GOVERNMENT OF KERALA

SELECTED STUDIES ON POPULATION AND FAMILY WELFARE PROGRAMME

VOL. II

DEMOGRAPHIC RESEARCH CENTRE
BUREAU OF ECONOMICS AND STATISTICS, TRIVANDRUM

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PREFACE

The Demographic Research Centre has so far published 96 Reports. Most of these Reports are cyclostyled and copies of many of them have been exhausted. Repeated requests are being received from various agencies for the supply of these Reports/Studies. To meet this growing demand, some of the important reports published since 1970 by the Demographic Research Centre have been selected and presented in this volume.

The Reports have been classified under various headings such as Characteristics of Acceptors, Evaluation of Mass Camps, KAP Studies, Fertility, Mortality and Migration.

It is hoped that this volume will be useful to Planners, Demographers, Family Planning Workers. Suggestions for improvement of this volume are welcome.

Trivandrum,
18-5-1978.

Dr. P. A. NAIR,
Director.

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STERILIZATION PROGRAMME IN KERALA—ABROAD STRATEGY OF ECONOMIC DEVELOPMENT

by

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1. *Introduction.*—Economy of Kerala is typical of a developing nation and the efforts of the economic development of the State are being nullified by the fast growing population. Thus the population problem has become a problem of economic development. In other words, the State can achieve economic development by a rational approach to the population problem.

2. *Demographic characteristics of the Population of Kerala.*—Demographically, Kerala is unique in many respects. It has a population that is already large and is growing rapidly at the rate of 2.3 per annum. Compared to other States of India it has the highest density of population, the highest level of literacy, the excess of females over males in the total population, the highest mean age at marriage of females, lower level of mortality and a higher proportion of workers in non-agricultural sectors. Though economic development is a function of so many factors like capital, investment, saving, resources, institutions, broadly the culture etc., it is akin to population growth in one way or other.

3. *Births and deaths.*—The salient demographic characteristics of the population of Kerala are high fertility and low mortality resulting in a rapid growth of population. The birth rate of Kerala was about 40 during 1931-40 period and the death rate was also as high at 29, resulting a growth of 11 persons per 1000 population. As years passed by, death rate started falling at a faster rate than the birth rate under the impact of public health programme and medical improvement in the State. Table I brings to light that a reduction of 5 points in birth rate from 1931–40 to 1967–68 period is marked by a fall of 19 points in death rate. The result is an alarming net growth of 25 persons per 1000 population. This phenomenon continued for some more years. The magnitude of population growth is quite alarming. It took nearly 50 years for the population to double itself in the early decades of this century but it requires only just half the period to double its present population.

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*Views expressed by the Authors are not necessarily the views of D.R.C.

4. *Standard of living.*—Rapid growth of population affects the standard of living of the people. Standard of living is in fact a function of four variables viz., natural resources, inventions, social organisations and the population, of which population is more pertinent in Kerala context. With meagre resources at hand, with scarcity in food, over crowding in land, with increased unemployment and under employment the standard of living of the people finds no better prospects in the near future.

5. *Investment.*—Further high rate of population growth requires a high level of investment to achieve a given per capita output. This is better explained in a simple illustration*. Consider two populations A and B that are equal in size and accumulated capital and in output. Assume population A grows at a rate of 1 per cent a year and population B at 3 per cent a year. If the ratio of capital stock to current annual output is 3 to 1, population A must invest 3 per cent of current output to maintain its per capita income, while population B must invest 9 per cent of current output. In Kerala, the supply of capital is limited. So a higher rate of population growth forces to duplicate investment to maintain the existing facilities, preventing an increase in capital available for each worker.

6. *Age structure.*—Rapid growth of population adversely affects the age structure. The principal determinent of the age distribution of a population is the course of fertility (migration is ruled out). Rapid growth creates a greater proportion of young population which means a larger dependency load. 53.5 per cent of the population are in the age group 15–59 (as per 1971 census). 40 per cent of the people are below 14 years of age. In contrast, the advanced countries like U.K. only 25 per cent are seen in the 0–14 age group. The dependency burden will be much serve when unemployment and underemployment are in existence. More than 65 to 70 per cent of the population are in the earners category in advanced countries. But Kerala has only 53.5 per cent in this category.

During 1961–71 period, while Kerala shows a decrease of 2.3 per cent in 0–14 age group, there is a visible increase of 2 per cent in the earners category. This change in the age structure is very favourable for the economic development of the State. This can be attributed to the fall in birth rate in this decade.

7. *Family welfare and per capita income.*—Rapid growth of population, in a State like Kerala, affects the family welfare and per capita income. An income that permits moderate comfort in a family with two children may mean under-nourishment and over-crowding in a family with ten children. The greater the number of children, the greater will be the

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*W. Parker Mouldin—Population of India—In population vital revolution—Edited by Ronald Freedman, P. 201.

burden on the budget of a family with meagre income. Further, if children are born at close intervals the health of the mother too will be affected. Kerala which produces only half of her food requirement, has a very low per capita income (Rs. 579 at current prices in 1971–72).

8. *Savings.*—Kerala has very inadequate savings that can be invested in capital goods to improve production or to maintain its per capita income. The extent to which an economy has to invest as a proportion of its income in order to keep the per capita income at a constant level would give the magnitude of the resources that are wasted to absorb the growth of population. In a country like India, it is estimated that 10 per cent* of Gross National Product has to be invested in order to keep the per capita income at constant level (Per capita income though rather a crude measure of a country's level of economic development, it measures the economic well being of the population in a general way).

9. *Economic development—two alternatives.*—For economic development of the State, we have two alternatives either we should procure capital investments sufficient to off-set the population growth and bring in welfare to the people at large, or bring in economic developments by reducing down the population growth. Hence it is imperative to have a concentrated effort to bring down the fertility rate to a considerable extent within a reasonable time. If we want to enjoy the benefits of economic planning, we should have a family planning programme which should be regarded as a programme for the economic development.

In the above paragraphs we have seen that as a result of high birth rate, the number of children in the total population is fast increasing and the State is under compelling necessity to expand ever greater resources simply to keep its people from slipping beneath the poverty line or the substance level. Consequently, what we have achieved through five year plans have been nullified by the growing population.

10. *A strategy to reduce birth rate to 19·5 in 25 years.*—An attempt has been made in this paper to chalk out a strategy to reduce the birth rate of 1961 to half in 25 years. The fact, that the birth rate has started falling since the starting of the family planning programme in the State is taken into account. A point of importance to be noted here is that the death rate which had started falling sharply has reached an optimum level of 9·7 per thousand in recent years. A strategy to reduce the birth rate by family planning programme has been worked out and given in Table III. Total number of sterilisation conducted so far and the targets of sterilisation for the years to come has been given in column 2 of the Table. The number of births averted every year due to sterilisation programme and other methods are also given in this

* Finance and Development No. 1 1969 P.8

table. As a subsidiary to this, Table IV is given, indicating the birth rates and death rates for the years 1957 to 1991. The assumptions and explanations regarding the calculation of the births averted etc., are indicated at the end of the tables. Targets fixed for the years are in conformity with the targets fixed by the Department of Family Planning for 5th Five Year Plan period and an increase of 10 per cent to this target for the periods upto 1981 and a constant target of 2 lakhs every year for the rest of the period. It may be well to point out that the influence of age at marriage, literacy etc., is not taken into account while calculating births averted by family planning for the periods 1957–58 to 1990–91. An increase noticed in the population constructed when compared with the actual population as per censuses is mainly due to this.

11. *Benefits by the reduction in birth rates.*—If population is allowed to grow at the present rate of 2.26 per cent per year, it would be 299 lakhs in 1985-86. But it would be 280 lakhs as per the programme given in this paper. Age distribution given in Table V is adopted from the Coale and Hoover model constructed for the less developed countries in the event of a decline in birth rate by 50 per cent in 25 years.

12. *Age structure.*—Table V brings to light the effect of a fall in birth rate which affects 0–14 age group. The burden of dependency would fall and this would increase the per capita income and individual welfare, for there will be more earners for the dependents.

13. *Sterilization programme to achieve the target.*—To bring down birth rate, a target is proposed (Table III Col 2) for the years. A concentrated effort to achieve it is essential and it is possible also. The implementation would certainly face many problems.

14. *Two approaches.*—Sterilization programme has two approaches (1) Normal sterilization programme attached to the hospitals and (2) Festival approach. Are the people of Kerala prepared to accept the sterilization programme whole-heartedly? A small family size is a new ideal in contrast to the traditional large family size. Family Planning is set on a new ideal of family limitation. This spells a change from traditionalism to modernism. From time immemorial, the attitude of the people towards sex and sex relation is hidden. Social restrictions imposed on sex relations, the norms and values attached to sex and sex relations for ages, past have shaped the attitude of the people towards sex. Many are the moral codes attached to sex. Any change in the existing norm will be looked down with contempt or will be looked up on as a diviant behaviour which goes against social conformity. K.A.P. surveys conducted at various periods reveal that people are hesitant to put in to practice what they know. If at all they practise they hardly reveal it and keep it as a secret. It is because that they are not sure of what other thinks of them. When family planning gets social acceptance of the people at large it becomes a way of life as in western

countries and family planning will become a matter of the individual. No persuation in this regard is required.

In between the old pattern of family building and the new pattern of family size, there is a gap which we may call it a cultural lag. *Cultural lag occurs when one of two parts of culture changes as before or in greater degree than the other part does thereby causing less adjustment between two parts than those existed previously. When the cultural lag disappears the programme of family planning will reach a take off stage. Till the time the communication apparatus should be set in to bring the common man closer and closer to Family Planning Programme.

15. *Festival approach.*—Festival approach to family planning is aimed at minimising the cultural lag by festivity. To achieve the desired target of sterilization, the camp approach is high yielding. It is seen that what was achieved during the past five years in normal programme in certain districts of Kerala have been achieved by a single camp. So the camp approach can profitably be used to achieve the said target if any laxity in the normal programme is perceived.

Sterilization camps have many advantages over normal programme. It creates enthusiasm and a feeling of oneness and one purpose. Those who attend the compare jubilant and the purpose of those who attend the camp is the promotion of family planning. Inside the camp all are the advocates of birth control. The promoter, the Doctor, the participants—all have identified themselves with a common goal i.e., Family Planning. The jubilant atmosphere, coupled with the generous and respectable treatment, one gets, generates confidence, a purpose and a bright future. Apart from that the liberal incentive that is offered per operation, not only to the acceptor but also to the promoter, Doctor, Nurse etc., makes the camp all the more attractive. So the festival approach is appropriate and is widely appreciated by the people. There is another side of mass vasectomy camp. It inbibes certain evils also. The promoter, the Doctor and the acceptor are the three major components of the camp who are coordinated for one purpose i.e., to sterilize as many number as possible. Here the promoters are not bothered about the welfare of the acceptor. Their interest lies in the number of sterilization and not in the welfare of the person after the operation. Further in their hectic activity to canvass as many number to the operation table, they took even young unmarried or even old people for this. To illustrate—in Trichur camp 465 persons have been rejected on the ground that they have been operated earlier. In Trivandrum camp more than 490 persons were turned down on this ground. The poverty of those persons are exploited for this purpose. Medical attention before and after sterilization is rather impracticable in a temporary camp. Further Doctors, drawn from the various institutions, can hardly know what happens to the acceptor the next day. Their responsibility terminates at the

operation table itself. Besides mass camps give room for complacent attitude of the family planning workers. With all these limitations, a mass camp can do in a month what an army of medical and para-medical officers fail to do in five years. The success of the camp depends on the organizational efficiency of the organizers in co-ordinating the various activities smoothly.

16. *Characteristics noted among the sterilised.*—In this connection a few observations on the sterilised persons are pertinent. Distribution of sterilised persons from the beginning of Family Planning Programme highlights that literates favour sterilisation more than illiterate. Among literates, those who adopt it are of literacy standard below middle school (Table VI). It may be presumed that highly educated people resort to other methods of Family Planning. Another factor noted is that most of the male persons are drawn from 30–44 age group and female from 25–39 age group (Table VII). The peak reproduction period of Kerala women is between ages 20–39.

17. *Summary and conclusion.*—Economy of Kerala is typical of a developing nation and population problem is a problem of economic development. The salient demographic characteristic of Kerala population are high fertility and low mortality resulting in a rapid growth of population. It took 50 years for the population to double itself in the early decades of this century but it will double its present population in 30 years. Rapid growth of population affects standard of living. High rate of population growth requires a very high level of investment to achieve the given per capita income.

Population growth also distorts the age structure. It creates a greater proportion of young population which means a larger dependency load. 53·5 per cent are in the age group 15–59 and 40 per cent are below 14 years of age. The corresponding figures for advanced countries are 20 and 25 respectively. It affects the family welfare and per capita income.

Two alternatives are before the State (i) Invest sufficiently a huge capital or (2) reduce fertility and save money for further investment. What is needed for feeding the growing population could be used if fertility is reduced, for making aminities for improving the standard of life of the people.

Taking this in view a programme for family planning (giving emphasis to sterilisation) is chalked out to reduce fertility to half. This is proposed to be completed in 25 years time starting with 1961. By the time we reach 1986–87, 29 lakhs sterilisation are to be performed as given in the Table III which in turn reduce birth rate to 19·8. The targets are not over ambitious though a bit difficult to achieve under normal programmes. The festival approach to family planning can profitably be used to achieve the desired targets. Whenever normal programme shows weakness or failures the festival approach can be rationally adopted.

TABLE I

Birth rates—Death rates and natural growth of Kerala for the periods 1931-40 to 1970-71

(of migration is ruled out)

Periods	*Birth rate*	*Death rate*	*Natural growth (per 1000)*
(1)	(2)	(3)	(4)
1931-40*	40.0	29.07	10.93
1941-50*	39.8	22.27	17.53
1951-60*	38.9	16.89	22.01
1965-66@	37.9	10.11	27.79
1966-67@	37.2	10.40	26.80
1967-68@	35.4	10.13	25.27
1968-69@	..	..	..
1969-70@	33.5	9.24	24.26
1970-71@	31.9	9.15	22.75

Source.—FACT Book on Population—Demographic Research Centre, Bureau of Economics and Statistics, Trivandrum.

* Census data.

@ Sample Registration data.

TABLE II

Dependency load to Kerala

	Kerala		*India*
	1971	*1961*	
	(1)	(2)	(3)
0-14	40.26	42.63	42.02
15-59	53.51	51.52	51.99
60+	6.23	5.85	5.99
Total	100.00	100.00	100.00

Source.—Economic Review, Kerala 1973.

TABLE III

Number of sterilisation operations and total number of births averted by sterilisations and other methods

Year	*No. of sterilisation*	*No. of births averted by sterilisation only*	*Births averted by other methods (including non-programme methods also)*	*Total number of births averted in each year*
(1)	(2)	(3)	(4)	(5)
1957–58	1469	13	2	15
1958–59	3962	326	41	367
1959–60	6034	1228	154	1382
1960–61	5403	2655	357	3012
1961–62	6663	4037	505	4542
1962–63	8630	5526	691	6217
1963–64	15395	7435	929	8364
1964–65	27878	10750	1344	12094
1965–66	39728	16832	5611	22443
1966–67	40274	25721	8574	34295
1967–68	65155	35212	11737	46949
1968–69	73840	48846	16282	65128
1969–70	60546	64937	21646	86583
1970–71	68017	77999	26000	103999
1971–72	151111	91092	30364	121456
1972–73	86688	118869	39623	158492
1973–74	45713	137665	45888	183553
		Targets proposed		
1974–75	100000	143709	47903	191612
1975–76	110000	155435	51812	207247
1976–77	125000	172108	57369	229477
1977–78	140000	190916	63639	254555
1978–79	150000	212029	70676	282705
1979–80	165000	234316	78105	312421
1980–81	180000	258169	86056	344225
1981–82	200000	283920	94640	378560
1982–83	200000	312132	104044	416176
1983–84	200000	339342	113114	452456
1984–85	200000	363943	121314	485257
1985–86	200000	385882	128627	514509
1986–87	200000	405290	135097	540387
1987–88	200000	422314	140771	563085
1988–89	200000	437415	145805	583220
1989–90	200000	450793	150264	601057
1990–91	200000	461915	153972	615887

These targets have been fixed in conformity with the targets fixed for the Fifth Five Year Plan period by the Department of Family Planning and for the remaining period it is assumed an increase of 10 per cent in every year upto 1980-81 and thereafter a constant target of two lakhs every year. Number of births averted by sterilisations have been calculated by using the methodology adopted in " A note on the calculation of births averted due to the Family Planning Programme in Kerala" by Dr. R. S. Kurup (Paper No. 78 D.R.C.).

The effect of non-programme methods has been assumed as 1/8th of total births averted and only that effect has been taken into account till 1965-66. Births averted by other methods (including non-programme methods) have been assumed as 1/3rd of the births averted by sterilisation since 1965-66, the year from which the methods like I.U.C.D. and the use of conventional contraceptives have been introduced.

TABLE IV

Estimated population, births and birth rates over the years

Year	*Mid-year population ('0000)*	*No. of births averted*	*Birth rate*	*Death rate*
(1)	(2)	(3)	(4)	(5)
1957-58	1557	15	38·9	15·7
1958-59	1593	367	38·9	15·3
1959-60	1631	1382	38·8	14·9
1960-61	1670	3012	38·7	14·5
1961-62	1710	4542	38·6	14·1
1962-63	1752	6217	38·5	13·7
1963-64	1796	8364	38·4	13·3
1964-65	1841	12094	38·2	12·9
1965-66	1888	22443	37·7	12·5
1966-67	1936	34295	37·1	12·1
1967-68	1984	46949	36·5	11·7
1968-69	2033	65128	35·7	11·3
1969-70	2083	86583	34·7	10·9
1970-71	2133	103999	34·0	10·5
1971-72	2183	121456	33·3	10·1
1972-73	2234	158492	31·8	9·7
1973-74	2283	183553	30·9	9·7
1974-75	2331	191612	30·7	9·7
1975-76	2380	207247	30·2	9·7

TABLE IV—(*cont.*)

Year	*Mid-year population ('0000)*	*No. of births averted*	*Birth rate*	*Death rate*
(1)	(2)	(3)	(4)	(5)
1976–77	2429	229477	29·5	9·7
1977–78	2477	254555	28·6	9·7
1978–79	2524	282705	27·7	9·7
1979–80	2569	312421	26·7	9·7
1980–81	2613	344225	25·7	9·7
1981–82	2655	378560	24·6	9·7
1982–83	2695	416176	23·5	9·7
1983–84	2732	452456	22·3	9·7
1984–85	2767	485257	21·4	9·7
1985–86	2799	514509	20·5	9·7
1986–87	2829	540387	19·8	9·7
1987–88	2858	563085	19·2	9·7
1988–89	2885	583220	18·7	9·7
1989–90	2911	601057	18·3	9·7
1990–91	2936	615887	17·9	9·7

Note.—The population in mid 1957–58 is estimated from the census figures. The birth rate of 38·9 and the death rate of 16·1 in 1951–60 as estimated from census data have been used as the base assuming a fall of 0·4 point each year upto 1972–73 and constant thereafter.

The methodology, adopted in the paper "A note on the calculation of births averted due to the Family Planning Programme in Kerala" by Dr. R. S. Kurup, has been adopted for the construction of this Table.

TABLE V

Percentage distribution of age groups of projected population of Kerala over the years

(Population in '0000)

Age group	1960–61		1965–66		1970–71		1975–76		1980–81		1985–86	
	Percentage	Population	Percentage	Population	Percentage	Population	Percentage	Population	Percentage	Population	Percentage	Population
1	2	3	4	5	6	7	8	9	10	11	12	13
If Fertility is declined by 50 per cent (1960–61 to 1985–86)												
0–14	43·64	729	42·72	806	40·50	364	37·75	899	35·10	932	32·94	922
15–64	53·39	891	54·07	1,021	55·91	1,192	58·38	1,389	60·56	1,608	62·68	1,754
65+	2·97	50	3·21	61	3·59	77	3·87	92	4·34	115	4·38	123
Total	100·00	1,670	100·00	1,888	100·00	2,133	100·00	2,380	100·00	2,655	100·00	2,799
Total population if the population increases at the present rate of growth i.e., 2·3 per cent per annum	..	1,666	..	1,876	..	2,110	..	2,369	..	2,660	..	2,986

TABLE VI

Percentage distribution of sterilised persons according to educational status

Educational status	1957–67 percentage	1967–68 percentage	Period 1968–69 percentage	1969–70 percentage	1970–71 percentage
1	2	3	4	5	6
Illiterates ..	20·8	20·8	21·1	19·6	17·7
Literates below primary ..	38·7	54·2	43·7	41·1	35·4
Above primary below middle ..	25·2	16·5	23·3	26·8	26·9
Above middle below matric ..	5·9	3·3	5·0	5·3	6·9
Matric and above ..	5·6	4·2	4·8	6·8	7·7
Literacy standards not specified ..	4·3	1·0	2·1	0·4	5·4

(1) A demographic profile of sterilised persons in Kerala 1957–67
(2) A study of sterilisation in Kerala during 1967–68
(3) Sterilisation in Kerala (1968–69)—An appraisal
(4) Highlights of persons sterilised in Kerala 1969–70
(5) Sterilisation in Kerala during 1970–71 (unpublished)

TABLE VII

Percentage distribution of sterilised persons according to age at the time of sterilisation for males and females

Age groups	Males					Females				
	1957–67	1967–68	1968–69	1969–70	1970–71	1957–67	1967–68	1968–69	1969–70	1970–71
1	2	3	4	5	6	7	8	9	10	11
15—19	..	..	..	..	0·09	0·1	0·3	0·2	0·3	0·18
20—24	0·4	0·6	0·7	0·1	2·11	9·7	12·2	13·8	15·2	17·55
25—29	7·7	9·3	10·4	12·2	16·08	34·7	37·1	35·9	38·4	38·30
30—34	23·5	21·6	21·8	23·1	24·28	32·1	29·9	29·7	28·1	26·76
35—39	30·7	28·6	27·6	28·1	27·10	19·1	16·8	17·2	15·2	14·18
40—44	37·7	21·2	20·6	18·5	16·45	4·3	3·2	2·7	2·4	2·42
45 and above	..	18·7	18·9	17·1	13·89	..	0·5	0·5	0·4	0·61
Total	100·00	100·00	100·00	100·00	100·00	100·00	100·00	100·00	100·00	100·00

1.2 CHARACTERISTICS OF STERILISED PERSONS IN KERALA 1957-71

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CHARACTERISTICS OF STERILISED PERSONS IN KERALA—1957–1971

1. *Introduction.*—Population control through family planning programme has become a matter of great significance to the economic development of the State and sterilisation has turned out to be its important impact. Hence it is worthwhile to examine the socio-demographic characteristics of persons who have adopted sterilisation for family planning in Kerala State.

2. *Object of the study.*—Number of the studies conducted by the Demographic Research Centre have shed light on the characteristics of sterilised persons since the beginning of the programme in the State in 1957. The present study which focuses on 1970–71 period provides information on the demographic characteristics of persons who have accepted sterilisation over the years 1957–71.

3. *Source of data.*—The study takes into account 60 per cent of the persons sterilised in 1970–71 and depends largely on the data, collected from the records kept at hospitals and other institutions. One major drawback which needs mention is that the hospital records are not maintained with due statistical importance and many valuable items of information are left unrecorded. Further, the investigators who copy down the information from the hospital records very often omit certain items. Nevertheless, the data collected, have proved to be a useful indicator of the various characteristics of persons who have accepted sterilisation operation.

4. *Progress of sterilisation programme.*—The sterilisation programme in the State began with a humble start in 1957 and gathered momentum in 1963–64 and recorded the highest performance in 1968–69 with 73840 sterilisations. But the subsequent two years have witnessed a decline in the total number of sterilisations. Only 68017 sterilisations were conducted in the State during 1970–71 period, out of which 68·5 per cent were vasectomies. In fact, 3·2 persons have adopted sterilisation per thousand population in the State in 1970–71.

4.1. A more or less steady progress in male sterilisations is noticeable till 1968–69 which is followed by a fall in 1969–70. In the case of female sterilisations, a steady upward trend is perceptible since 1964.

4.2. The index of progress in the number of sterilisations with 1966–67 as the base year is given in the table below:

TABLE 1

Index of progress

Period	*No. of sterilisations*	*Index of progress*
(1)	(2)	(3)
1966–67	40274	100
1967–68	65155	165
1968–69	73840	185
1969–70	60546	150
1970–71	68017	170

5. *Targets and achievements.*—Generally sterilisation targets are fixed by Government of India in consultation with the State Health Services Department. A target of 128922 sterilisation was fixed for the year 1970–71 but only 52·8 per cent of the targets could be achieved during the year. Table below reveals the sterilisation targets and the achievements for the period from 1967–68 to 1970–71.

TABLE 2

Targets and achievements

Period	*Target (No. of sterilisation proposed)*	*Achievements (No. of sterilisations)*	*Percentage of target achievements*
(1)	(2)	(3)	(4)
1967–68	79664	65155	81
1968–69	122544	73844	60
1969–70	129400	59561	46
1970–71	128922	68017	52·8

The target fixed for 1970–71 is below that of 1969–70 target. It appears that the sterilisation targets compared to achievements are unrealistic.

6. Demographic characteristic (like age, sex, education, religion, income, occupation, number of children born and alive, etc.), are elaborated in the following paragraphs:—

6.1. *Religion.*—The population of Kerala is composed of three major religious groups—Hindus, Christians and Muslims. During 1967–71 decade, there is a fall of 1·59 per cent of the Hindu population and

an increase of 0·05 per cent and 1·5 per cent in the population of Christians and Muslims respectively.

6.1.1. Religious composition of the sterilised persons in 1961 shows that 74·6 per cent are Hindus and 20·2 per cent of them are Christians and 5·2 per cent of them are Muslims. In 1970–71 period 72·35 per cent are Hindus, 19·27 per cent are Christians and 8·38 are Muslims.

6.1.2. A point of importance to be noted here is that the Hindu population in 1961–71 decade has fallen by 1·59 per cent but their proportion among sterilised has fallen by 2·3 per cent for the same period. But in the case of Christians in spite of a very nominal increase of 0·05 per cent in the general population, there proportion among the sterilised has declined by 1 per cent indicating a slowing down in their acceptance. Muslims have recorded an increase of 1·5 per cent in the general population while their proportion among the sterilised also has recorded an increase of 3·18 per cent (Table 4).

TABLE 3

Decennial variation—Religion-wise—1961-71

Religion	Proportion of population according to censuses			Proportion of sterilised persons		
	1961 percentage	1971 percentage	Decennial variation percentage	1961 percentage	1971 percentage	Decennial variation percentage
1	2	3	4	5	6	7
Hindus ..	61	59·41	—1·6	74·6	72·35	—2·3
Christians ..	21	21·05	+0·05	20·2	19·27	—1·0
Muslims ..	18	19·54	+1·5	5·2	8·38	+3·18
Total ..	100	100		100	100	

From the very outset, the Hindus have over represented and Christians and Muslims under represented in the sterilisations conducted in the State. Religious-wise distribution of sterilised persons from

1957-67 to 1970-71 is given in Table 5 appended. As a matter of fact the Hindus are culturalogically favourable in accepting sterilisation. The acceptance of the Muslims, who were hesitant in the early periods of sterilisation programme seems to be slowly increasing.

6.2. *Education.*—Literacy promotes, knowledge of family planning which influences the attitudes and acceptors of family planning and thus determines family size.

6.2.1. During 1970-71 period 19 per cent of the Hindus, 9·6 of the Christians and 32 per cent of Muslims who have adopted sterilisation are illiterates.

6.2.2. According to 1971 census 60 per cent of the people in Kerala are literates. Literates of all religious groups have favoured sterilisation more than illiterates. A slight increasing trend is seen in the proportion of sterilised persons with matric and above standard in recent years (Table VI appended). 62 per cent of the Hindus, 78 per cent of the Christians and 53 per cent of Muslims are of below middle school standard during 1970-71 period (Table VII appended).

6.3. *Age structure.*—The age composition of the sterilised persons reveals the extent of the reproductive span, saved from child bearing on account of sterilisation operations. The number of births averted by sterilisation depends largely on the age of persons who accept it. The younger the persons sterilised the greater the possible number of birth that would be averted.

6.3.1. The age compesition of the males sterilised during 1957-71 period reveals that in the early periods of the sterilisation programme, it was the middle aged males who accepted it. The proportion of the sterilised males below 30 years of age has increased from 8 per cent in 1957-67 to 18 per cent in 1970-71.

6.3.2. A notable characteristics in this connection is that half the number of persons sterilised belongs to 30-39 age group. This is a uniform trend seen throughout the period from 1957 to 1971 (Table 8 appended).

6.3.3. The proportion of females sterilised in the ages 20-24 shows a rising trend from 9·7 per cent in 1957-67 period to 17·5 per cent in 1970-71. Besides, the proportion of females in the age group 40-44 has fallen from 4 per cent in 1957-67 to 2·4 per cent in 1970-71 (Table 8 appended).

6.3.4. 51·3 per cent of sterilised males are in 30-39 age group and 63 per cent of females are 25-34 age group during 1970-71 (Table 9 appended). More than 1/4 of the males sterilised belong to 35-39 age group while 38 per cent of the females sterilised are in the age group 25-29.

6.4. *Occupation.*—Nearly 43 per cent of the sterilised persons are unskilled workers. Agricultural labourers and cultivators form 19 per cent. Occupational distribution of sterilised persons is given in Table 10 (appended). This is not readily comparable with the census classification given in Table 11 appended as they are not identical. However agricultural labours in the census classification Table 11 (appended) are comparable with the corresponding item in Table 10 (appended). In fact, the agricultural labourers have been over represented. The fact that more than 60 per cent of person who adopted sterilisation in 1970–71 period belong to workers and labourers category is a prominent factor to be noted.

6.5. *Income.*—Those people with a monthly income of Rs. 100 or more are expected to pay for the medical service they receive from the hospitals. So there is a tendency to project a very low income by the patients when they come to hospitals to escape payment of medical charges. 77 per cent of the persons sterilised have reported a monthly income of less than Rs. 100 and only 5 per cent have reported a monthly income of more than Rs. 200 during 1970–71 period. However it may be seen that a good majority of them is of very low monthly income (Table 12 appended).

6.6. Composition of sterilised persons according to the number of children born and living at the time of sterilisation.

The mean age at sterilisation is of 36·56 for males and 28·67 for females in 1970–71 period. The age at sterilisation of males and females for the previous two years is given in the Table.

TABLE 4

Age at sterilisation 1968–71

Periods	*Mean age at sterilisation* *Male*	*Female*
1968–69	37·6	30·5
1969–70	36·0	29·0
1970–71	36·5	28·67

The age at sterilisation of females shows a falling trend. But for males it is around 36 years.

6.6.1. The average number of children born to sterilised males is 3.82 and to females it is 4·22 during 1970–71 period. An average of 3·68 and 4 children are alive to males and females respectively at the time of sterilisation.

6.6.2. Table 14 appended reveals that 50 per cent of the males and 39 per cent of females who accept sterilisation have 3 children born at the time of sterilisation. In general 49·4 per cent of the sterilised persons have 3 children alive at the time of sterilisation.

6.6.3. A religion-wise analysis of the acceptors of sterilisation brings to light that 60 per cent of the Muslims, 53 per cent of Christians and 48 per cent of Hindus acceptors have more than 3 children alive at the time of sterilisation. [Table 14(a) appended.]

6.7. *Trend in family size.*—The proportion of sterilised persons who have more than 3 children living at the time of sterilisation, shows a declining trend. It declines from 74·5 per cent in 1956–51 to 50·6 per cent in 1970–71 (Table 15 appended). The number of children a person desires to have, is more or less reflected by the number of children a person has at the time of sterilisation. During 1956–51 period, the family size of those who accepted sterilisation is large. Only ¼ of the persons sterilised in 1956–61 period has 3 or less than three children alive. But in 1970–71, period nearly 1/2 the number of persons who accepted sterilisation has 3 or less than 3 children alive at time of sterilisation in 1956–61 period but in1970–71 this proportion has increased four fold [Table 14 (b) appended]. The idea of permanent family limitation crops up only after the couples have 2 living children.

7. *Preference for male children.*—6·52 of the males sterilised have no male children living and 10·25 per cent have no female children alive at the time of sterilisation (Table 16 appended). In the case of females 6·36 per cent have no male children alive and 8·12 per cent have no female children living at the time of sterilisation. A preference for male is more prominent than for female children.

8. *Impact of sterilisation on future births.*—Government of India have estimated that on an average, 1·7 births will be saved per sterilisation in the course of 10 years. On the basis of this estimate 115,600 births will be prevented during the course of next 10 years by the sterilisations done in 1970–71 period.

9. *Summary and conclusion.*—The present study on sterilised persons gives a view of the various characteristics of persons who accepted sterilisation voluntarily for family planning in 1970–71 period. Many of the major points have been amplified by making a comparison with earlier periods.

9.1. There is a slight increase in the number of sterilisations during 1970–71. 68·5 per cent of them in 1970–71 are males.

9.2. Average age at sterilisation is 36·5 years for males and 28·7 years for females. The age at salpinjectomy has fallen from 30·5 years in 1968–69 to 28·7 years in 1970–71.

9.3. 1961–71 decade variation in the religious composition of the people in the general population is that Hindus have declined their strength by 1·5 per cent in the general population while Christians and Muslims have increased their number by 0·05 per cent and 1·5 per cent respectively. The analogy in the composition of the sterilised persons during the decade brings to light that the Muslims have shown substantial increase in their proportion by 3·18 per cent while the proportions of Hindus and Christians have registered a fall of 2·3 per cent and

1 per cent respectively. During 1970–71 period, 72·35 percent of the sterilised persons are Hindus and 19.27 percent are Christians and 8·38 are Muslims. While Hindus are over-represented, Christians and Muslims are under-represented in the sterilisations conducted from 1957–71.

9.4. Nineteen per cent of the Hindus, 9·6 per cent of Christians and 32 per cent of Muslims sterilised during 1970–71 are illiterates. Literates are more favourable to sterilisation than illiterates. But the literacy of the sterilised persons is limited to the middle school standard.

9.5. The proportion of the sterilised males below 30 years increased from 8 per cent in 1957–67 to 18 per cent in 1970–71. Further 50 per cent of the sterilised persons belong to 30–39 age groups

9.6. The proportion of females sterilised in 20–24 age-group grows up from 9.2 per cent in 1957–67 to 17·5 per cent, in 1970–71. At the same time their proportion in the 40–44 age group has fallen from 4 per cent in 1957–67 to 2·4 per cent in 1970–71.

9.7. 51.3 per cent of the males sterilised are in the age group 30–39 and 63 per cent of females are in the age group 25 to 34 during 1970–71. In fact more than 1/4 of the sterilised males belongs to 35–39 age group while 38 per cent of the females are in the ages 25–29.

TABLE 5

Percentage distribution of sterilised persons according to educational status 1967–71

Serial number	Educational status	Periods				
		1957–67 (1)	1967–68 (2)	1968–69 (3)	1969–70 (4)	1970–71 (5)
1	Illiterates ..	20·8	20·8	21·1	19·6	17·7
2	Literates below Primary ..	38·7	54·2	43·7	41·1	35·4
3	Above primary below middle ..	25·2	16·5	23·3	26·8	26·9
4	Above middle below matric ..	5·9	3·3	5·0	5·4	6·9
5	Matric and above ..	5·6	4·2	4·8	6·8	7·7
6	Literacy standards not specified ..	4·3	1·0	2·1	0·4	5·4

(1) A Demographic profile of sterilised persons in Kerala 1957–67
(2) A Study of sterilisation in Kerala during 1967–68
(3) Sterilisation in Kerala (1968–69—An appraisa l
(4) Highlights of persons sterilised in Kerala 1969-70
(5) Sterilisation in Kerala during 1970–71 (unpublished)

TABLE 6

Distribution of sterilised persons according to religion and educational status—1970-71

Educational status	Religion									
	Hindus		Christian		Muslim		N.R.		Total	
	No.	Percentage	No.	Percentage	No.	Percentage	No.	Percentage	No.	Percentage
1	2	3	4	5	6	7	8	9	10	11
Illiterates ..	3150	18·90	427	9·62	617	31·97	54	6·14	4248	17·76
Literates below primary ..	5746	34·48	1755	39·53	637	33·01	331	37·61	8469	35·41
Above Primary below middle ..	4531	27·18	1258	28·33	381	19·74	263	29·89	6433	26·90
Above middle below matric ..	1123	6·74	383	8·63	74	3·83	78	8·86	1658	6·93
Matric and above ..	1312	7·87	393	8·85	72	3·73	70	7·95	1847	7·72
Literacy not specified ..	805	4·83	224	5·04	149	7·72	84	9·55	1262	5·28
Not recorded ..	8965	..	1871	..	882	..	5733	..	17451	..
Total ..	25632	100·00	6311	100·00	2812	100·00	6613	100·00	41368	100·00
Percent ..	73·75	..	18·16	..	8·09	..	..	..	100	..

TABLE 7

Percentage distribution of sterilised persons according to age at the time of sterilisation for males and females for the periods—1957–71

Age group	Males					Females				
	1957–67	1967–68	1968–69	1969–70	1970–71	1957–67	1967–68	1968–69	1969–70	1970–71
1	2	3	4	5	6	7	8	9	10	11
15—19	..	..	..	..	0·09	0·1	0·3	0·2	0·3	0·18
20—24	0·4	0·6	0·7	1·0	2·11	9·7	12·2	13·8	15·2	17·55
25—29	7·7	9·3	10·4	12·2	16·08	34·7	37·1	35·9	38·4	38·30
30—34	23·5	21·6	21·8	23·1	24·28	32·1	29·9	29·7	28·1	26·76
35—39	30·7	28·6	27·6	28·1	27·10	19·1	16·8	17·2	15·2	14·18
40—44	37·7	21·2	20·6	18·5	16·45	4·3	3·2	2·7	2·4	2·42
45	..	18·7	18·9	17·1	13·89	..	0·5	0·5	0·4	0·61
Total	100·0	100·0	100·0	100·0	100·00	100·0	100·0	100·0	100·0	100·00

TABLE 8

Distribution of sterilised persons according to age and sex—1970–71

Age group	Male		Female		Total	
	No.	Percentage	No.	Percentage	No.	Percentage
15–19	21	0·09	30	0·17	51	0·13
20–24	477	2·11	2936	17·55	3413	8·67
25–29	3641	16·08	6406	38·30	10047	25·52
30–34	5500	24·28	4477	26·77	9977	25·34
35–39	6137	27·10	2372	14·18	8509	21·01
40–44	3727	16·45	404	2·42	4131	10·49
45	3145	13·89	102	0·61	3247	8·24
Not Recorded	1312	..	681	..	1993	..
Total	23960	100·00	17408	100·00	41368	100·00

TABLE 9

Distribution of the sterilised persons according to occupation

Occupation	Male	Percentage	Female	percentage	Total	Percentage
Agricultural Labourers ..	2041	12·80	382	6·04	2423 (5·86)	10·88
Skilled workers ..	2131	13·37	226	3·57	2357 (5·69)	10·58
Unskilled workers ..	7553	47·37	2119	38·50	9672 (23·38)	43·43
Cultivators and Farmers ..	1504	9·43	306	4·84	1810 (4·38)	8·13
Professional workers ..	544	3·41	172	2·72	716 (1·73)	3·22
Traders and Businessmen ..	887	5·56	223	3·53	1110 (2·68)	4·99
Clerical workers ..	150	0·94	69	1·09	219 (0·53)	0·98
Others ..	1048	6·57	2135	33·75	3183 (7·69)	14·29
No occupation ..	87	0·55	693	10·96	780 (1·89)	3·50
Not Recorded ..	8015	..	11083	..	19098 (46·17)	..
Total ..	23960	100·00	17408	100·00	41368	100·00

TABLE 10

Percentage distribution of workers and non-workers (as per 1971 Census)		Percentage distribution of sterilised persons according to industrial category of workers (1970–71)	
1. Cultivators	5·2	Cultivators and farmers	8·13
2. Agricultural labourers	8·9	Agricultural labourers	10·98
3. Livestock, forestry, fishing, hunting and plantation, etc.	2·0	Skilled workers	10.58
		Unskilled workers	43·23
4. Mining and quarrying	0·1	Professional workers	3·22
5. Manufacturing, processing:		Traders and businessmen	4·99
Servicing and repairs:		Clerical workers	0·98
(a) Household industry	1·3	Others	14·29
(b) Others than household industry	3·3	No occupation	3·50
6. Construction	0·5		
7. Trade and commerce	2·7		
8. Transport, storage and communication	1·1		
9. Other services	4·0		
10. Non-workers	70·9		
Total	100·00		

TABLE 11

Distribution of sterilised person according to monthly Income—1970-71

Monthly income	Male	Percentage	Female	Percentage	Total	Percentage
Below Rs. 50	2149	12·26	1184	12·51	3333 (8·06)	12·35
Rs. 50-99	11054	63·06	6423	67·85	17477 (42·25)	64·74
Rs 100-149	2811	16·04	865	9·14	3676 (8·89)	13·62
Rs. 150-199	762	4·35	379	4·00	1141 (2·76)	4·22
Rs. 200 and above	758	4·29	616	6·50	1369 (3·30)	5·07
Not Recorded	6431	..	7941	..	14372 (34·74)	..
Total	23960	100	17408	100	41368	100

TABLE 12

Percentage distribution of persons sterilised according to number of children born—1970-71

No. of children born	Male		Female		Total	
	No.	percentage	No.	Percentage	No.	Percentage
1	195	1·41	46	0·70	241	1·18
2	3120	22·53	698	10·59	3818	18·68
3	3746	27·05	1819	27·60	5565	27·23
4	2765	19·96	1642	24·92	4407	21·56
5	1803	13·02	1104	16·75	2907	14·22
6	1160	8·38	637	9·67	1797	8·79
7	617	4·46	345	5·24	962	4·71
8	254	1·83	165	2·50	419	2·05
9	118	0·85	76	1·15	194	0·95
10	53	0·38	33	0·53	86	0·42
10 and above	18	0·13	25	0·38	43	0·21
Total	13849	100·00	6590	100·00	20439	100·00

TABLE 13 (a)

Percentage distribution of sterilised persons according to Religion and number of children living—1970–71

No. of children living	Hindus	Christians	Muslims	N.R.	Total
1	2	3	4	5	6
1	1·18	1·30	1·01	1·83	1·25
2	20·47	17·23	16·57	18·71	19·50
3	30·17	25·48	22·67	28·25	28·68
	51·82	47·01	40·25	..	49·43
4	22·12	22·52	23·34	22·17	22·28
5	13·41	15·30	16·48	15·07	14·09
6	7·12	9·22	9·59	8·60	7·78
7	3·48	5·16	5·93	3·37	3·92
8	1·32	2·34	2·65	1·27	1·58
9	0·51	0·94	1·05	0·43	0·61
10	0·16	0·30	0·46	0·20	0·21
10 and above	0·06	0·21	0·25	0·10	0·10
Total	100·00	100·00	100·00	100·00	100·00

TABLE 19 (b)

Percentage distribution of sterilised persons according to number of children living (1956–71)

Number of children living	1956–61	1961–62	1962–63	1963–64	1964–65	1965–66	1966–67	1967–68	1968–69	1969–70	1970–71
1	2	3	4	5	6	7	8	9	10	11	12
1	0·8	0·9	0·5	0·4	0·5	0·7	0·9	0·89	1·00	0·86	1·25
2	4·7	5·3	6·9	6·6	6·3	8·7	12·1	14·93	17·7	17·85	19·50
3	19·9	20·6	22·1	25·4	28·0	27·4	26·1	26·88	26·7	27·80	28·68
	25·4	25·9	29·5	32·4	34·8	36·8	39·1	42·70	45·4	46·51	49·43
4	26.4	24·5	26·0	25·8	25·5	24·9	23·5	22·71	22·3	22·34	22·28
5	21·8	22·1	19·7	19·9	18·8	18·3	17·5	16·26	15·4	15·50	14·09
6	13·7	14·8	12·4	11·8	11·5	11·2	10·8	10·05	9·4	8·51	7·78
7	7·4	6·9	6·7	6·2	5·7	5·0	5·4	4·97	4·6	4·23	3·92
8	3·2	3·2	3·1	2·6	2·3	2·6	2·5	2·19	1·9	1·89	1·58
9	1·3	1·1	1·1	0·9	0·9	0·9	0·8	0·75	0·7	0·71	0·61
10	0·8	0·6	0·6	0·4	0·5	0·3	0·4	0·25	0·2	0·20	0·21
10 and above	..	..	..	..	..	..	..	0·12	0·1	0·11	0·10
	100·00	100·00	100·00	100·00	100·00	100·00	100·00	100·00	100·00	100·00	100·00

TABLE 14

Trend in family size of the sterilised persons

Sl. No.	*Periods*	*Percentage of sterilised person having more than three children living at the time of sterilisation*
(1)	(2)	(3)
1.	1956–61	74·5
2.	1961–62	73·0
3.	1962–63	60·5
4.	1963–64	67·2
5.	1964–65	65·2
6.	1965–66	63·0
7.	1966–67	61·0
8.	1967–68	57·3
9.	1968–69	54·6
10.	1969–70	53·5
11.	1970–71	50·6

TABLE 15

Demographic particulars of sterilised males according to number of children living in each sex (1970-71)

No. of male children living	No. of female children living									Total
	0	1	2	3	4	5	6	7-6	N.R.	
1	2	3	4	5	6	7	8	9	10	11
0	..	115	538	351	170	62	19	6	..	1261 (6·52)
1	148	3181	1958	797	337	123	35	12	..	6591 (34·08)
2	957	2465	1851	777	325	124	32	9	..	6540 (33·81)
3	566	893	880	493	194	53	19	9	..	3107 (16·06)
4	210	348	354	234	99	25	7	2	..	1279 (6·61)
5	63	124	109	50	41	9	1	1	..	398 (2·06)
6	31	42	25	17	5	1	..	..	..	121 (0·63)
6 and above	8	11	12	10	2	..	..	1	..	44 (0·23)
N.R.	..	..	..	..	..	..	..	..	4619	..
Total	1983 (10·25)	7179 (37·12)	5727 (29·62)	2729 (14·11)	1173 (6·06)	397 (2·05)	113 (0·58)	40 (0·21)	4619 (100)	19341 (100·00)

TABLE 16

Demographic particulars of sterilised females according to number of children living in each sex (1970-71)

No. of male children living	No. of female children living									Total
	0	1	2	3	4	5	6	6 and above	N.R.	
1	2	3	4	5	6	7	8	9	10	11
0	..	46	194	240	129	44	18	6	..	677 (6·36)
1	67	706	1153	553	257	66	28	7	..	2837 (26·66)
2	232	1477	1243	527	175	69	21	7	..	3751 (35·25)
3	343	634	657	324	115	44	10	4	..	2131 (20·03)
4	158	275	195	164	61	14	5	1	..	873 (8·20)
5	44	94	51	43	19	12	1	2	..	266 (2·50)
6	15	19	24	15	2	2	1	..	..	78 (0·73)
and above	5	7	6	6	3	1	1	..	..	29 (0·27)
N.R.	..	..	..	..	..	..	..	..	..	..
Total	864 (8·12)	3258 (30·61)	3523 (33·11)	1872 (17·59)	761 (7·15)	252 (2·37)	85 (0·80)	27 (0·25)	.. ..	10642 (100·00)

1·3 A STUDY OF STERILISED PERSONS IN KERALA 1971–74

PREFACE

The realisation that in the Indian context rapid population growth will impede the country's attempts of economic development led Government of India to introduce Family Welfare on a national scale. Among the major components of the scheme are the sterilisation of males and females. The importance of sterilisation in bringing down the birth rate is well recognised. As such, the characteristics of those who accept this programme, is an important area of study, which will be useful for the administrators of the programme.

The demographic and socio-economic characteristicsof those accepting sterilisation during the period 1971–74 for the State and the districts are analysed in this report. The impact of the programme based on the number of couples protected and the number of births averted is also studied in this paper.

The percentage of younger people who undergo sterilisation is steadily increasing over the years. The percentage below the age 30, among the tubectomised persons has increased from 44·5 per cent in 1957–67 to 66·7 per cent in 1973–74. The percentage of sterilised persons having 3 or less than 3 living children is steadily increasing over these period.

Out of a total of 32·57 lakhs of eligible couples in the reproductive age group 15–49, 6·30 lakhs have been protected by this method by the end of 1973–74. A total of 16·25 lakhs births will be averted by the year 1997–98 due to this programme, achievement upto March 1974 since the inception of the programme.

This report was prepared by Sri K. Divakaran Pillai, Research Officer, under the guidance of Sri P. S. Gopinathan Nair, Deputy Director.

Trivandrum,
15–7–1977.

Dr. P. A. NAIR,
Additional Director-in-Charge.

4. *Religion.*—The percentage distribution of sterilised persons according to religion is given in Appendix Table (2). It is revealed that more than 70 per cent of the sterilised persons belong to Hinduism. The percentage of Hindus among the sterilised persons is higher than their proportion in the general population. Another trend noticed recently is a slight increase in the percentage of Christians and Muslims among the acceptors. During the period 1957–67 among the sterilised persons the percentage of Muslim is only 6·9 per cent. This has increased to 11·0 per cent by 1973–74. More motivational efforts have to be directed towards the eligible persons from among these communities, to accept this method.

5. *Education of sterilised persons.*—Information regarding the level of education of the sterilised persons shows that less of illiterate people accept this method. Nearly 40 per cent of the population according to the 1971 Census are illiterates. During the period 1957–67 the percentage of illiterates among the sterilised persons was 20·8 per cent. This declined to 9.9 per cent by the year 1973–74. This means that illiterate people are not adequately represented among the sterilised persons. People having educational level of 'above primary' shows a steady increase over the years. In 1973–74 slightly more than 15 per cent of the acceptors are having the educational level of 'Matric and above'. An interesting finding of this study is that over the years there is a rise in the proportion of educated persons especially 'above primary level' among the acceptors and a decline in the proportion of illiterates. Effective steps are therefore required to attract this under represented segment of illiterates to accept this programme. The percentage distribution of sterilised persons according to educational level during the period 1957 to 1973–74 is given in Appendix Table (3).

6. *Income.*—The limitations of the income data are well-known. This is especially so, where no attempt is made to probe into the reported income. With this limitations in view, the information regarding the income distribution of the sterilised persons has to be looked into. This table shows that more than 75 per cent had reported a monthly income of less than Rs. 100 per month. During the earlier period of the programme people who had a monthly income of more than Rs. 100 per month have not been much attracted by this method. Recently their proportion among the acceptors has shown an increasing trend. Nearly 10 per cent of the sterilised persons had a monthly income of Rs. 200 and above during the year 1973–74. The percentage distribution of sterilised persons according to monthly income is given in Appendix Table (4).

7. *Number of living children.*—The number of surviving children at the time of sterilisation indicates the probable desired family size of the acceptor, as also the likely impact on fertility. The impact on birth rate will be more of persons with lesser number of children

accepting sterilisation is much higher than of those who accept sterilisation, after the birth of a large number of children. Information regarding the number of living children at the time of sterilisation, shows that the percentage of those having 3 or less than 3 living children, is steadily increasing over this period. The table given below shows the percentage distribution of sterilised persons with one child, two children and three living children at the time of sterilisation.

TABLE 3

Percentage distribution of sterilised persons having one child, two children and three children, living

Year	*One child*	*Two children*	*Three children*
1957–61	0·8	4·7	19·9
1961–62	0·9	5·3	20·6
1962–63	0·5	6·9	23·1
1963–64	0·4	6·6	25·4
1964–65	0·5	6·3	28·0
1965–66	0·7	8·7	27·4
1966–67	0·9	12·1	26·1
1967–68	0·9	14·9	26·9
1968–69	1·0	17·7	26·7
1969–70	0·9	17·8	27·8
1970–71	1·2	19·5	28·7
1971–72	1·4	18·5	31·5
1972–73	1·3	17·6	33·7
1973–74	1·4	19·1	34·8

It may be seen that nearly 20 per cent of the persons who have undergone sterilisation had two living children and their proportion has been increasing over the years. This means that more and more people are prepared to accept permanent method after having two children. A detailed distribution of the percentage of sterilised persons according to number of living children is given in Appendix Table (5).

8. *Average number of living children.*—The men had on an average less number of living children than the females who accept sterilisation. The average number of living children is 3·29 in the case of males and 3·71 for females during the year 1973–74.

The table given below shows the average number of living children to sterilised persons for the period 1968–69 to 1973–74.

TABLE 4

Average number of living children

Year	*Male*	*Female*
1968–69	4·15	4·40
1969–70	3·80	4·20
1970–71	3·68	4·00
1971–72	3·52	3·91
1972–73	3·38	3·80
1973–74	3·29	3·71

Over the years there is a falling trend in the average number of living children per sterilised male as well as female.

II. Inter district variations in the characteristics of sterilised persons

Inter district variations in respect of some of the important characteristics of sterilised persons like age, religion, number of surviving children at the time of operation and income, for the years 1971–72 to 1973–74 are analysed in this section.

1. *Age compesition.*—As already mentioned, information regarding the age of sterilised persons is a good indicator, of the real effectiveness of the programme. More births could be averted if more people in their younger ages accept this method. The age distribution of sterilised persons during the period 1971–72 to 1973–74 is given in Appendix Table (6). It is seen that 43·8 per cent of the males who had undergone sterilisation belong to age "below 35" years in the State. Except Malappuram, Palghat and Cannanore in all the other Districts, percentage of sterilised males who are in the "below 35" age, is about the same as that of State. In Palghat District nearly 70 percentage of the acceptors belong to age 'above 35'. Among the females 67 per cent in the State belonged to the age "below 30" at the time of operation.

In Trivandrum District the percentage of sterilised females "below 30 years" accounts for more than 74 per cent. In all the Districts, except Kottayam, more than 50 to 60 per cent of the females who underwent this operation belonged to the age "below 30" years.

A comparison with the period 1971–72 shows that the percentage of younger people attracted by this programme has gradually increased in all the Districts. The percentage of males who accept this operation from the age "below 35", has increased substantially in all the districts during this period except in Trivandrum, Trichur

and Kozhikode. It is seen that nearly 56 per cent of the male acceptors in Trivandrum District belonged to the age at the time of operation.

The percentage of females accepting sterilisation who are below the age 50 has increased considerably in all the district except Trichur, Trivandrum, Malappuram and Cannanore where there is slight decrease in the percentage. More than 66 per cent of the females who had undergone sterilisation belonged to the age below 30 years. This shows that on an average 15–19 years of the reproductive years of the majority of the tubectomised females have been saved due to this operation.

Compared to previous years the percentage of males who went for this operation who belong to the age below 35 has increased very much during the period 1973–74. In the districts of Trivandrum, Kottayam and Ernakulam more than 60 per cent of the males who had undergone sterilisation belonged to the age below 35 years.

Slight increase in the percentage of females belonging to the age "below 30" years is seen in all the districts during the period. More than 60 per cent of the females who had undergone sterilisation belonged to the age "below 30" years in all the districts except Idikki and Ernakulam. In Trivandrum 73 per cent of the females belonged to the age below 30.

The percentage of males from the "above 45" age who accept this operation has shown steady declining trend during this period. Similar trend is seen in respect of the percentage of females above the age of 35. It is noted that the programme of sterilisation attracts a large number of men belonging to age below 35.

2. *Median age of sterilised persons.*—The median age of sterilised persons during the years 1971–72, 1972–73 and 1973–74 is worked out and given in Appendix Table (6 c). During the year 1971–72 in Ernakulam and Trivandrum Districts, the median age of the vasectomised persons is 33·85 and 33·60 respectively. In all other districts it is between 35 and 37 years. The median age of the sterilised females during this period is found to be between 27–30.

The median age of the sterilised male and female has come down during the period 1972–73 and 1973–74. This shows a welcome shift towards accepting a permanent method while they are young. Among the females the average age at the time of accepting sterilisation is between 27 and 28 during the period 1973–74.

3. *Religion.*—The distribution of sterilised persons according to religion during the period 1971–72, 1972–73 and 1973–74 in the districts is given in Appendix Table (7). The percentage of acceptance by the Hindus is more than their respective proportion in the general

population. The attitudes of the Christians and Muslims communities are not favourable to this systems of family limitation. The proportion of Hindus among the sterilised persons has increased steadily in all the districts during this period. The percentage of Muslims accepting sterilisation in Malappuram District has increased from 33·50 in 1971–72 to 36·83 in 1973–74. In Ernakulam and Idikki the percentage of Christians among the sterilised persons has come down during this period. Greater efforts are necessary to motivate Christian and Muslim Communities to the fold of family planning.

4. *Education.*—The distribution of sterilised persons according to the level of education during the years 1971–72, 1972–73 and 1973–74, in the districts is given in Appendix Table (8). It is interesting to note that during the year 1971–72, the percentage of illiterates among the sterilised persons in all the districts except Palghat is low when compared to the proportion in the general population. The percentage of sterilised persons educated above Matriculation is 17·03 in Trivandrum District.

The highest percentage of sterilised persons belonged to the educational level of 'Primary'.

The percentage of illiterates among the sterilised persons increased in the districts of Trichur and Palghat during the period 1972–73. During this period the percentage of sterilised persons with educational attainment "Matric and above", has increased in the Districts of Trivandrum, Quilon, Alleppey, Kottayam and Palghat. In all the district the highest percentage of sterilised persons belonged to the educational level of 'primary'.

More illiterate people from the districts of Idikki and Cannanore have accepted this programme during the year 1973–74. The percentage of sterilised persons from the "Matric and above group," has increased in the districts of Quilon, Trichur and Palghat during the period.

5. *Income.*—A substantial number of cases have not recorded monthly income. Even in recorded cases there is every chance of it being inaccurate. However, the distribution of sterilised persons according to income is given in Appendix Table (9). It seems that these persons are reluctant to give out correct figures of income. From the figures obtained, it appears that people in higher income groups do not come forward in large proportions to accept this programme. More than 80 per cent of the sterilised persons have reported an income of less than Rs. 100 per month. During the period 1971–72, in Trivandrum and Kottayam Districts more than 13 per cent of the sterilised persons has reported a monthly income of more than Rs. 200. During the year

1972–73, 15·70 per cent of the sterilised persons in Palghat District had reported a monthly income of Rs. 200. More people in the higher income groups in Trivandrum (12·17), Kottayam (14·13), Palghat (19·45), Malappuram (12·09) and Kozhikode (10·76) had accepted this method during the year 1973–74.

6. *Number of living children.*—The number of surviving children at the time of sterilisation will provide information regarding the family size of the person. This also helps to measure the impact on fertility. The distribution of sterilised persons according to number of surviving children at the time of operation during the years 1971–72, 1972–73 and 1973–74 in the districts, is given in Appendix Table (10).

During the year 1971–72 the average number of surviving children to vasectomised persons ranged between 3–4 in all the districts except Ernakulam, Malappuram and Kozhikode where they had 4 or more surviving children. In the case of females who underwent vasectomy, in Idikki District the females had an average of less than 3 surviving children when they underwent the operation. This will range between 3–4 in other districts except Kottayam, Ernakulam, Palghat, Malappuram and Cannanore where those females had undergone this operation had 4 or more surviving children at the time of operation. The average number of living children to sterilised persons in these districts is given in Appendix Table (10). There is steady declining trend in the case of average number of children in all the districts during the period 1972–73 and 1973–74, for males and females who underwent this operation. The average number of children is less than 4 to those men who had undergone this operation during the period 1972–73 in all the districts except in Trivandrum District where the average number of children to males who had undergone this operation is 2·93.

When compared to the previous year, the average number of surviving children is less to females who underwent this operation during the period 1972–73.

It is interesting to note that during the year 1973–74 men and women with lesser number of surviving children were attracted to vasectomy.

The percentage of sterilised persons who had 3 or less than 3 living children will indicate the success of the programme. The table given below provides information regarding the percentage of acceptors who had 3 or less than 3 living children at the time of operation in the districts during the period 1971–72, and 1972–73 and 1973–74.

TABLE 5

Percentage of sterilised persons who had 3 or less than 3 living children at the time of operation

Districts	1971–72		1972–73		1973–74	
	Male	Female	Male	Female	Male	Female
1	2	3	4	5	6	7
Trivandrum ..	71·54	52·28	74·55	57·66	78·17	61·21
Quilon ..	59·69	51·36	68·14	51·85	71·85	52·75
Alleppey ..	58·61	51·54	65·54	46·77	64·67	46·17
Kottayam ..	54·88	40·14	55·47	50·65	63·30	53·69
Idikki ..	57·60	38·18	59·86	49·44	61·14	44·58
Ernakulam ..	64·28	45·56	70·72	44·98	78·92	50·30
Trichur ..	60·38	47·39	62·04	43·51	67·56	50·88
Palghat ..	48·70	37·04	55·48	40·84	67·41	48·16
Malappuram ..	40·57	42·28	48·29	42·13	50·73	44·01
Kozhikode ..	59·09	45·68	56·88	42·09	61·39	45·38
Cannanore ..	49·09	40·91	68·14	51·85	55·12	39·61

The percentage of sterilised persons who had 3 or less than 3 living children at the time of operation has steadily increased in all the districts during this period.

III. Impact of the Programme

The ultimate aim of the programme is to reduce the birth rate. The target of birth rate reduction fixed by Government of India is to reduce the birth rate from 39 per 1000 population in 1970 to 30 by 1979 and to 25 by 1984*. To achieve this target of birth rate reduction, 30 to 45 per cent of the eligible couples will have to be protected against the risk of conception during this period.

The number of eligible couples protected through the sterilisation method will measure the success of the programme. For this purpose the following indicators are given.

(1) The number of eligible couples in the age group 15–49 protected against the risk of conception by this method.

(2) The percentage of the couples protected.

(3) and the number of births averted by sterilisation.

*K. C. Seal—The family planning programme in India—In population in India's Development—1947–2000. P. 381.

1. *Number of couples (Cumulative) protected by sterilisation.*—The number of couples protected by the cumulative performance of sterilisation since its inception is given in Appendix Table (11). By the end of 1973–74, out of a total of 32·57 lakhs of eligible couples in the reproductive age group 15–49, only 6·30 lakhs have been protected by this method. The number of couples protected by sterilisation is more in Trivandrum, Quilon and Ernakulam than in the other districts.

2. *Prevention of couples protected by sterilisation.*—The percentage of couples protected in the Districts by sterilisation since its inception is given in Appendix Table (12). This shows that nearly 20 per cent of the eligible couples have been protected by this method till the end of 1973–74. In Ernakulam district where 50 per cent and in Trivandrum district above 30 per cent of eligible couples have been protected. In the northern districts of the State—especially, Malappuram and Palghat are lagging behind the State's performance. More efforts are required in the districts of Malappuram and Palghat to bring the eligible couples to the fold of family planning programme.

3. *Number of births saved by sterilisation.*—The number of births saved by sterilisation method will provide a quantitative assessment of the impact of the programme. The calculation is done by applying the norm of number of births averted by one sterilisation evolved by Dr. R. S. Kurup,† in respect of Kerala. According to this, one sterilisation would prevent 2·5 births in 23 years. As such, the sterilisation done upto March 31st 1974 will prevent a total of 16·25 lakhs births by the year 1997–98.

The appendix table (13) gives the number of sterilisation, the number of births saved during each year, and the number of births that would be saved till the year 1997–98 by the sterilisation operations conducted upto March 1974, since its inception.

Summary.—The percentage of younger people who had undergone sterilisation is steadily increasing over the years. The percentage of tubectomised persons below 'age 30' has increased from 62·3 in 1957–67 to 76·8 in 1973–74. The median age of sterilised persons shows a steady declining trend over the years. More than 70 per cent of the sterilised persons belong to Hinduism. Information regarding the level of education of the sterilised persons shows that less illiterate people accept this method. People having educational level of 'above primary' shows a steady increase over these years. More than 75 per cent had reported a monthly income of less than Rs. 100 per month. The percentage of sterilised persons having 3 or less than 3 living children is steadily increasing over these period. The average number of living children is 3·29 in the case of males and 3·71 for females during the year 1973–74.

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†Kurup R. S.—A note on the calculation of births averted due to the Family Planning Programme in Kerala—October 1973—D.R.C. Trivandrum.

The inter-district variation in respect of some of the important characteristics of sterilised persons are analysed in this report. In all districts except Malappuram, Palghat and Cannanore the percentage of sterilised males who are in the below "35 age group" is almost the same as that of the State. In Palghat district nearly 70 per cent of the acceptors belong to the age above 35. The percentage of females accepting sterilisation belong to the age 30 has increased considerably in all the districts, except Ernakulam, Trichur, Malappuram and Cannanore.

The median age of males and females during the period 1971–72 to 1973–74 is between 35–37 and 27–30 respectively. More than 80 per cent of the sterilised persons had a monthly income of less than Rs. 100.

The proportion of Hindus among the sterilised persons has increased steadily in all the districts during this period.

Illiterate people are showing reluctance to accept this method. In Trivandrum district 17·03 per cent of the acceptors are educated above Matriculation.

The percentage of sterilised persons who had 3 or less than 3 living children at the time of operation has steadily increased in all the districts during this period.

Out of a total of 32·57 lakhs of eligible couples in the reproductive age group 15–49 only 6·30 lakhs were protected by this method. The number of couples protected by sterilisation is more in Trivandrum, Quilon and Ernakulam districts. 20 per cent of the eligible couples are protected by this method till the end of 1973–74. A total of 16·25 lakhs of births will be averted by this method by the year 1997–98 due to this sterilisation operation done upto March 1974 since the inception of the programme.

APPENDIX

List of Tables

Nos.

TABLE 1 (a)

Percentage distribution of vasectomised persons according to age

Age group	1957-67	1967-68	1968-69	1969-70	1970-71	1971-72	1972-73	1973-74
1	2	3	4	5	6	7	8	9
15—19	..	..	..	..	0·09	..	..	..
20—24	0·4	0·6	0·7	1·0	2·11	1·63	1·99	1·61
25—29	7·7	9·3	10·4	12·2	16·08	17·12	19·37	19·92
30—34	23·5	21·6	21·8	23·1	24·28	25·58	27·79	27·25
35—39	30·7	28·6	27·6	28·1	27·10	29·02	27·63	27·95
40—44	37·7	21·2	20·6	18·5	16·45	15·24	14·49	15·42
45+	..	18·7	18·9	17·1	13·89	11·41	8·73	7·85
Total	100·00	100·00	100·00	100·00	100·00	100·00	100·00	100·00

TABLE 1 (b)

Percentage distribution of tubectomised persons according to age

Age group	1957-67	1967-68	1968-69	1969-70	1970-71	1971-72	1972-73	1973-74
1	2	3	4	5	6	7	8	9
15—19	0·1	0·3	0·3	0·3	0·13	0·47	0·44	0·43
20—24	9·7	12·2	13·8	15·2	17·66	17·95	19·31	23·09
25—29	34·7	37·1	35·9	38·4	38·30	37·86	40·88	43·14
30—34	32·1	29·9	29·7	28·1	26·76	26·29	24·30	21·09
35—39	19·1	16·8	17·2	15·2	14·18	14·70	12·84	10·55
40—44	4·3	3·2	2·7	2·4	2·42	2·37	1·95	1·52
45+	..	0·5	0·5	0·4	0·61	0·36	0·28	0·18
Total	100·00	100·00	100·00	100·00	100·00	100·00	100·00	100·00

TABLE 2

Percentage distribution of sterilised persons according to religion 1957-67 to 1973-74

Year	Hindus	Christians	Muslims	Total
1	2	3	4	5
1957—67	74·2	18·9	6·9	100·00
1967—68	73·9	18·5	7·6	100·00
1968—69	73·1	18·2	8·7	100·00
1969—70	74·3	17·9	7·8	100·00
1970—71	72·4	19·3	8·4	100·00
1971—72	66·95	23·91	9·14	100·00
1972—73	70·92	19·44	9·63	100·00
1973—74	72·88	16·12	11·00	100·00

TABLE 3

Percentage distribution of sterilised persons according to educational status 1957-67 to 1973-74

Educational status	Year							
	57-67	67-68	68-69	69-70	70-71	71-72	72-73	73-74
1	2	3	4	5	6	7	8	9
Illiterate ..	20·8	20·8	21·1	19·6	17·7	15·37	7·42	9·92
Literate below Primary ..	38·2	54·2	43·7	41·1	35·4	33·39	33·13	27·32
Above Primary below Middle ..	25·2	16·5	23·3	26·8	26·9	28·49	31·57	33·10
Above Middle below Martic ..	5·9	3·3	5·0	5·4	6·9	10·00	9·97	12·23
Matric and above ..	5·6	4·2	4·8	6·8	7·7	10·39	15·42	15·93
Literate not specified ..	4·3	1·0	2·1	0·4	5·4	2·36	2·49	1·50
Total ..	100·00	100·00	100·00	100·00	100·00	100·00	100·00	100·00

TABLE 4

Percentage distribution of sterilised persons according to monthly income

Monthly income	Year					
	1968-69	1969-70	1970-71	1971-72	1972-73	1973-74
1	2	3	4	5	6	7
Below Rs. 50 ..	19·2	11·12	12·35	6·40	3·62	2·36
Rs. 50-99 ..	66·4	71·87	64·74	71·60	75·57	75·11
Rs. 100-149 ..	2·0	10·14	13·62	10·07	7·35	7·75
Rs. 150-199 ..	2·9	3·53	4·22	4·58	5·08	4·86
Rs. 200 and above ..	2·5	3·34	5·07	7·55	8·38	9·92
Total ..	100·00	100·00	100·00	100·00	100·00	100·00

TABLE 5

No. of living children to sterilised persons

No. of living children	1956–61	1961–62	1962–63	1963–64	1964–65	1965–66	1966–67	1967–68	1968–69	1969–70	1970–71	1971–72	1972–73	1973–74
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1	0·8	0·9	0·5	0·4	0·5	0·7	0·9	0·9	1·0	0·9	1·2	1·4	1·3	1·4
2	4·7	5·3	6·9	6·6	6·3	8·7	12·1	14·9	17·7	17·8	19·5	18·5	17·6	19·1
3	19·9	20·6	23·1	25·4	28·0	27·4	26·1	26·9	26·7	27·8	28·7	31·5	33·7	34·8
4	26·4	24·5	26·0	25·3	25·5	24·9	23·5	22·7	22·3	22·3	22·3	22·1	22·8	22·1
5	21·8	22·1	19·7	19·9	18·8	18·3	17·5	16·2	15·4	15·5	14·1	13·0	12·3	11·7
6	13·7	14·8	12·4	11·8	11·5	11·2	10·8	10·0	9·4	8·5	7·8	7·5	6·8	5·9
7	7·4	6·9	6·7	6·2	5·7	5·0	5·4	5·0	4·6	4·2	3·9	3·6	3·1	2·9
8	3·2	3·2	3·1	2·6	2·3	2·6	2·5	2 2	1·9	1·9	1·6	1·4	1·5	1·3
9	1·3	1·1	1·1	0·9	0·9	0 9	0·8	0·8	0·7	0·7	0·6	0·7	0·5	0·4
10	0·8	0·6	0.6	0·4	0·5	0 3	0·4	0·4	0·3	0·3	0·3	0·4	0·3	0·3
Total	100·00	100·00	100·00	100·00	100·00	100·00	100·00	100·00	100·00	100·00	100·00	100·00	100·00	100·00

TABLE 6 (a)

Percentage distribution of vasectomised persons according to age 1971–74

District	Year	Age distribution						
		15–19	20–24	25–29	30–34	35–39	40–44	45+
1	2	3	4	5	6	7	8	9
Trivandrum	1971–72	..	2·43	31·50	22·35	21·35	8·14	14·23
	1972–73	..	3·05	25·19	30·53	24·81	10·69	5·73
	1973–74	..	0·44	27·10	34·23	20·41	12·09	5·51
Quilon	1971–72	..	1·72	20·52	23·96	30·25	14·11	9·44
	1972–73	..	1·62	28·85	27·82	22·48	11·24	7·99
	1973–74	..	2·01	24·89	27·72	28·92	10·84	5·62
Alleppey	1971–72	..	1·05	14·61	27·27	34·48	14·16	8·43
	1972–73	..	1·07	20·13	26·02	28·37	14·77	9·64
	1973–74	..	0·81	19·92	25·18	29·36	15·58	8·97
Kottayam	1971–72	..	0·79	18·32	30·27	29·08	11·55	9·99
	1972–73	..	3·30	19·12	28·57	29·45	11·21	8·35
	1973–74	..	6·61	26·59	27·74	23·41	11·56	4·04
Idikki	1971–72	..	4·31	22·58	24·73	32·26	9·67	6·45
	1972–73	..	4·88	27·04	30·49	23·17	10·57	3·25
	1973–74	..	6·80	34·29	23·13	19·04	14·28	5·46
Ernakulam	1971–72	..	4·17	22·57	30·21	26·39	12·15	4·51
	1972–73	..	1·84	14·74	35·03	29·04	10·60	8·75
	1973–74	..	5·85	26·90	29·25	23·39	12·86	1·75
Trichur	1971–72	..	1·49	17·85	26·39	32·72	14·86	6·69
	1972–73	..	2·02	15·85	30·[illegible]5	30·85	14·51	6·42
	1973–74	..	3·87	26·75	26·35	26·36	12·41	4·26
Palghat	1971–72	..	0·33	10·26	18·54	39·07	18·29	13·51
	1972–73	..	0·78	12·31	24·61	33·07	16·15	13·08
	1973–74	..	0·51	14·75	23·49	33·33	19·67	8·19
Malappuram	1971–72	..	1·26	9·69	22·93	31·11	19·14	15·87
	1972–73	..	2·01	14·24	21·84	28·17	20·43	13·31
	1973–74	..	1·66	15·89	24·58	29·95	19·05	8·13
Kozhikode	1971–72	..	1·49	15·29	27·11	28·11	15·06	12·94
	1972–73	..	1·48	15·25	27·68	28·78	16·97	9·84
	1973–74	..	0·94	15·52	27·33	29·93	16·93	9·35
Cannanore	1971–72	..	1·28	10·55	25·27	30·91	20·04	11·95
	1972–73	..	0·46	9·26	28·71	32·87	17·13	11·57
	1973–74	..	0·97	13·17	21·96	33·91	17·80	12·19
State	1971–72	..	1·63	17·12	25·58	29·02	15·24	11·41
	1972–73	..	1·99	19·37	27·79	27·63	14·49	8·73
	1973–74	..	1·61	19·92	27·25	27·95	15·42	7·85

TABLE 6 (b)

Percentage distribution of tubectomised persons according to age 1971–74

District	Year	Age distribution						
		15–19	20–24	25–29	30–34	35–39	40–44	45+
1	2	3	4	5	6	7	8	9
Trivandrum	1971–72	..	31·21	43·25	20·33	5·04	0·17	..
	1972–73	0·21	27·99	45·55	18·74	7·00	0·51	..
	1973–74	0·49	28·46	44·39	19·98	6·17	0·45	0·02
Quilon	1971–72	0·31	21·05	42·63	22·73	11·66	1·46	0·16
	1972–73	0·13	22·01	46·24	21·77	8·83	0·82	0·20
	1973–74	0·24	22·74	46·35	19·78	9·36	1·43	0·10
Alleppey	1971–72	1·79	21·21	34·19	24·63	15·23	2·79	0·16
	1972–73	0·23	16·23	41·54	27·54	12·74	1·54	0·18
	1973–74	0·31	16·44	43·21	23·17	12·66	1·83	0·38
Kottayam	1971–72	0·27	5·98	39·42	32·01	19·00	2·69	0·63
	1972–73	0·80	16·53	39·31	25·67	14·72	2·65	0·32
	1973–74	0·98	19·75	42·76	20·02	13·18	3·13	0·18
Idikki	1971–72	..	12.91	41·94	28·49	13·97	2·69	..
	1972–73	0·96	17·06	40·39	23·32	12·98	5·05	0·24
	1973–74	0·79	17·78	40·31	25·29	12·05	3·17	0·60
Ernakulam	1971–72	0·17	16·64	38·73	28·28	14·05	1·65	0·48
	1972–73	0·24	17·10	36·56	27·76	16·12	1·52	0·70
	1973–74	0·81	19·05	39·84	27·18	11·73	1·28	0·11
Trichur	1971–72	1·79	21·21	34·19	24·63	15·33	2·69	0·16
	1972–73	0·38	14·77	37·64	27·54	16·86	2·53	0·28
	1973–74	0·33	25·81	34·06	26·53	13·27	..	..
Palghat	1971–72	..	21·51	39·24	25·31	13·91	0·03	..
	1972–73	0·54	18·48	43·85	21·74	13·95	0·90	0·54
	1973–74	0·69	22·34	38·89	23·30	12·37	2·41	..
Malappuram	1971–72	0·49	19·76	39·52	25·92	12·34	1·23	0·74
	1972–73	1·27	17·46	33·80	28·45	15·92	2·68	0·42
	1973–74	0·63	22·79	37·94	22·70	18·09	2·22	0·48
Kozhikode	1971–72	1·25	20·36	33·57	24·64	16·25	3·22	0·71
	1972–73	0·47	23·08	38·79	22·08	13·03	2·03	0·52
	1973–74	0·43	23·43	40·13	20·50	13·26	1·95	0·30
Cannanore	1971–72	0.08	23·07	46·06	20·54	7·69	2·56	..
	1972–73	0·43	15·15	42·85	25·12	12·77	3·25	0·43
	1973–74	0·43	19·06	41·54	22·19	13·06	1·93	1·07
State	1971–72	0·47	17·95	37·86	26·29	14·70	2·37	0·36
	1972–73	0·44	19·31	40·88	24·30	12·84	1·95	0·28
	1973–74	0·43	23·09	43·14	21·09	10·55	1·52	0·18

TABLE 6 (c)

Median age of sterilised persons 1971–72, 1972–73, and 1973–74

Districts	Median age—Males and Females					
	1971–72		1972–73		1973–74	
	Male	Female	Male	Female	Male	Female
1	2	3	4	5	6	7
Trivandrum ..	33·60	27·17	33·56	27·40	33·28	27·37
Quilon ..	35·63	28·36	33·51	28·01	34·17	27·91
Alleppey ..	36·03	28·95	35·49	29·04	35·70	28·84
Kottayam ..	35·11	30·68	34·83	29·16	33·03	28·42
Idikki ..	35·89	29·42	32·87	28·96	32·57	28·90
Ernakulam ..	33·85	29·30	34·77	29·47	32·95	28·78
Trichur .	35·65	28·95	35·29	29·58	33·68	28·50
Palghat ..	37·67	28·63	36·86	28·53	36·69	28·47
Malappuram ..	37·59	28·76	37·11	29·63	36·31	28·51
Kozhikode ..	36·09	29·23	35·97	28·41	36·03	28·26
Cannanore ..	36·12	27·91	36·76	29·02	37·05	28·67
State ..	36·00	29·2	35·2	28·7	35·2	28·00

TABLE 7

Percentage distribution of sterilised persons according to religion

(1)	*Religion* (2)	1971–72 (3)	1972–73 (4)	1973–74 (5)
Trivandrum	Hindus	83·67	82·50	82·80
	Christians	11·25	10·32	9·85
	Muslims	5·08	7·18	7·35
	Total	100·00	100·00	100·00
Quilon	Hindus	74·00	72·13	71·97
	Christians	16·41	18·20	17·70
	Muslims	9·59	9·67	10·33
	Total	100·00	100·00	100·00
Alleppey	Hindus	68·99	76·37	78·45
	Christians	25·45	18·86	16·57
	Muslims	5·56	4·77	4·98
	Total	100·00	100·00	100·00
Kottayam	Hindus	53·59	52·21	54·53
	Christians	44·01	44·01	40·43
	Muslims	2·40	3·78	5·04
	Total	100·00	100·00	100·00
Idikki	Hindus	44·37	54.69	55·22
	Christians	48·68	40·55	36·46
	Muslims	6·95	4·76	8·32
	Total	100·00	100.00	100·00
Ernakulam	Hindus	46·24	51·09	52·22
	Christians	44·26	38·48	33·48
	Muslims	9·50	10·43	14·30
	Total	100·00	100·00	100·00
Trichur	Hindus	61·32	67·50	72·54
	Christians	34·17	24·68	22·73
	Muslims	4·51	7·82	4·73
	Total	100·00	100·00	100·00
Palghat	Hindus	79·66	86·59	81·04
	Christians	4·90	2·90	5·95
	Muslims	15·44	10·51	13·01
	Total	100·00	100·00	100·00
Kozhikode	Hindus	79·89	78·15	77·13
	Christians	7·20	7·74	6·62
	Muslims	12·91	14·11	16·25
	Total	100·00	100·00	100·00
Malappuram	Hindus	60·47	57·43	57·05
	Christians	6·03	5·88	6·12
	Muslims	33·50	36·69	36·83
	Total	100·00	100·00	100·00
Cannanore	Hindus	80·45	83·83	86·33
	Christians	13·16	11·32	8·43
	Muslims	6·39	4·85	5·24
	Total	100·00	100·00	100·00
Kerala	Hindus	66·95	70·92	72·88
	Christians	23·91	19·44	16·12
	Muslims	9·14	9·64	11·00
	Total	100·00	100·00	100·00

TABLE 8

Percentage distribution of sterilised persons according to education 1971–74

District	Year	Educational level						
		Illiterates	Literate below primary	Above primary below middle	Above middle below matric	Matric and above	Not specified	Total
1	2	3	4	5	6	7	8	9
Trivandrum ..	1971–72	11·84	38·08	24·27	3·22	17·03	5·56	100·00
	1972–73	6·50	25·46	32·99	10·42	24·63	..	100·00
	1973–74	17·02	22·13	26·55	11·12	22·06	1·12	100·00
Quilon ..	1971–72	15·99	44·42	26·46	6·32	6·81	..	100·00
	1972–73	0·71	40·22	36·32	10·25	12·50	..	100·00
	1973–74	4·31	28·94	36·68	8·92	21·15	..	100·00
Alleppey ..	1971–72	7 61	36·80	35·01	9·00	11·58	..	100·00
	1972–73	6·16	34·68	37·09	9·13	12·94	..	100·00
	1973–74	11·76	32·91	37·99	14·94	11·08	1·32	100·00
Kottayam ..	1971–72	3·97	32·05	28·33	17·92	14·88	2·85	100·00
	1972–73	4·84	42·86	25·57	11·29	15·44	..	100·00
	1973–74	2·71	31·19	35·72	15·11	15·27	..	100·00
Idikki ..	1971–72	12·63	36·84	30·53	10·53	6·32	3·15	100·00
	1972–73	20·05	29·53	32·31	8·08	9·47	0·56	100·00
	1973–74	41·43	16·67	19·05	10·00	8·09	4·76	100·00
Ernakulam ..	1971–72	18·34	32·41	25·53	12·79	10·80	0·13	100·00
	1972–73	7·01	38·37	25·37	11·67	..	..	100·00
	1973–74	0·91	38·81	34·43	9·04	16·81	..	100·00

TABLE 8—(*cont.*)

District	Year	Educational level						
		Illiterates	Literate below primary	Above primary below middle	Above middle below matric	Matric and above	Not specified	Total
1	2	3	4	5	6	7	8	9
Trichur ..	1971–72	19·86	44·58	21·34	7·02	7·20	..	100·00
	1972–73	56·93	21·17	7·29	14·62	..	..	100·00
	1973–74	0·26	36·48	40·05	8·93	14·28	..	100·00
Palghat ..	1971–72	33·72	17·87	26·51	7·49	7·49	6·92	100·00
	1972–73	18·67	27·86	25·61	10·15	16·58	1·13	100·00
	1973–74	9·94	17·98	31·07	17·98	20·98	2·05	100·00
Malappuram ..	1971–72	16·77	29·33	29·70	11·64	11·55	1·01	100·00
	1972–73	30·95	23·21	28·29	9·95	7·29	0·31	100·00
	1973–74	18·63	25·47	32·34	11·71	10·85	..	100·00
Kozhikode ..	1971–72	18·97	27·58	37·15	8·97	6·90	0·43	100·00
	1972–73	2·13	24·79	37·78	12·93	11·09	11·28	100·00
	1973–74	7·11	30·01	38·17	14·10	10·61	..	100·00
Cannanore ..	1971–72	17·58	23·59	33·23	5·17	9·25	11·18	100·00
	1972–73	25·95	9·80	17·18	7·90	7·73	31·44	100·00
	1973–74	31·48	11·50	20·79	6·27	5·92	24·04	100·00
State ..	1971–72	15·37	33·39	28·49	10·00	10·39	2·36	100·00
	1972–73	7·42	33·13	31·57	9·97	15·42	2·49	100·00
	1973–74	9·92	27·32	33·10	12·23	15·93	1·50	100·00

TABLE 9

Percentage distribution of sterilised persons according to income—Districts

District	Year	Income Rs.					Total
		<50	50–99	100–149	150–199	200+	Rs.
1	2	3	4	5	6	7	8
Trivandrum	1971–72	14·70	55·22	10·65	5·11	14·32	100·00
	1972–73	4·04	76·51	5·17	4·65	9·63	100·00
	1973–74	0·32	77·89	3·53	6·07	12·17	100·00
Quilon	1971–72	5·57	81·66	8·00	1·50	3·27	100·00
	1972–73	2·30	86·26	4·05	4·03	3·36	100·00
	1973–74	0·86	89·88	2·98	2·27	4·01	100·00
Alleppey	1971–72	11·61	74·03	5·88	3·43	5·05	100·00
	1972–73	2·39	82·76	4·88	3·16	6·81	100·00
	1973–74	2·45	78·42	8·32	3·70	7·11	100·00
Kottayam	1971–72	0·92	60·87	15·94	9·19	13·08	100·00
	1972–73	1·16	55·21	21·04	10·45	12·14	100·00
	1973–74	0·26	58·29	19·82	7·50	14·13	100·00
Idikki	1971–72	6·12	36·76	40·80	10·20	6·12	100·00
	1972–73	1·29	62·37	17·53	10·05	8·67	100·00
	1973–74	1·18	66·48	17·05	6·47	8·82	100·00
Ernakulam	1971–72	2·19	69·10	11·80	7·96	8·95	100·00
	1972–73	0·71	76·55	6·41	6·41	9·91	100·00
	1973–74	1·85	76·10	8·30	7·75	6·00	100·00

TABLE 9—(*cont.*)

District	Year	Income Rs.					Total
		<50	50–99	100–149	150–199	200+	Rs.
1	2	3	4	5	6	7	8
Trichur	1971–72	3·46	76·89	13·68	2·21	3·76	100·00
	1972–73	4·09	71·45	12·27	3·70	8·49	100·00
	1973–74	0·72	70·40	17·33	3·61	7·94	100·00
Palghat	1971–72	11·94	65·12	11·47	4·68	6·79	100·00
	1972–73	1·05	58·88	15·85	8·52	15·70	100·00
	1973–74	1·52	56·76	10·48	9·79	19·45	100·00
Malappuram	1971–72	9·86	73·86	6·65	3·13	6·50	100·00
	1972–73	6·95	75·11	7·74	3·59	6·61	100·00
	1973–74	1·47	70·17	11·75	4·52	12·09	100·00
Kozhikode	1971–72	4·35	83·91	7·91	1·83	2·00	100·00
	1972–73	6.59	73·61	5·65	4·69	9·47	100·00
	1973–74	3·72	77·46	5·20	2·86	10·76	100·00
Cannanore	1971–72	3·89	77·03	6·20	5·09	7·79	100·00
	1972–73	7·99	78·25	2·36	2 82	8·58	100·00
	1973–74	3·31	74·46	10·26	5·58	6·39	100·00
Total	1971–72	6·40	71·60	10·07	4·58	7·35	100·00
	1972–73	3·62	75·57	7·35	5·08	8·38	100·00
	1973–74	2·36	75·11	7·75	4·86	9·92	100·00

TABLE 10 (a)

Percentage distribution of vasectomised persons according to number of living children 1971-74

District	Year	Number of children living									
		(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10) +
1	2	3	4	5	6	7	8	9	10	11	12
Trivandrum ..	1971-72	0·68	38·27	32·59	14·01	7·32	4·23	2·34	0·34	0·11	0·11
	1972-73	0·72	46·22	27·61	15·43	5·88	3·02	0·88	0·24	..	..
	1973-74	1·11	46·89	30·17	14·57	4·78	1·35	0·64	0·40	0·09	..
Quilon ..	1971-72	1·32	29·92	28·45	19·37	11·00	4·93	2·73	0·96	0·88	0·44
	1972-73	1·55	36·03	30·56	16·05	7·97	4·52	2·50	0·47	0·12	0·23
	1973-74	1·98	37·42	32·45	13·91	7·95	3·64	1·99	0·33	..	0·33
Alleppey ..	1971-72	0·13	28·02	30·46	19·66	11·83	6·17	2·18	0·65	0·52	0·38
	1972-73	0·89	31·65	33·00	15·55	9·40	4·81	2·58	1·34	0·78	..
	1973-74	1·20	32·73	30·74	18·20	9·14	4·04	2·62	1·05	0·53	0·15
Kottayam ..	1971-72	..	24·71	30·17	23·97	11·15	6·19	2·47	0·83	0·45	..
	1972-73	0·88	26·96	27·63	18·64	12·72	7·24	2·85	1·54	1·54	..
	1973-74	6·59	30·59	26·12	19·53	7·76	5·41	1·65	1·18	0·94	0·23
Idikki ..	1971-72	0·47	27·67	29·46	16·07	11·60	8·92	2·67	0·89	1·78	0·47
	1972-73	2·19	24·45	33·22	17·84	11·68	6·57	2·19	1·09	0·36	0·36
	1973-74	0·69	30·55	29·90	13·89	7·63	6·25	5·55	3·47	0·69	1·38
Ernakulam ..	1971-72	0·85	26·86	36·57	18·86	9·71	2·08	3·14	1·42	0·51	..
	1972-73	..	33·78	36·94	13·06	9·46	3·16	1·80	1·35	..	0·45
	1973-74	0·90	39·91	38·11	11·21	4·48	2·69	0·90	0·90	0·90	..

TABLE 10 (a)—(*cont.*)

District	Year	Number of children living									
		(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10) +
1	2	3	4	5	6	7	8	9	10	11	12
Trichur ..	1971–72	0·45	24·39	35·54	17·87	12·07	6·76	1·80	0·67	0·45	..
	1972–73	2·07	27·60	32·37	18·26	9·34	6·23	1·86	1·86	0·41	..
	1973–74	0·76	35·88	30·92	12·22	10·68	7·25	1·15	0·76	0·38	..
Palghat ..	1971–72	0·58	18·73	29·39	27·09	12·39	6·92	2·02	1·15	1·15	0·58
	1972–73	..	22·56	32·92	21·95	14·02	4·88	1·83	0·61	0·61	0·61
	1973–74	1·66	37·02	28·73	16·57	9·94	4·43	..	1·10	..	3·18
Malappuram ..	1971–72	1·25	14·98	24·34	22·28	17·75	10·45	3·17	2·51	1·64	1·63
	1972–73	1·48	22·07	24·74	21·34	14·23	7·70	4·74	1·92	1·48	0·30
	1973–74	1·09	20·65	28·99	19·20	14·31	7·97	4·35	1·45	1·27	0·72
Kozhikode ..	1971–72	0·87	26·07	32·15	21·20	9·16	5·39	2·38	1·13	0·50	0·25
	1972–73	1·07	26·51	29·30	23·18	9·33	6·87	2·03	1·61	0·10	..
	1973–74	1·05	29·26	31·08	19·47	10·73	5·09	1·83	1·16	0·27	0·05
Cannanore ..	1971–72	0·80	19·01	29·28	21·80	13·08	9·50	3·42	2·17	0·46	0·48
	1972–73	1·55	36·03	30·56	16·05	7·97	4·52	2·50	0·47	0·12	0·23
	1973–74	0·49	22·68	31·95	22·44	10·74	7·80	2·44	1·22	0·24	..

TABLE 10 (b)

Percentage distribution of tubectomised persons according to number of living children—1971–74

District	Year	Number of children living									
		1	2	3	4	5	6	7	8	9	10+
1	2	3	4	5	6	7	8	9	10	11	12
Trivandrum ..	1971–72	0·19	8·65	43·44	26·46	12·55	5·78	2·15	0·59	0·19	..
	1972–73	0·35	13·78	43·53	24·13	11·48	4·17	1·82	0·62	0·06	0·06
	1973–74	0·23	17·49	43·49	21·58	10·83	3·87	1·65	0·64	0·14	0·08
Quilon ..	1971–72	0·69	14·17	36·50	24·79	13·42	6·19	2·69	0·96	0·51	0·07
	1972–73	0·86	12·92	38·07	26·08	12·26	6·21	2·02	1·00	0·31	0·17
	1973–74	1·15	14·55	37·05	24·80	12·09	6·00	2·42	1·18	0·36	0·40
Alleppey ..	1971–72	5·40	16·48	29·66	22·58	12·55	7·65	3·57	1·26	0·49	0·36
	1972–73	1·04	14·17	31·56	24·43	13·74	8·87	3·74	1·91	0·54	..
	1973–74	0·79	13·54	31·84	25·59	14·78	6·77	4·49	1·67	0·35	0·18
Kottayam ..	1971–72	..	9·56	30·58	25·01	16·84	10·19	4·71	1·87	0·55	0·69
	1972–73	3·81	14·92	31·92	21·60	13·10	7·59	3·99	1·69	0·56	0·82
	1973–74	4·68	15·80	33·21	20·04	12·55	7·28	3·73	1·54	0·66	0·51
Idikki ..	1971–72	..	12·90	25·28	21·50	20·43	9·68	6·45	2·69	1·07	..
	1972–73	8·33	12·78	28·33	19·45	11·11	12·22	2·22	2·78	1·61	1·11
	1973–74	1·49	12·31	30·78	24·62	14·01	6·79	5·52	2·76	1·27	0·42

TABLE 10 (b)—(*cont.*)

District	Year	Number of children living									
		1		3	4	5	6	7	8	9	10+
1	2	3	4	5	6	7	8	9	10	11	12
Ernakulam ..	1971–72	1·66	13·21	30·69	23·95	14·15	8·78	5·28	2·04	0·86	0·38
	1972–73	1·13	12·60	31·25	22·78	14·23	9·41	4·87	2·46	0·88	0·39
	1973–74	1·27	16·01	33·02	23·87	13·53	6·79	3·31	1·71	0·27	0·22
Trichur ..	1971–72	2·96	16·90	27·53	20·16	13·20	10·74	4·89	2·17	0·84	0·61
	1972–73	2·18	14·09	27·24	24·00	14·86	10·20	4·13	1·53	1·18	0·59
	1973–74	2·97	22·77	25·08	26·40	9·57	5·62	5·28	1·98	0·33	..
Palghat ..	1971–72	1·29	13·68	22·07	33·11	16·23	8·44	3·25	1·29	0·64	..
	1972–73	1·29	15·71	23·84	26·80	16·82	6·84	4·62	2·77	0·74	0·57
	1973–74	3·52	13·60	31·04	22·56	10·88	9·28	5·12	2·24	0·80	0·96
Malappuram ..	1971–72	4·02	14·55	23·71	20·51	17·02	9·28	6·04	2·64	1·24	0·99
	1972–73	4·68	15·47	21·98	21·08	15·60	10·79	5·46	3·25	1·04	0·65
	1973–74	3·14	13·17	27·60	22·96	12·30	9·79	5·77	3·14	1·38	0·75
Kozhikode ..	1971–72	0·24	10·63	34·81	26·17	13·58	8·15	5·43	0·25	0·74	..
	1972–73	0·68	9·88	31·53	26·35	14·76	8·41	4·28	2·67	0·93	0·28
	1973–74	1·02	12·69	31·67	25·69	13·98	8·26	3·87	1·82	0·67	0·33
Cannanore ..	1971–72	0·15	6·22	34·54	27·98	14·55	7·72	5·39	1·50	1·35	0·60
	1972–73	0·86	12·92	38·07	26·08	12·26	6·21	2·12	1·00	0·31	0·17
	1973–74	1·07	8·99	29·55	23·34	16·70	8·78	7·72	2·35	0·86	0·64

TABLE 11

Couples protected by sterilisation

	upto 1966-67	1967-68	1968-69	1969-70	1970-71	1971-72	1972-73	1973-74
Trivandrum ..	30877	40498	51583	59480	67352	89568	93557	99413
Quilon ..	16626	24625	33050	40245	47034	51131	66410	75223
Alleppey ..	13625	21398	29447	37453	43429	45263	46475	48722
Kottayam ..	11613	17106	24077	29485	34041	36640	50156	55031
Ernakulam ..	14691	21898	31926	39248	59553	123719	139214	140535
Trichur ..	14230	20497	26466	30758	35004	57912	58817	63291
Palghat ..	9684	13409	16484	18994	20248	21063	31732	31062
Malappuram ..	..	..	..	..	1589	3159	4506	5955
Kozhikode ..	13968	22631	31020	38036	42051	46025	50413	56052
Cannanore ..	10918	15441	21841	25933	29219	45689	51310	53495
Total ..	136232	197503	265894	319632	379520	520169	592590	629779

TABLE 12

Percentage of couples protected (cumulative) by sterilisation

	upto 1966-67	1967-68	1968-69	1969-70	1970-71	1971-72	1972-73	1973-74
Trivandrum ..	12·50	16·00	20·00	22·44	24·85	29·56	30·27	31·45
Quilon ..	6·13	8·92	11·71	13·97	16·00	15·83	20·18	22·56
Alleppey ..	5·02	7·78	10·55	13·18	15·07	14·41	14·12	15·13
Kottayam ..	4·64	6·70	9·29	11·16	12·65	12·54	15·24	24·92
Ernakulam ..	5·82	8·48	12·04	14·48	21·49	41·65	50·62	50·01
Trichur ..	5·19	7·32	9·22	10·49	11·66	18·56	18·55	19·53
Palghat ..	3·87	5·25	6·31	7·14	7·41	7·60	11·33	11·21
Malappuram ..	..	..	..	..	0·57	1·08	1·51	1·94
Kozhikode ..	4·56	7·23	9·63	11·49	12·36	12·43	13·33	14·40
Cannanore ..	3·48	4·79	6·59	7·62	8·34	12·55	13·79	14·00
State ..	5·08	7·20	9·47	11·12	12·91	16·55	18·50	19·33

TABLE 13

Number of birth averted—Sterilisation

Year	*No. of sterilisation*	*No. of births averted*	*No. of births that would be saved in future years (upto) 1997–98*
(1)	(2)	(3)	(4)
1957–58	1469	13	3725
1958–59	3962	326	10049
1959–60	6034	1228	15304
1960–61	5403	2655	13703
1961–62	6663	4037	16899
1962–63	8630	5526	21888
1963–64	15395	7435	39047
1964–65	27878	10750	70708
1965–66	39728	16833	100764
1966–67	40274	25721	102148
1967–68	65155	35212	165255
1968–69	73840	48847	187284
1969–70	60546	64937	153565
1970–71	68017	78001	172515
1971–72	151111	91079	383270
1972–73	86688	118869	219871
1973–74	50389	138376	127804
Total	711182	649845	1625698

1.4 A STUDY OF THE I.U.D. ACCEPTORS IN KERALA DURING 1966–67 AND 1967–1968

CONTENTS

A STUDY OF THE I.U.D. ACCEPTORS IN KERALA DURING 1966-67 AND 1967-68

1. *Introduction.*—The family planning activities in the State began during the Second Five Year Plan. But the programme gained momentum during the Third Five Year Plan period. In the family planning clinics of the State various methods of birth control are propagated to the couples. Temporary methods are suggested to couples who need spacing of births. Permanent methods are suggested to couples who have the desired number of children and wish to avoid further pregnancies. Condom, Jelly, foam tablets and diaphragm are the important temporary methods suggested in the family planning clinics. From 1965 onwards facilities for I.U.C.D. insertion were provided in the clinics of the State.

The I.U.C.D. method has several special advantages over the other methods of birth control. The major advantage of the method is that it can be used both for spacing and limitation. Once the I.U.C.D. is inserted the woman is protected from conception as long as the device is in position. I.U.C.D. can be removed easily by a doctor if the woman wants it to be removed. Another important advantage of I U C.D. over the conventional contraceptives is that it does not require constant attention like other methods. In Kerala where majority of the couples live in houses without facilities for privacy, the I.U.C.D. is a facile method. Because of these advantages I.U.C.D. has gained wide popularity in the State.

In this paper it is intended to study the characteristics of women who accepted I.U.C D. during the years 1966-67 and 1967-68.

2. *Objects of the study.*—Even though the scheme was introduced in the State five years ago, no State-wide study has so far been conducted on the characteristics of I.U.C.D. acceptors. The present study is intended to throw light on the characteristics of I.U.C.D. acceptors—Namely, their age composition, educational status, religious break-up, income and occupational distribution and fertility levels. The study may highlight the comparative popularity of the method among various socio-economic sections of the population.

3. *Source of data and limitations of the study.*—The hospital authorities record certain items of information regarding the women accepting I.U.C.D. insertion. The hospital records are to give data on the religion, educational status, monthly income, occupation and number of children living in respect of each woman accepting I.U.C.D. method. It was intended to collect these details for all I.U.C.D. acceptors in Kerala during 1966-67 and 1967-68, because in some districts the

details had not been collected at all. In some institutions where the records were maintained, all the details were not available. As such the present study could not cover all the cases. The study for the year 1966–67 does not cover any of the cases from the five districts of Alleppey, Kottayam, Palghat, Kozhikode and Cannanore. The study for the year 1967–68 covers all the districts but not all the cases for want of details. The total number of I.U.C.D. insertions during the years and the number of cases covered in the study are given below:

Year	*Total I.U.C.D. insertions*	*Total number covered in the study*	*Percentage coverage*
(1)	(2)	(3)	(4)
1966–67	40760	16913	41·5
1967–68	37553	31276	83·3

The study could take into account only 41·5 per cent of the I.U.C.D. acceptors in 1966–67 and 83·3 per cent of the I.U.C.D. acceptors in 1967–68. Even in the case of the 41·5 per cent cases during 1966–67 and 83·3 per cent cases during 1967–68, all the details are not available. The highest percentage of omissions is with regard to the item "occupation". Information on income and education is also not recorded in a large number of cases. In most cases, information is available about age and religion. The data used are thus incomplete in respect of a number of cases covered in the study. This limitation very much weakens the conclusions arrived at by the study.

It was also intended to study the followup details of I.U.C.D. cases. The followup study would give rates of expulsions, removals, re-insertions and nature of complaints. But the followup study could not be made as the requisite details were not available with the hospitals. Thus the present study confined only to the socio-economic and demographic characteristics of the I.U.C.D. acceptors.

4. *Previous studies.*—A number of studies on this topic have been conducted by various agencies inside and outside the country. In Kerala, a case study of I.U.C.D., acceptors in two hospitals in Trivandrum City was conducted by the Demographic Research Centre*. In this case study the rates of expulsions, removals, re-insertions and complaints were studied in addition to the characteristics of acceptors.

Some studies on this topic conducted in various parts of the country are those conducted by Demographic Research Centre, Delhi, Demographic Training Research Centre, Bombay and Institute of Rural Health and Family Planning, Gandhigram.

*A case study of I.U.C.D., acceptors in two Hospitals in Trivandrum City—By Dr. R. S. Kurup, P. S. Gopinathan Nair and N. V. George.

These studies are referred to for comparison in appropriate place.

5. *Age composition.*—The item of information considered first is the age of the women at the time of I.U.C.D. insertion. This item of information is available in most of the cases. The comparative popularity of I U.C.D. among women of various age-groups is studied here.

Table 1 gives the distribution of women who have adopted I.U C.D. The percentage distribution in the State of married women in 15–44 years in 1961, is also given for comparison.

TABLE 1

Distribution of women who have adopted I.U.C.D. according to age

Age	1966–67		1967–68		1961 census percentage of married women 15–44 years
	Number	Percentage	Number	Percentage	
15—19	189	1·20	506	1·68	8·53
20—24	2445	15·52	5436	18·04	21·97
25—29	5014	31·83	9745	32·33	23·29
30—34	4326	27·46	7979	26·47	18·69
35—39	3022	19·18	5334	17·70	16·50
40—44	693	4·40	1035	3·43	11·02
45 and above	64	0·41	105	0·35	..
Not recorded	1160	..	1136	..	..
Total	16913	100·00	31276	100·00	100·00

The distribution of I.U.C.D. acceptors according to age in 1966–67 and 1967–68 are almost similar except for a shift in favour of early adoption of I.U.C.D. The percentage of women adopting I.U.C.D. before 25 years has increased from 16·72 per cent in 1966–67 to 19 72 in 1967–68. The increase in percentage is upto 25–29 age group. 48·55 per cent in 1966–67 and 52 05 per cent in 1967–68 have adopted I.U.C.D. before 30 years. The model age group to which the highest percentage of I.U.C.D. acceptors belongs is 25–29 years. This result is in conformity with the case study referred to in paragraph 4. Incidentally it may be noted that the highest percentage of married women in 15–44 age group belong to this group according to 1961 census.

In studies conducted by other centres also (study conducted by D.T.R.C., Bombay, Mr. Asha Bhende, 1966 and study conducted by Central Family Planning Institute, New Delhi, Murthy, D.V.R., etc. 1967). The same model age group was noticed.

The median age of the I.U.C.D. acceptors works out 30–26 years in 1966–67 and 29·97 years in 1967–68. About 3/4th of the I.U.C.D. acceptors are from the age group 20–34 years. This shows close similarity with the study conducted by the Rural Health and Family Planning, Gandhigram (1966) according to which 80 per cent of the I.U.C.D. acceptors covered by their study belongs to the same age group. In the Lucknow study by Seghal and Pandey, M.S. (1967) it was found that 71·2 per cent of the I.U.C.D. acceptors belong to the age group of 25–35. The corresponding percentages in the present study are 78·5 for 1966–67 and 76·5 for 1967–68. According to a study conducted in Delhi (Bardwaj, K. S. 1967) 60 per cent of the I.U.C.D. acceptors belong to 15–30 age group. According to the present study the percentage belonging to the age group 15–30 is near about 50.

A comparison of the age distribution of the I.U.C.D. acceptors and married females in the child bearing age in Kerala shows that comparatively few women adopt I.U.C.D. in the early age groups of 15–24 as also in the older age group of 40–44 and above. In the quinquennial age groups 25–29, 30–34, 35–39 years the percentage of I.U.C.D. acceptors exceed those of married women in child bearing age group.

6. *Number of children living.*—The number of children living at the time of I.U.C.D. insertion is also an indicator of the timing of making the decision on the part of I.U.C.D. acceptors. Since I.U.C.D. is an easily reversible method, it can be used as a temporary method from the early years of marriage. Table 2 gives the distribution of women who have adopted I.U.C.D. according to the number of children living.

TABLE 2

Distribution of women who have adopted I.U.C.D. according to number of children living

No. of children living	*1966–67*		*1967–68*	
	Number	*Percentage*	*Number*	*Percentage*
0	10	0·08	6	0·02
1	649	5·03	1562	6·35
2	2160	16·74	4688	19·06
3	2966	22·99	6119	24·88
4	2601	20·16	5066	20·60
5	1941	15·04	3393	13·80
6	1273	9·87	2011	8·18
7	740	5·74	1037	4·22
8	354	2·74	450	1·83
9	126	0·98	178	0·72
10	53	0·41	60	0·24
Above 10	28	0·22	25	0·10
Not recorded	4012	..	6681	..
Total	16913	100·00	31276	100·00

The average number of children living to I.U.C.D. acceptors is 3·98 in 1966–67 and 3·74 in 1967–68.

The percentage of I.U.C.D. adopters who have 3 or less children is 44·84 in 1966–67 and 50·31 in 1967–68. The trend in favour of early adoption of I.U.C.D. noticed in the previous section is seen here also. According to the study in D.T.R.C., Bombay (Mohanty and Rao S.L.N. 1967) 60 per cent of the women who had adopted I.U.C.D. had three or fewer children. Thus the Kerala women adopt I.U.C.D. after a comparatively larger number of children are born. But compared to the studies in Najafgarh (Bhandari, Vinod 1967) and Lucknow (Seghal B.S. and Pandey M.S. 1967) have shown that Kerala women adopt I.U.C.D. earlier. According to the first study 27·3 per cent had 1–3 children and according to the second study 81·9 per cent had three or more children.

Only very few adopt I.U.C.D. when they have one child or when they have no children. About 20 per cent adopt it when they have 2 children. About the same percentage adopt I.U.C.D. when they have 3 or 4 children. The percentage decreases in the higher parities. The women with more than 5 children, would naturally prefer a method for family limitation. Though to a lesser extent, the method is adopted by women having 6 or more children. These women required a method for limitation and not for spacing. The reasons for their preferring I.U.C.D. rather than P.P.S. which is more suitable for permanent control are to be investigated. It may be that the motivators are not discriminative in persuading women of higher parity to permanent method of family limitation.

7. *Religion.*—There is a general notion that the family planning methods are not favoured to the same extent by all religious groups. Some religious groups may have their sentimental objections to birth control methods. The comparative popularity of I.U.C.D. among different religious groups is proposed to be examined in this section. Table 3 gives the distribution of women who have adopted I.U.C.D. according to religion.

TABLE 3

Distribution of women who have adopted I.U.C.D. according to religion

Religion	*1966–67*		*1967–68*	
	Number	*Percentage*	*Number*	*Percentage*
Hindu	9089	73·16	19258	73·73
Christian	2839	22·85	4933	18·89
Muslim	484	3·90	1929	7·38
Others	11	0·09	..	..
Not recorded	4490	..	5156	..
Total	16913	100·00	31276	100·00

In 1966–67 and 1967–68 the percentage of Hindus among I.U.C.D acceptors is almost same. The percentage of Christians is a little less in 1967–68, while the percentage of Muslims is high. This may be mainly due to the difference in spatial coverage during the two years. In 1966–67 the Districts of Palghat, Kozhikode and Cannanore, which have a higher percentage of Muslims and a lesser percentage of Christians were excluded from the study. In 1967–68 all Districts of the State were included in the study and hence the data for 1967–68 give a more realistic picture. According to 1961 census, there are 60·83 per cent Hindus, 21·22 per cent Christians and 17·91 Muslims in Kerala. A comparison with the distribution of I.U.C.D. acceptors shows that I.U.C.D. is comparatively more popular among Hindus. The popularity of the method among Christians also cannot be said to be very bad. But among Muslims the method has yet to gain popularity. Against 18 per cent Muslims in the general population, the percentage of Muslims among I.U.C.D. acceptors is only 7. Efforts are therefore necessary to make the method popular among Muslims also.

8. *Educational status.*—Like religion, education is also another relevant factor which influence the acceptance of I.U.C.D. But information is not available in a large number of cases. The percentage of cases about which information on education is not available is as high as 75 in 1966–67 and 58 in 1967–68. The available details are presented in the following table:

TABLE 4

Distribution of women who have adopted I.U.C.D. according to educational status

Educational status	*1966–67*		*1967–68*	
	Number	*Percentage*	*Number*	*Percentage*
Illiterate	928	21·89	3010	22·83
Literate below primary	2307	54·41	5901	44·76
Above primary below middle	530	12·50	2852	21·63
Above middle below matric	166	3·91	662	5·02
Matric	250	5·90	627	4·76
Above matric	59	1·39	131	1·00
Not recorded	12673	..	18093	..
Total	16913	100·00	31276	100·00

The percentage of illiterates is almost same in 1966–67 and 1967–68. The percentage of literate women below primary standard has decreased in 1967–68 compared to 1966–67. The decrease is compensated by the increase in the category 'above primary below middle'. So also the total of the categories "above middle school" is

almost same in the two years though there is slight variations when each category is taken separately.

To study the comparative popularity of I.U.C.D. among various educational status groups, a comparison with the educational status distribution in 1961 is made. According to 1961 census, among females in 15–44 age group, 48·03 per cent are illiterate, 34·06 per cent are literate without educational level, 13·75 per cent have passed primary or junior basic and 4·16 per cent have passed matriculation and above. The above figures indicate that I.U.C.D. is comparatively more popular among the literate women. The percentage of illiterate women among I.U.C.D. acceptors is less than half the percentage of illiterate women among married females in 15–44 age group. There are comparatively higher percentage of women from the higher educational status groups among the I.U.C.D. acceptors. The above conclusions are subject to certain limitations. The very high percentage of 'not recorded' cases, considerably reduces the validity of the conclusions. It may also be noted that the comparison is made with respect to the 1961 census figures. The change in the educational status distribution of married females in 1961 and 1966–68 may be substantial. During the course of the eight years, women aged 36 and above would have passed the child bearing age; and a younger group women would have entered the child bearing age group. The younger group who have joined the child bearing group of women are naturally more educated than those who have left the child bearing group. However, it may be concluded that I.U.C.D. has not become so popular among illiterate women as among literate women. The education of the husband also affects the differential acceptance of I.U.C.D. This factor also can be considered in subsequent studies.

9. *Monthly income.*—This item is also 'not recorded' in a large number of cases. The percentage of cases on which information is not available is 63 in 1966–67 and 54 in 1967–68. Table 5 gives the details.

TABLE 5

Distribution of women who have adopted I.U.C.D. according to monthly income of the couple

Monthly income of the couple	*1966–67*		*1967–68*	
	Number	*Percentage*	*Number*	*Percentage*
Below Rs. 50	2060	33·08	4101	28·74
Rs. 50–99	3491	56·06	8150	57·12
,, 100–149	409	6·57	1251	8·77
,, 150–199	153	2·46	437	3·06
,, 200 and above	114	1·83	329	2·31
Not recorded	10686	..	17008	..
Total	16913	100·00	31276	100·00

The comparison of the distribution according to income for the two years indicates a shift in favour of higher income groups. In 1967–68 more women from the monthly income range of Rs. 50 and above adopted I.U.C.D. But in both of these years only less than 15 per cent of the I.U.C.D. acceptors come from the monthly income range of Rs. 100 and above. The financial incentive may be one reason to attract the large percentage of acceptors from the low income groups.

The conclusions drawn from the above data are also subject to serious limitations from the following reasons:—

(*a*) The data have been collected at the hospital level without any probing into the details furnished by the informants.

(*b*) The high percentage of 'not recorded' cases.

(*c*) No reliable data are available regarding 'the distribution of women according to income and hence no firm conclusions can be drawn about the acceptance of I.U.C.D. by women in the various income groups.

10. *Occupation.*—Data on this item are also recorded only in very few cases. Information is available for only 17·6 per cent cases in 1966–67 and 20·3 per cent cases in 1967–68. Table 6 gives the distribution of women according to occupation.

TABLE 6

Distribution of women who have adopted I.U.C.D. according to occupation

Occupation	*1966–67*		*1967–68*	
	Number	*Percentage*	*Number*	*Percentage*
(1)	(2)	(3)	(4)	(5)
Agricultural Labour	10	0·33	368	5·81
Other unskilled work	918	30·83	1726	27·25
Skilled work	42	1·41	454	7·17
Professional work	39	1·31	101	1·59
Cultivators	156	5·24	383	6·04
Traders and businessmen	52	1·75	119	1·88
Clerical work	15	0·50	73	1·15
Others	1233	41·40	1570	24·75
No occupation	513	17·23	1541	24·33
Not recorded	13935	..	24941	..
Total	16913	100·00	31276	100·00

Due to the high percentage of 'not recorded' cases the conclusions drawn from the distribution is of very little validity. About 17 per cent

in 1966–67 and 24 per cent in 1967–68 are recorded as having no occupation. According to 1961 census, 67·4 per cent of the women in the age group 15–34 years are non-workers' or in other words not gainfully employed. Since most of the I.U.C.D. acceptors belong to 15–34 age group, it may be seen that there is comparatively a large percentage of 'workers' or those having occupation among I.U.C.D. acceptors. During both the years a large percentage of unskilled workers like coolies have adopted I.U.C.D. The financial incentive may have attracted a large percentage of them. The occupation of the husband is another factor which influences the acceptance of I.U.C.D. Hence in the subsequent studies, the analysis of the occupational distribution of husbands of I.U.C.D. acceptors also can be attempted.

11. *Summary and conclusions.*—The study gives broad indications of the characteristics of I.U.C.D. acceptors in Kerala during 1966–67 and 1967–68.

About 80 per cent of the I.U.C.D. acceptors belong to the age group 25–39 years. I.U.C.D. is seen to be less popular in the early years of marriage and after 40 years.

About 50 per cent adopt I.U.C.D. when they have 3 or less children, living. Only very few women having less than 2 children or having more than 5 children adopt I.U.C.D.

I.U.C.D. is seen to be comparatively less popular among Muslims. Efforts are therefore necessary to intensify the propaganda among Muslims.

Illiterate women do not adopt I.U.C.D. as literate women.

The available information of I.U.C.D. acceptors is defective in many respects. All the details are recorded only in very few cases. Items like occupation, income and education are omitted in a large number of cases. A study with the complete data will be more realistic and objective.

The present study is confined to the demographic and socio-economic characteristics of I.U.C.D. acceptors. If follow up visits are conducted regularly and details of expulsion, removal and complications are analysed, the data could be made use of for conducting studies, the results of which may be useful for these engaged in the implementation of the programme.

1.5 THE DEMOGRAPHIC CHARACTERISTICS OF I.U.D. ADOPTERS IN KERALA—1970–71

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LIST OF TABLES

THE DEMOGRAPHIC CHARACTERISTICS OF I.U.D. ADOPTERS IN KERALA 1970-71

1. This report deals with the demographic particulars of I.U.D. acceptors in Kerala during the year 1970-71. The present study is the fourth one in its series issued by the Demographic Research Centre of this Bureau. Out of 30,584 I.U.D. acceptors reported during the year, the present study could cover only 19,845 cases representing 64·8 per cent of the total number.

2. An examination of the total number of acceptors over the previous years from 1966-67, presented in Table (1) appended, shows that there has been a substantial drop in the number of adopters in 1970-71 as compared to the earlier years. The reason for this cannot be specifically located in the absence of relevant data. It may be due to one or more of the several factors like (*i*) declining influence of the programme over the massess, (*ii*) tardy implementation of the programme, (*iii*) under reporting of the number of acceptors, etc.

3. The median age group of the I.U.D. adopters in the year 1970-71 is found to be 25-29 years. This age group alone covers nearly one-third of the total number of adopters. As much as 40 per cent of the adopters are reported in the higher age groups of 30 and above. The figures may be seen in Table (2).

4. The percentage distribution of I.U.D. adopters according to age is given in Table (2) for the annual periods from 1966-67 to 1970-71. The percentage of acceptors in the age group 15-24 years has increased over these years from 16·2 per cent to 27·3 per cent. A similar trend is noticed in the age group of 25-29 also. The percentage of acceptors in the age group of 30-34 shows a decreasing trend from 27·5 per cent in 1966-67 to 24·5 per cent in 1970-71. These variations have resulted in the shifting of the median age-group from 30-34 in 1966-67 to 25-29 in 1970-71. This change is revealing and interesting. Further the acceptors of I.U.D. and sterilization below 30 years of age goes up steadily. But an inverse relation is perceptible in cases of above 30 years of age (Table 2A appended). This shift in the age pattern can be attributed to the subjective aspects of changes imbibed in the society in general during these periods. Changes to attitudes, values and behaviourisms are more readily effected as changes are achieved in the social melieu.*

5. According to 1971 census, 59 per cent of the population of Kerala are Hindus, 21 per cent are Christians and 19·5 per cent are

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* Philip M. Hanser—A Sociological perspective in family planning programme —East-west Population Institute—Reprint No. 44.

Muslims. Those in the religious composition of the I.U.D. adopters, Hindus are over represented while the other two religious groups under represented. It may be noted the figures for the period from 1966–71 presented in Table 3, show that there is an increasing, trend in the percentage of acceptors among the Hindus; while the trend is rather declining in respect of acceptors in other two religious groups.

6. Education of couples play an important role in them decision for family limitation and the method therefor. 22 per cent of the standard. This indicates that the literates but below matric standard had favoured I.U.D. adoption for family planning. 13 per cent of their husbands were illiterates 77·5 per cent of them were below matric standard, and 9·3 per cent were above matric standard. There was no change from this pattern in the preceding years also (Table 4). The educational attainment of I.U.D. adopters 1966–71 is given in Table 6.

7. Nearly 41 per cent of the I.U.D. adopters had not reported their income either because of their ignorance about their husband's income or because of their reluctance to disclose their family income. The tendency to project an income far below that of their actual income seems to be strong among the I.U.D. adopters. Nevertheless, the income data are useful to arrive at some general conclusions. For instance, we can say that only a small percentage of I.U.D. adopters were drawn from a higher income group and only women from low income category came forward for I.U.D. Only 1·8 per cent of the I.U.D. adopters reported a monthly income of above Rs. 200 in 1966–67. But the percentage has increased to 3·1 per cent in 1970–71 (Table 6).

8. Sixty-three per cent of the I.U.D. adopters of 1970–71 period have practically no occupation at all. 25·4 per cent of them are unskilled workers and the remaining 11·3 per cent spread to various occupation. Since most of the I.U.D. adopters were self employed in their own household duties they were reported as persons with no occupation. But 58 per cent of their husbands were unskilled workers, 15 per cent of them were agriculturists and 6·3 per cent of them were cultivators and 6 per cent were traders and businessmen. Skilled workers formed only 4 per cent (Table 7).

9. Sixty per cent of the I.U.D. adopters have 3 children born at the time of I.U.D. adoption.

10. Sixty-eight per cent of the I.U.D. acceptors have 3 children living at the time of I.U.D adoption. 9·7 per cent of them have only one child. On the other extreme, 0·05 per cent of the adopters report more than 10 children living at the time of I.U.D. adoptions (Table 8).

11. During 1966–67 period only 45 per cent of the I.U.D. adopters had a maximum of 3 children at the time of their acceptance. But

this proportion increased to 69 per cent in 1970–71. The percentage of I.U.D. acceptors with only one child had increased from 5 per cent in 1966–67 to 9·7 per cent in 1970–71 (Table 9).

12. According to an estimate of the department of family planning, Government of India, an average of 0·7 children over 5 years per I.U.D. insertion will be saved. Based on this estimate, 61,992 births will be saved over next five years by 30,584 I.U.D. insertions done in 1970–71 period.

TABLE 1

Number of I.U.D. adopters in Kerala during the period from 1966–67 to 1970–71

Year	*Total No. of I.U.D. adopters*	*No. of adopters covered for the study of demographic characteristics*	*Percentage of number covered to the total*
(1)	(2)	(3)	(4)
1966–67	40760	16913	41·3
1967–68	37553	31276	83·3
1968–69	36065	30006	83·0
1969–70	37708	35735	95·0
1970–71	30584	19845	64·8

TABLE 2

Age composition of I.U.D. adopters from 1966–67 to 1970–71

Age group	No. of I.U.D. adopters 1970–71	Percentage of I.U.D. adopters				
		1966–67	1967–68	1968–69	1969–70	1970–71
1	2	3	4	5	6	7
15–19	523	1·20	1·68	1·97	2·46	2·76
20–24	4652	15·52	18·04	20·75	22·09	24·55
25–29	6276	31·83	32·33	33·65	31·23	33·13
30–34	4635	27·46	26·47	24·86	25·13	24·46
35–39	2434	19·18	17·70	15·70	15·75	12·85
40–44	393	4·40	3·43	2·78	3·04	2·08
45 and above	33	0·41	0·35	0·29	0·31	0·17
Not recorded	899	..	..	..	..	..
Total	19845	100·00	100·00	100·00	100·00	100·00
Number of I.U.D. adopters	..	31276	16913	30006	35735	..

TABLE 2 A

Percentage distribution of acceptors of I.U.D. and Sterilisation from 1967–68 to 1970–71

Periods	Acceptors below 30 years of age at the time of acceptance					Acceptors above 30 years of age at the time of acceptance				
	1966–67	1967–68	1968–69	1969–70	1970–71	1966–67	1967–68	1968–69	1969–70	1970–71
1	2	3	4	5	6	7	8	9	10	11
I.U.D. ..	48·13	52·00	55·78	55·78	60·44	52·00	48·00	44·00	44·00	39·56
Sterilisation (females) ..	44·5	49·6	49·6	53·9	56·16	56·00	50·00	50·00	46·00	43·84

I.U.D. 12 per cent increase below 30 years and 12 per cent decrease above 30 years.
Sterilisation 12 per cent increase below 30 years. 12 per cent decrease down 30 years.

Note:—The acceptors of I.U.D. and Sterilisation below 30 years of age shows a steady increase during 1966–71 period are inverse relation is seen among the acceptors of above 30 years.

TABLE 3

Distribution of I.U.D. adopters according to religion 1966–67 to 1970–71

Sl. No.	Religion	Percentage of I.U.D. adopters					No. of I.U.D. acceptors in
		1966–67	1967–68	1968–69	1969–70	1970–71	1970–71
1	2	3	4	5	6	7	8
1	Hindus ..	73·16	73·73	76·29	77·88	78·28	13574
2	Chrlstians ..	22·85	18·99	14·84	16·35	13·75	2384
3	Muslims ..	3·90	7·38	5·87	5·77	7·97	1382
4	Others ..	0·09	..	..	..	..	..
	Total ..	100·00	100·00	100·00	100·00	100·00	17840

@—Paper No. 64. *—Paper No. 69. @@—Paper No. 76.

TABLE 4

Distribution of I.U.D. adopters and their husbands according to educational standard 1970–71

Educational attainment	*No. of females*	*Percentage*	
		Wife	*Husband*
Illiterates ..	1555	21·94	13·20
Literates below Primary ..	2728	38·49	37·17
Above Primary and below middle ..	1790	25·25	30·86
Above middle and below matric ..	521	7·35	9·44
Matric and above ..	494	6·97	9·33
Not recorded ..	..	..	..
Total ..	7088	100·00	100·00

TABLE 5

Percentage distribution of I.U.D. adopters according to educational attainment from 1966–67 to 1970–71

Educational attainment	Percentage				
	1966–67	1967–68	1968–69	1969–70	1970–71
Illiterate ..	21·9	22·8	31·1	28·0	21·94
Literate but below matric ..	70·8	71·4	63·5	66·6	71·09
Matric and above ..	7·3	5·8	5·4	5·4	6·97
Total ..	100·00	100·00	100·00	100·00	100·00

Census Data 1970–71

Educational standard	*Male per cent*	*Female per cent*	*Total per cent*
Illiterate ..	33·88	45·67	39·58
Literate ..	19·84	17·44	18·63
Basic upto middle ..	39·31	32·22	35·74
Matric and above ..	7·47	4·65	6·05
Total ..	100·00	100·00	100·00

TABLE 6

Distribution of I.U.D. adopters according to monthly income of the couples 1966–71

Monthly income	Percentage of I.U.D. adopters					I.U.D. adopters in
	1966–67	1967–68	1968–69	1969–70	1970–71	1970–71
1	2	3	4	5	6	7
Below Rs. 50 ..	33·08	28·74	24·29	15·80	21·45	2508
Rs. 50—99 ..	56·06	57·12	61·83	65·97	59·91	7006
Rs. 100—149 ..	6·57	8·77	9·79	11·22	9·89	1156
Rs. 150—199 ..	2·46	3·06	2·12	3·91	5·57	651
Rs. 200 and above ..	1·83	2·31	1·97	3·11	3·18	373
Total ..	100·00	100·00	100·00	100·00	100·00	19845

TABLE 7

Distribution of I.U.D. acceptors and their husbands according to occupation 1969–70

Occupation	*Husbands of I.U.D. adopters*	*Percentage*	*I.U.D. adopters*	*Percentage*
(1)	(2)	(3)	(4)	(5)
Agricultural labourers ..	1163	15·14	365	2·82
Skilled workers ..	293	4·05	261	2·02
Unskilled workers ..	4216	57·79	3287	25·41
Cultivators ..	463	6·35	249	1·93
Professional workers ..	227	3·11	155	1·20
Traders and businessmen ..	453	6·21	164	1·27
Clerical workers ..	111	1·53	62	0·48
Others ..	215	2·94	173	1·34
No occupation ..	155	2·12	8218	63·53
Not recorded ..	12549	..	6911	..
Total ..	19845	100·00	19845	100·00

TABLE 8

Distribution of women who have accepted I.U.D. according to number of children born and living at the time of I.U.D. adoption (1970–71)

No. of children	*Born*		*Living*	
	No. of children	*Percentage*	*No. of children*	*Percentage*
(1)	(2)	(3)	(4)	(5)
1	1145	10·48	1678	9·73
2	2659	24·34	4881	28·32
3	2778	25·43	4916	28·52
4	1968	18·01	2937	17·04
5	1183	10·83	1375	7·98
6	664	6·08	781	4·58
7	300	2·75	339	1·97
8	143	1·31	196	1·14
9	52	0·47	83	0·51
10	10	0·10	37	0·21
Above 10	22	0·20	9	0·05
Not recorded	8919	..	2608	..
Total	19845	100·00	19845	100·00

TABLE 9

Percentage distribution of the I.U.D. adopters having 3 or less than 3 children living and those having one child at the time of acceptance

Period of I.U.D. adoption	*Percentage of I.U.D. adopters with 3 or less than 3 children living at the time of I.U.D. adoption*	*Percentage of I.U.D. adopters with one child living*
(1)	(2)	(3)
1966—67	44·84	5·0
1967—68	50·31	6·4
1968—69	60·19	8·0
1969—70	61·82	9·0
1970—71	68·50	9·7

RECENT TRENDS IN THE I. U. C. D. ACCEPTANCE IN KERALA

Introduction.—Among the various methods of preventing births offered to the public, under the Indian Family Planning Programme, the I.U.C.D (or what is commonly known as loop) has a unique place. This is because of its capability to prevent births for quite a long period, without, repetitive use as in the case of conventional contraceptives or permanently stopping births as in the case of sterilisation. Hence, it is ideally suited for the newly weds, who would like to have their first baby after an year or two and for those who require proper spacing, after their first or second child. In spite of these advantages, the acceptance of this method has not been one of steady rise in the State, probably because of reported side effects. The method was introduced in the middle of 1965. After an initial spurt in the total number of acceptors, there has been a decline in acceptance during the years that followed.

2. *Objective of the study.*—This paper attempts to study the characteristics of the I.U.C.D. acceptors in the State and in the districts in respect of their religion, age, educational status, occupation, income and the number of children living at the time of insertion. Also the variations in these characteristics in the districts has been analysed. The demographic effect of I.U.C.D. insertions done is also briefly indicated.

3. *Source of the data and limitations.*—The data collected by the hospital authorities are taken for analysis. There are nearly 473 medical institutions in the State providing facilities for I.U.C.D. insertions. These include Government hospitals, Primary Health Centres and private hospitals. The data in respect of each acceptor are recorded in the registers maintained by the institutions concerned. These recorded data are copied by the statistical staff attached to the District Statistical Offices.

The records of the primary institutions show that all items of information, in respect of each acceptor, are not often recorded. The actual performance and the number for which data have been obtained and analysed for each of the three years are given below. This shows the extent of non-coverage.

Year	*Total performance (No. of I.U.C.D. insertions)*	*No. for which data have been collected*
1971–72	18167	10979
1972–73	21444	15777
1973–74	21703	18281

Thus the data are incomplete. The items of information to the extent they are recorded in the hospitals, are taken for the present study.

4. *Characteristics of I.U.C.D. acceptors—(i) Age composition.*—The age at which a woman prefers to accept I.U.C.D. is an important factor for assessing the success of the programme. If more females in the young age-groups and low parities accept I.U.C.D. insertion, more births will be averted. The percentage distribution of I.U.C.D. acceptors according to age during the period 1966–67 to 1973–74 is given in Table 1 in appendix. A gradual increase of acceptors of younger age is noticed. The highest percentage of acceptors is in the age-group 25–29 years. The percentage of acceptors below age 30 has increased from 49 to 64 as can be seen from the table given below:

TABLE 1

Percentage distribution of I.U.C.D. acceptors aged below 30

Years	*Percentage of females aged below 30*
1966–67	48·63
1967–68	52·00
1968–69	56·37
1969–70	55·77
1970–71	60·44
1971–72	61·69
1972–73	61·79
1973–74	64·04

The percentage of acceptors below 30 years of age has increased from 49 in 1966-67 to 64 in 1973-74. This means that more and more young females are willing to postpone the next births. They consider the loop as an ideal method for spacing births. The trend in the median age of acceptors over the years can be seen from the following table:—

TABLE 2

Median age of acceptors—1966–67 to 1973–74

Year	*Median age*
1966-67	30·26
1967–68	29·66
1968–69	29·15
1969–70	29·08
1970–71	28·42
1971–72	28·20
1972–73	28·08
1973–74	27·85

It is seen that the median age of acceptors is steadily declining during this period. The median age of acceptors in 1966-67 was 30·26; it declined to 27·85 in 1973-74.

(ii) *Religion.*—The religious composition of the acceptors shows that among the major religious communities in the State, Hindus predominates among I.U.C.D. acceptors. Their proportion among the acceptors is more than their proportion in the general population.

The percentage distribution of I.U.C.D. acceptors according to religion is given below:

TABLE 3

Percentage distribution of I.U.C.D. acceptors according to religion

Year	Religion			Total
	Hindus	Christians	Muslims	
(1)	(2)	(3)	(4)	(5)
Proportion in 1971 Census	59·42	21·06	19·52	100
1966-67	73·16	22·85	3·99	100
1967-68	73·73	18·89	7·38	100
1968-69	76·29	14·84	8·87	100
1969-70	77·88	16·35	5·77	100
1970-71	78·28	13·76	7·97	100
1971-72	73·59	17·76	8·65	100
1972-73	69·52	22·36	8·12	100
1973-74	70·86	21·00	8·14	100

The percentage of acceptors among the Muslim community has slightly increased over the years. Among the Muslims this method has yet to gain popularity. Against 19·50 per cent of the Muslims in the general population, the percentage of Muslims among the I.U.C.D. adoptors is below 9. Efforts are necessary to make the method more popular among the Muslim community.

(iii) *Education.*—The distribution of I.U.C.D. acceptors and their husbands according to the level of education is given in Table 2 in appendix. The percentage of illiterates among the acceptors is low compared to their share in the general population. Among the acceptors the highest percentage belong to the category of people with the educational level of below primary and above primary but below middle. The percentage of acceptors having higher educational level e.g., metric and above is increasing

(*iv*) *Occupation.*—The percentage distribution of I.U.C.D. acceptors according to the economic activities is given in Table 3 in appendix. The occupation of a large percentage of acceptors is recorded either as 'unskilled workers or no occupation'.

(*v*) *Income.*—The percentage distribution of I.U.C.D. acceptors according to monthly income is given in Table 4 in appendix. About 80 per cent of the females who accepted I.U.C.D. belong to the income group of less than Rs. 100 per month. People having higher income, seen to be reluctant to accept the loop. The percentage of acceptors above the income group of Rs. 200 is showing increasing trend during these years.

(*vi*) *Number of living children.*—The number of living children at the time of acceptance of I.U.C.D. is an indicator of the effectiveness of the programme. Besides the low age group of acceptors, their low parity is also an important factor in determining the number of births that can be averted. The following table gives the percentage distribution of females who had accepted I.U.C.D. when they had one child, two and three children, and also less than 3 living children:—

TABLE 4

Percentage of females having one, two, three and less than three living children at the time of insertion

Year	*Number of children at the time of acceptance*		
	One child	*Two children*	*3 and less than 3 children*
1966–67	5·03	16·74	44·84
1967–68	6·35	19·06	50·31
1968–69	7·99	24·77	60·19
1969–70	9·04	25·61	61·82
1970–71	9·73	28·32	66·57
1971–72	11·47	28·55	66·29
1972–73	13·49	29·30	68·30
1973–74	13·59	30·10	68·66

The percentages of women having one, two and three and less than three living children, are steadily increasing. During the period 1973–74 more than 68·7 per cent of the acceptors had 3 or less than 3 living children at the time of I.U.C.D. insertion. This means that more females with fewer number of living children prefer to postpone the next birth by inserting I.U.C.D. The percentage of females according to the number of living children at the time of I.U.C.D. insertion is given in Table 5 in appendix.

III. Inter-district variation in the characteristics of I.U.C.D. acceptors

An attempt is made in this section to analyse inter-district variations in some of the important characteristics of I.U.C.D. acceptors like, age, religion and number of living children at the time of acceptance for the period 1971–72 to 1973–74.

(*i*) *Age composition.*—The age distribution of the acceptors in various districts for the period 1971–72 to 1973–74 is given in Table 6 in appendix. The percentage distribution of females who had accepted I.U.C.D before age 30, in the districts is given below:

TABLE 5

Percentage distribution of acceptors aged below 30 years—Districts

Districts		*Percentage of acceptors aged below 30*
Trivandrum	..	65·19
Quilon	..	51·77
Alleppey	..	62·89
Kottayam	..	68·44
Idikki	..	69·21
Ernakulam	..	54·12
Trichur	..	54·43
Palghat	..	69·22
Malappuram	..	56·57
Kozhikode	..	69·65
Cannanore	..	61·55

More than 65 per cent of the acceptors are below 30 years in the Districts of Trivandrum, Kottayam, Idikki, Palghat and Kozhikode. The Districts of Kottayam and Idikki as well as Kozhikode and Palghat seem to be better in respect of acceptor's age. In the Districts of Quilon, Ernakulam, Trichur and Malappuram the percentage of acceptors below the age 30 years is less than 60. The highest percentage of acceptors is from 25–29 age group in all districts except Kottayam and Idikki where it is from 20–24 age group.

(*ii*) *Religious composition.*—The percentage distribution of acceptors according to religion is given in Table 7 in appendix. Among the acceptors, the percentage of Hindus is much higher than their respective strength in the general population. In the districts of Alleppey, Palghat Malappuram and Kozhikode the proportion of X'ians among the acceptors is higher than their population proportion. The percentage of Christians among the acceptors in Alleppey, Kottayam, Idikki and Ernakulam is higher than that in other districts. The percentage of

acceptors from the Muslim community is lower than their percentage in the general population. Hence a more effective propaganda is necessary to create a favourable attitude among Muslims to accept family planning method.

(iii) *Number of living children.*—The percentage of acceptors according to number of living children at the time of I.U.C.D. insertion in various districts is given in Table 8, in appendix. The percentages of acceptors having one, two, three and less than three living children at the time of I.U.C.D. insertion are shown below:

TABLE 6

Distribution of I.U.C.D. acceptors according to one, two and three and less than three living children at the time of I.U.C.D. insertions—Districts—1971–72 to 1973–74

Districts	*1 child*	*2 children*	*3 and less than 3 children*
(1)	(2)	(3)	(4)
Trivandrum ..	10·83	35·87	77·29
Quilon ..	15·09	30·26	69·70
Alleppey ..	14·19	29·15	68·31
Kottayam ..	16·34	30·70	69·42
Idikki ..	12·11	27·43	63·67
Ernakulam ..	15·52	33·64	72·25
Trichur ..	8·61	23·97	58·64
Palghat ..	10·39	27·94	62·71
Malappuram ..	10·51	20·23	52·34
Kozhikode ..	14·37	28·57	66·59
Cannanore ..	9·55	22·86	56·62

In Trivandrum District 77 per cent of the acceptors had 3 or less than 3 living children at the time of I.U.C.D. insertion. In all districts except Trichur, Malappuram and Cannanore, more than 60 per cent of acceptors had 3 or less than 3 living children at the time of accepting I.U.C.D. In the Districts of Quilon and Ernakulam more than 15 per cent of the I.U.C D. acceptors had one living child at the time of acceptance. In Trivandrum District 36 per cent of the acceptors had two living children at the time of insertion.

The average number of children living to acceptors in districts is given below:

TABLE 7

Average number of children living to acceptors—Districts—1971-1972 to 1973-1974

Districts		*Average No. of living children*
Trivandrum	..	2·76
Quilon	..	2·90
Alleppey	..	2·97
Kottayam	..	2·91
Idikki	..	3·15
Ernakulam	..	2·85
Trichur	..	3·35
Palghat	..	3·14
Malappuram	..	3·49
Kozhikode	..	3·00
Cannanore	..	3·57

The average number of living children to an acceptor in Trivandrum, Quilon, Alleppey and Kottayam Districts is below 3 while in other districts above 3. In Cannanore average number of living children to an acceptor is 3·57. Even the idea of spacing of children for which I.U.C.D. is adopted, is taken to at a late stage by the people in the northern districts.

IV. Demographic impact of the programme

The ultimate objective of the Family Planning Programme in the country is to reduce the birth rate. The objective of the Government of India is to reduce the birth rate of the country from 39 per 1,000 of population in 1970 to 30 by 1979 and to 25 by 1984. For this purpose 33 to 45 percent of the reproductive couples will have to be protected against the risk of conception during this piriod.* The number of females protected through the method under study will measure the success of the particular method. Some of the indication assessing the demograph impact of the I.U.C.D. Programme will be (*i*) number of I.U.C.D. acceptors per 1,000 females population (*ii*) percentage of eligible couples in the age group 15-44 protected by I.U.C.D. against the risk of conception and (*iii*) the number of births averted by the method.

*K.C. Seal. The Family Planning Programme in Indias Population in Indias Development 1947—2000 IASP—Delhi. P. 381

(*a*) *Rate per 1000 female population.*—Appendix Table 9 gives the distribution of I.U.C.D. insertion per 1,000 female population in the districts of Kerala during the period 1967–68 to 1973–74. The number of I.U.C.D. adopters varies from district to district. In all the districts a rising trend is seen during the period 1968 to 1971. Thereafter the number of I.U.C.D. adopters is diminishing. Because of the mass vasectomy camps organised in the districts during the period 1971–72 the performance of other programmes was at a low obb. In the Districts of Malappuram, Kozhikode and Cannanore the acceptance rate of I.U.C.D. is particularly low. In the Districts of Trivadrum, Quilon and Alleppey the I.U.C.D. seems to be more popular.

In Appendix Table 10, the number of couples accepting I.U.C.D. per 1,000 eligible couples is given. The table reveals that during the period 1967–68 nearly 14 persons used I.U.C.D. and this rate declined to 6 in 1973–74.

(*b*) *Number and percentage of couples protected.*—Percentage of acceptors protected (cumulative) by I.U.C.D. programme since its inception in 1965 is given in Appendix Table 11. By the end of 1973–74, out of a total of 32·57 lakhs of eligible couples in the reproductive age groups 15—49, 0·68 lakh were protected by I.U.C.D. The number of couples protected by I.U.C.D. insertion is more in the Districts of Trivandrum, Quilon and Alleppey than the other districts.

(*c*) *Number of births saved.*—The number of births saved by I.U.C.D. acceptance will give a quantitative assessment of the impact of the programme. The calculation is done by applying the norm of the number of births averted by one I.U.C.D. insertion arrived at by Kurup R. S.(1) as far as Kerala is concerned. As a result of the I.U.C.D. insertion up to March 1974 since inception of the programme a total of 199,360 births will eventually be averted by 1984–85.

The table given below shows the number of acceptors and the number of births saved during each year as a result of the current year performance as well as the carry over effect of the previous years the number of births that would be saved till the year 1984–85 by the I.U.C.D insertions done up to March 1974. Since its inception, the rate of 0·71 per insertion over a period of 11 years, is also given.

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(1) Kurup R.S., A note on the calculation of births averted due to family planning in Kerala—Paper 78. D.R.C., Trivandrum.

TABLE 8

No. of acceptors and No. of births saved during the period and the number of births that would be saved till the year 1984-85 by this programme

Year	*No. of I.U.C.D. acceptors*	*No. of births saved during the year*	*No. of briths that would be saved in future years*
1965-66	34,812	233	24,894
1966-67	40,760	5,563	29,947
1967-68	37,553	12,102	26,854
1968-69	36,062	16,811	25,987
1969-70	37,708	20,023	26,964
1970-71	30,584	22,428	21,870
1971-72	18,167	22,944	12,991
1972-73	21,444	21,075	15,384
1973-74	21,703	19,511	15,519
Total	278,793	140,690	199,360

Summary.—64·04 per cent of the I.U.C.D. adopters during the year 1973-74 belong to the age group below 30. The largest proportion of I.U.C.D. acceptors belong to the age group 25-29. The percentage of I.U.C.D. adopters in the age group below 30 steadily increased from 48·13 during the year 1966-67 to 64·04 in the year 1973-74.

More than 70 per cent of the I.U.C.D. acceptors are Hindus. I.U.C.D. is more popular among literates than among illiterates. 68 per cent of the acceptors had 3 or less than 3 living children at the time of acceptance.

More than 65 per cent of the acceptors in Trivadrum, Alleppey, Kottayam, Idikki, Palghat and Kozhikode are below 30 years of age.

The percentage of Christians among the acceptors in Alleppey, Kottayam, Idikki and Trivandrnm is higher than in other districts. The proportion of acceptors of this method from the Muslims is lower than their proportion in the general population.

Seventy-seven per cent of the acceptors in Trivandrum District had 3 or less than 3 living children at the time of acceptance.

During the year 1967-68 nearly 14 persons out of 1,000 eligible couples had used I.U.C.D. and this declined to 6 in 1973-74.

Out of 32·57 lakhs of eligible couples in the State, 0·68 lakh have been protected by I.U.C.D. up to the period 1973-74.

A total of 199,360 births will be averted by 1984–85 as a result of I.U.C.D. insertion up to March 1974.

Reference.—1. A study of I.U.C.D. acceptors in Kerala during 1966–67 and 1967–68—D.R.C., No.64—1971, Trivandrum.

2. A study of I.U.C.D. acceptors in Kerala during 1968–69, D.R.C. No.69, 1971, Kerala.

3. Some demographic aspects of I.U.C.D. adopters in Kerala during 1969–70, D.R.C. No. 76, 1973, Kerala.

4. The demographic characteristics of I.U.C.D. adopters in Kerala 1970–71, D.R.C. No.88, Trivandrum.

5. Kurup, R.S. A note on the calculation of birth. averted due to family planning in Kerala—Paper No.78–D.R.Cs Trivandrum.

APPENDIX

TABLE 1

Percentage distribution of acceptors of I.U.C.D. according to age 1966–67 to 1973–74

Years	15–19	20–24	25–29	30–44	35–39	40–44	40+	Total
1	2	3	4	5	6	7	8	9
1966–67	1·20	15·52	31·83	27·46	19·18	4·40	0·41	100·00
1967–68	1·68	18·04	32·33	26·47	17·70	3·43	0·35	100·00
1968–69	1·97	20·75	53·65	24·86	15·70	2·78	0·29	100·00
1969–70	2·45	22·09	31·23	25·13	15·75	3·04	0·31	100·00
1970–71	2·76	24·55	33·13	24·46	12·85	2·08	0·17	100·00
1971–72	2·72	26·54	32·43	22·76	13·05	2·09	0·41	100·00
1972–73	3·00	28·08	30·70	21·96	13·39	2·49	0·38	100·00
1973–74	3·13	28·21	32·70	20·88	12·66	2·17	0·25	100·00

TABLE 2

Percentage distribution of acceptors according to Educational Status

Educational Status	1966–67	1967–68	1968–69		1969–70		1970–71		1971–72		1972–73		1973–74	
			H	W	H	W	H	W	H	W	H	W	H	W
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Illiterate ..	21·89	22·83	19·29	31·14	21·50	28·06	21.94	13·20	9·65	11·86	8·85	17·75	11·03	13·66
Literate below Primary ..	54·41	44·76	32·95	37·50	32·86	39·23	38·49	37·17	34·35	40·68	31·63	33·16	29·54	33·3
Above Primary below Middle ..	12·50	21·63	27·61	20·36	24·86	22·67	25·25	30·86	31·20	27·10	31·85	25·70	32·90	27·82
Above Middle below Matric ..	3·91	5·02	10·49	5·63	7·65	4·63	7·35	9·44	11·52	9·66	13·69	11·72	11·41	10·12
Matric and above Matric	5·90	4·76	7·53	4·63	7·75	5·08	6·97	9·33	7·64	7·30	12·50	8·64	14·17	13·88
Not specified ..	1·39	1·00	2·13	0·74	5·38	0·33	...	..	5·64	3·40	1·48	3·03.	0·95	1·17
Total ..	100·00	100·00	100·00	100·00	100·00	100·00	100·00	100·00	100·00	100·00	100·00	100·00	100·00	100·00

TABLE 3

Percentage distribution of acceptors according to occupation

Occupation	1966-67	1967-68	1968-69		1969-70		1970-71		1971-72		1972-73		1973-74	
			H	W	H	W	H	W	H	W	H	W	H	W
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Agricultural labour ..	0·33	5·81	7·49	3.41	8·49	4·33	15·14	2·82	5·90	3·18	9·89	6·22	4·95	3·17
Skilled worker ..	1·41	7·17	4·71	1·86	6·25	1·19	4·05	2·02	6·98	4·56	18·54	6·17	11·86	3·90
Unskilled worker ..	30·83	27·25	59·99	38·11	62·93	51·33	57·79	25·41	69·17	59·66	38·00	21·73	37·97	28·27
Cultivator ..	5·24	6·04	12·15	1·70	6·89	2·04	6·35	1·93	7·07	2·70	12·08	3·66	16·41	5·53
Professional work ..	1·31	1·59	1·78	2·63	2·81	1·55	3·11	1·20	3·22	2·82	3·99	1·67	4·27	1·78
Traders and businessmen ..	1·75	1·88	6·37	1·32	5·06	1·07	6·21	1·27	3·98	1·49	9·41	4·33	5·83	1·73
Clerical workers ..	0·50	1·15	1·46	0·32	1·50	0·57	1·53	0·48	1·38	1·21	2·53	0·93	4·58	2·21
Others ..	41·40	24·75	4·99	10·35	4·57	0·70	2·94	1·34	2·21	5·43	0·70	29·41	3·88	25·45
No occupation ..	17·23	24·36	1·06	40·30	1·50	28·22	2·88	63·53	0·09	18·95	4·86	25·88	10·25	27·96
Total ..	100·00	100·00	100·00	100.00	100·00	100·00	100·00	100·00	100·00	100·00	100·00	100·00	100·00	100·00

TABLE 4

Percentage distribution of acceptors according to monthly income

Monthly income Rs.	1966-67	1967-68	1968-69	1969-70	1970-71	1971-72	1972-73	1973-74
1	2	3	4	5	6	7	8	9
Below 50	26·08	28·74	24·29	15·80	21·45	12·85	7·47	8·75
50-99	56·06	57·12	61·83	65·97	59·91	70·34	70·00	68·59
100-149	6·57	8·77	9·79	11·22	9·89	10·77	11·86	13·14
150-199	2·46	3·06	2·12	3·91	5·57	2·16	5·01	3·43
200+	1·83	2·31	1·97	3·10	3·18	3·88	5·66	6·09
Total	100·00	100·00	100·00	100·00	100·00	100·00	100·00	100·00

TABLE 5

Number of children living to I.U.C.D. adopters from 1966-74

No. of children	1966-67	1967-68	1968-69	1969-70	1970-71	1971-72	1972-73	1973-74
0	0·08	0·02	0·09	0·07	..	..	..	..
1	5·03	6·35	7·99	9·04	9·73	11·47	13·49	13·29
2	16·74	19·06	24·77	25·61	28·32	28·55	29·30	30·10
3	22·99	24·88	27·34	27·10	28·52	26·27	25·51	24·97
4	20·16	20·60	18·46	18·08	17·04	17·13	15·66	16·13
5	15·04	13·80	10·52	10·11	7·98	8·58	8·38	8·33
6	9·87	8·18	6·00	5·69	4·53	4·23	4·18	4·21
7	5·74	4·22	2·89	2·67	1·97	2·31	2·05	1·94
8	2·74	1·83	1·20	1·04	1·14	0·85	0·73	0·68
9	0·98	0·72	0·45	0·42	0·51	0·38	0·33	0·26
10	0·41	0·24	0·20	0·13	0·21	0·19	0·12	0·05
10+	0·22	0·10	0·09	0·04	0·05	0·04	0·05	0·04
Total	100·00	100·00	100·00	100·00	100·00	100·00	100·00	100·00

TABLE 6

Percentage distribution of acceptors according to Age—Districts—1971-72 to 1973-74

Districts	15-19	20-24	25-29	30-34	35-39	40-44	45+	Total
Trivandrum ..	2·27	28·90	34·02	23·82	10·11	0·80	0·08	100·00
Quilon ..	3·17	28·21	30·39	32·65	13·26	2·15	0·17	100·00
Alleppey ..	3·30	28·17	31·42	19·50	14·05	3·14	0·42	100·00
Kottayam ..	3·85	33·58	31·01	17·27	11·89	2·19	0·21	100·00
Idikki ..	2·90	35·81	30·50	17·66	10·14	2·90	0·09	100·00
Ernakulam ..	3·66	29·23	31·05	20·30	12·55	2·75	0·46	100·00
Trichur ..	1·25	20·31	32·87	23·39	17·01	4·50	0·67	100·00
Palghat ..	2·51	20·39	46·32	17·91	11·13	1·67	0·07	100·00
Malappuram ..	3·27	21·54	31·76	24·19	16·91	1·95	0·38	100·00
Kozhikode ..	4·30	32·08	33·27	19·30	9·08	1·79	0·18	100·00
Cannanore ..	3·56	25·60	32·39	24·60	12·50	1·35	..	100·00

TABLE 7

Percentage distribution of I.U.C.D. adopters according to religion—Districts—1971-72 to 1973-74

Districts	Hindu		Christian		Muslim		Total
	Percentage of I.U.C.D. adopters	Percentage in General population	Percentage of I.U.C.D. adopters	Percentage in General population	Percentage of I.U.C.D. adopters	Percentage in General population	
1	2	3	4	5	6	7	8
Trivandrum ..	78·72	70·72	16·03	17·26	5·25	12·02	100·00
Quilon ..	72·74	63·65	19·24	23·52	8·02	12·82	100·00
Alleppey ..	67·19	65·50	28·77	27·63	4·04	6·85	100·00
Kottayam ..	60·93	48·63	34·99	46·93	4·08	4·42	100·00
Idikki ..	58·55	..	34·45	..	7·00	..	100·00
Ernakulam ..	54·48	46·13	38·17	41·54	7·35	12·33	100·00
Trichur ..	70·95	61·11	23·83	25·18	5·22	13·69	100·00
Palghat ..	86·67	76·03	3·18	2·69	10·15	21·26	100·00
Malappuram ..	67·90	34·03	2·15	1·99	29·95	63·93	100·00
Kozhikode ..	72·53	62·13	13·65	7·15	13·86	30·63	100·00
Cannanore ..	78·99	66·23	8·56	9·40	12·46	24·34	100·00
Total ..	70·98	59.41	20·78	21·05	8·24	19·50	100·00

TABLE 8

Percentage distribution of I.U.C.D. acceptors according to number of children living—1971-72 to 1973-74

Districts	Number of children living							Total
	1	2	3	4	5	6	6+	
1	2	3	4	5	6	7	8	9
Trivandrum ..	10·83	35·87	30·59	14·64	4·89	1·86	1·32	100·00
Quilon ..	15·09	30·26	24·35	15·96	7·79	3·90	2·65	100·00
Alleppey ..	14·19	29·15	24·97	16·14	8·67	4·06	2·82	100·00
Kottayam ..	16·34	30·70	22·38	14·36	8·49	4·25	3·48	100·00
Idikki ..	12·11	27·43	24·13	16·06	9·91	4·95	5·41	100·00
Ernakulam ..	15·52	33·64	23·09	12·48	8·34	3·54	3·39	100.00
Trichur ..	8·61	23·97	26·06	18·84	10·42	6·10	6·00	100·00
Palghat ..	10·39	27·94	24·38	19·74	9·23	5·02	3·30	100·00
Malappuram ..	10·51	20·23	21·60	20·27	11·92	7·57	7·90	100·00
Kozhikode ..	14·37	28·57	23·65	16·43	10·07	4·12	2·79	100·00
Cannanore ..	9·55	22·86	24·21	20·58	11·23	6·59	4·98	100·00

TABLE 9

District rates of I.U.C.D. insertion

Districts	Rates per 1000 females population						
	1967–68	1968–69	1969–70	1970–71	1971–72	1972–73	1973–74
1	2	3	4	5	6	7	8
Trivandrum ..	6·54	8·42	6·56	14·25	3·28	2·69	2·76
Quilon ..	4·69	4·05	4·97	9·72	4·30	2·70	2·79
Alleppey ..	5·84	4·12	6·28	8·60	3·37	2·79	3·06
Kottayam ..	3·75	3·02	3·75	5·77	1·63	2·95	2·50
Idikki ..	..	..	..	..	..	..	..
Ernakulam ..	3·73	3·49	2·94	3·57	0·67	1·85	1·27
Trichur ..	3·28	2·42	2·59	4·98	0·74	1·04	1·38
Palghat ..	4·15	4·38	3·73	5·52	2·19	1·47	1·86
Malappuram ..	..		..	..	1·15	1·69	1·62
Kozhikode ..	1·49	0·99	0·91	1·27	0·59	0·70	0·78
Cannanore ..	1·26	1·14	1·32	1·44	0·43	0·40	1·17
State ..	3·74	3·48	3·54	3·10	1·68	1·95	1·93

TABLE 10

Rate of I.U.C.D. acceptors per 1000 eligible couples

Districts	1967–68	1968–69	1969–70	1970–71	1971–72	1972–73	1973–74
1	2	3	4	5	6	7	8
Trivandrum ..	27·5	37·8	28·2	28·9	12·0	9·8	10·0
Quilon ..	20·1	17·4	21·7	19·3	10·8	10·1	10·5
Alleppey ..	22·2	15·7	24·1	15·8	11·5	9·5	10·4
Kottayam ..	15·1	12·4	15·6	10·6	5·8	10·6	9·0
Idikki ..	..	..	..	..	..	..	..
Ernakulam ..	15·4	14·4	12·4	7·3	2·7	7·4	5·1
Trichur ..	11·5	8·4	9·1	8·7	2·5	3·5	4·7
Palghat ..	16·6	17·4	14·8	8·3	6·7	4·5	5·7
Malappuram ..	..	..	..	4·2	3·7	5·1	5·2
Kozhikode ..	7·4	5·0	4·5	2·1	1·7	2·0	2·2
Cannanore ..	4·2	3·9	4·3	2·1	1·4	1·3	3·8
State ..	13·7	12·8	13·1	10·4	5.6	6·6	6·3

TABLE 11

Percentage of couples protected (cumulative) I.U.C.D.

Districts	1966–67	1967–68	1968–69	1969–70	1970–71	1971–72	1972–73	1973–74
1	2	3	4	5	6	7	8	9
Trivandrum ..	3·56	4·66	6·29	6·67	6·98	5·90	4·75	4·10
Quilon ..	2 59	3·40	3·31	4·43	4·67	3·94	3·63	3·44
Alleppey ..	2·85	3·76	3·95	4·73	4·63	4·06	3·65	3·61
Kottayam ..	1·96	2·57	2·82	3·25	3·15	2·58	3·37	2·84
Ernakulam ..	2·01	2·62	3·00	3·12	2·80	2·13	2·27	1·79
Trichur ..	1·48	1·94	2·05	2·19	2·24	1·77	1·56	1·50
Palghat ..	2·12	2·81	3·37	3·58	3·21	2·84	2·41	1·99
Malappuram ..	..	..	..	..	..	0·51	0·79	0·82
Kozhikode ..	0·97	1·54	1·29	1·28	1·08	0·85	0·77	0·71
Cannanore ..	0·55	0·71	0·82	0·92	0·81	0·68	0·59	0·58
State ..	1·77	2·32	2·66	2·93	2·86	2·47	2·21	2·01

1·7 A STUDY OF THE SECOND MASS VASECTOMY CAMP IN KERALA

(Held at Ernakulam in July 1971)

CONTENTS

A STUDY OF THE SECOND MASS VASECTOMY CAMP IN KERALA

(Held at Ernakulam in July 1971)

1. *Introduction.*—Ernakulam District in Kerala State which won the unique distinction of having conducted vasectomy operation on a massive scale through organised camp in 1970 conducted its second camp in July 1971 in which it set up an international record. The second camp was conducted from 1st July 1971 to 31st July 1971. This 31 day camp, which was publicised as "Kudumbaksheema Maholsava" (Family Welfare Festival) achieved an all-time record of 62,902 vasectomy operations in the main camp held in the gaily decorated Town Hall at Ernakulam. As a part of the main camp, sub-camps and minicamps were organised in the taluk and municipal areas of the District, where necessary clinical facilities were available. In these camps 516 tubectomy operations were performed thereby making the total number of sterilisation operations during the camp to 63,418. The remarkable achievement of this camp is quite striking when compared to the earlier camp held from 20th November 1970 to 20th December 1970 at the same place when 15,005 vasectomy operations were achieved.

The socio-economic and demographic particulars of the persons who underwent sterilisation in the first camp were published in the report "Population Studies No. 114" issued by the Demographic Research Centre of the Bureau of Economics and Statistics. The present report gives a statistical appraisal of the socio-economic and demographic particulars of the persons who underwent vasectomy operations in the second camp.

2. *Organisation of the camp.*—The main camp was held at the Town Hall at Ernakulam. Initially only a target of 20,000 vasectomy operations was fixed. The target was subsequently revised to 30,000 and again to 50,000. But the actual achievement far exceeded these targets. It may further be noted that the achievement in this camp alone far exceeded the annual target fixed for the whole State by the Department of Health Services.

The credit of the success of the camp goes to the efficient organisation of the camp. The facilities provided for the acceptors in respect of their transportation to and from the camp, the speedy completion of the formalities like registration, disbursement of incentives, etc., and above all the attractive clinical services for the safe conduct of the sterilisation operations deserve mention.

3. *Incentives to the acceptors.*—The liberal incentives offered to the acceptors was a major factor of their attraction to the camp. The incentives to each acceptor with their equivalent money value are listed below:

	Rs.	
(*i*) Usual cash payment from Government	21 29	for male for female
(*ii*) Special cash payment from Government	14	
(*iii*) Cash payment from local bodies	10	
(*iv*) Contribution packet from CARE (containing articles like sarees, dhoti, umbrella, etc., and a plastic bag)	40	
(*v*) One week's free ration for the family	14	
(*vi*) Lottery ticket	1	
Total	100	

In addition to the above the acceptors were given free of cost, (*i*) Transport to and from the camp, (*ii*) Refreshment and lunch, (*iii*) Medicines and tonic. The Camp conducted also lottery in favour of the acceptors with the following prizes on the tickets issued to them free of cost.

	Rs.	
One prize	10,000	
3 prizes	1,000	each
5 prizes	500	,,
10 prizes	250	,,
82 prizes	100	,,

The promoters of the acceptors were give Rs. 10 for each case of vasectomy or tubectomy promoted.

4. *Objects of the study* —The present report attempts (*i*) to study the distribution of the acceptors over various administrative divisions in the Rural and Urban sectors, (*ii*) to analyse the socio-economic and demographic characteristics of the persons who underwent vasectomy operations in the main camp; (*iii*) to assess the impact of the operations in terms of births saved and (*iv*) to estimate the cost for vasectomy operation.

5. *Data used.*—The details regarding the socio-economic and demographic characteristics were collected and compiled by the District Statistical staff at Ernakulam. The collection of data was done on a sample basis. The declaration forms furnished by the

persons coming for operation was the main source for the data. These forms contained details regarding acceptor's age, age of his wife, religion, income, occupation, educational status and the number of living children. 25 per cent of the declaration forms of the acceptors for each day was selected at random. The data have been collected from 14,149 persons sterilised in the camp. The details presented is the total of the data for the 31 days. The other particulars dealt with in the report are collected from the District Medical Officer, Ernakulam.

6.1. *Regional distribution of acceptors.*—The original target fixed for the camp was 20,000. This was later revised to 50,000. But by the end of the month, even this was exceeded reaching a record figure of 62,902. The average achievement per day was thus above 2,000. The achievement of the 1st camp at Ernakulam was 15,005. The 2nd camp had an achievement more than 4 times the 1st camp.

It will be interesting to analyse the achievement on the basis of the place of the persons. In the first camp, all the persons except 342, came from the district itself. But in the second camp the pattern has changed very much. Only about 31 per cent of the acceptors were from Ernakulam District. Of the remaining 43,494 acceptors, 5 persons came from outside the State. The distribution of the remaining 43,489 cases according to the districts is given below:

TABLE 1

Distribution of vasectomy cases from outside, Ernakulam District according to District of origin

District	*Number*	*Percentage*
Trichur	12330	28·35
Kottayam	11556	26·57
Alleppey	10716	24·64
Quilon	4896	11·26
Trivandrum	2191	5·04
Malappuram	715	1·64
Kozhikode	423	0·97
Palghat	411	0·95
Cannanore	246	0·57
Unspecified	5	0·01
Total	43489	100·00

The distribution reveals some interesting peculiarities. The proximity to Ernakulam is naturally the most important factor. The three adjacent districts of Trichur, Kottayam and Alleppey account

for about 80 per cent of the vasectomy acceptors outside, Ernakulam District. The percentage difference of acceptors between these districts is only less than 5 per cent. As the distance from the camp increases the number of acceptors of vasectomy decreases. When we come to Quilon District, the percentage decreases to 11 and in the case of the southern most District Trivandrum, the percentage is only 5. In the case of northern districts, the rate of achievement is still lower. Only less than 2,000 vasectomy acceptors are reported from all the 4 districts north of Trichur. This shows that proper organisation and attractive incentives can make such camps serve persons in far off places also.

The achievement of the camp in respect of acceptors within the District was also more than that of previous camp as the number of acceptors in the camp is 19,253 against 15,005 acceptors in the previous camp. The Panchayat and block-wise distribution of the 19,253 acceptors is presented in the detailed table appended to the report. The appendix also gives a comparison of the block-wise and Panchayat-wise achievements of the two camps in terms of the achievement per 1,000 population and in terms of achievement per 100 eligible couples.

6.2. *Panchayat-wise distribution of acceptors.*—The frequency distribution of the Panchayats in the district according to the rate of achievement of sterilisation per 1,000 population given in Table 2 below reveals the progressive response to the family planning methods in the second camp as compared to the 1st camp.

TABLE 2

Distribution of Panchayats according to the rate of achievement

Rate of sterilisation per 1,000 population		*Number of Panchayats according to achievement in*		
		1st camp	*2nd camp*	*cumulative*
(1)		(2)	(3)	(4)
Below 5	..	31	5	1
5– 9	..	46	32	10
10–14	..	19	44	17
15–19	..	2	14	30
20 and above	..	1	4	41
Total	..	99	99	99

The figures in the above table show that the number of panchayats with higher rate of sterilisation achievement per 1,000 population has

considerably increased in the 2nd camp. While 30 per cent of the panchayats in the district, belonged to the class of 'below 5' sterilisation per 1,000 population in the first camp, it was less than 5 per cent in the 2nd camp as more panchayats moved to the classes of higher rates of achievement of 10 or more sterilisation/1,000 population in the 2nd camp whereas the corresponding percentage in the 1st camp was less than 25. Alakode Panchayat has the least rate in the second camp. This panchayat has a rate below 5 sterilisation/1,000 population even after the two camps. The highest rate of achievement is reported from Arakulam Panchayat. More than 70 per cent panchayats were able to achieve a cumulative rate of 15 or above, sterilisation per 1,000 population as a result of the two camps.

6.3. *Achievement in urban areas.*—The urban areas (only Municipal towns) reported a lower rate of achievement compared to the rural areas in the second camp. While in the first camp the average urban rate of achievement of sterilisation per 1,000 population was slightly higher (7·7) than the rural rate (7·4), in the 2nd camp the urban rate dropped to 6·4 sterilisation per 1,000 population while the rural rate went up to 11 sterilisation per 1,000 population. One probable reason for this may be that large number of couples in the Municipal towns might have had adopted sterilisation even before the massive camps. The eligible couples now available for sterilisation would therefore be lower in these towns.

In order to study the relation between rate of achievement in the various blocks in the two camps, the rank correlation coefficient method has been used. The rank correlation coefficient is worked out between the ranks of the different blocks in the district in the two camps according to the rate of achievement of sterilisation per 1,000 population. The rank correlation coefficient works out 0·53. This shows that the achievements of the blocks in the two camps are highly correlated. This indicates that the blocks which reported relatively high rates of achievements in the 1st camp did so in the second camp also.

7.1. *Characteristics of the sterilised persons.*—The characteristics of the persons who underwent the operation in the camp are studied in the paragraphs that follow. The characteristics considered are (*i*) age, (*ii*) age of the wife of the sterilised person, (*iii*) religion, (*iv*) educational status, (*v*) income, (*vi*) occupation and (*vii*) the number of children living. As already mentioned, the data for this study have been collected from a 25 per cent sample of declaration forms. The sample size is 14,149.

7.2. *Age.*—The ages of the sterilised person and of his wife are important factors as regards the timing of sterilisation. Vasectomy of a person whose wife is in the fag end of her reproductive period has obviously very little saving of births compared to sterilisation of a person whose wife is in the early or middle years of reproductive period.

Table 3 below gives the distribution of sterilised persons according to their age and that of their wives.

TABLE 3

Distribution of sterilised persons according to age

Age group	*Age of husband*		*Age of wife*	
	Number	*Percentage*	*Number*	*Percentage*
(1)	(2)	(3)	(4)	(5)
15–19	..	..	189	0·3
20–24	881	1·4	9939	15·8
25–29	7611	12·1	17235	27·4
30–34	13461	21·4	16480	26·2
35–39	16921	26·9	15348	24·4
40–44	13083	20·8	3397	5·4
45–49	9561	15·2	314	0·5
50 and above	1384	2·2	..	..
Total	62902	100·0	62902	100·0

Comparatively more persons are drawn for the sterilisation from the age group of 30–44 years. These age groups accounts for 70 per cent of the males sterilised. When the age of wife is considered it is seen that relatively more persons whose wives are in the age group of 25–39 have accepted the sterilisation. That is, as much as 78 per cent of the persons who underwent sterilisation had their wives in the age group 25–39.

In the study of the 1st camp the age of the vasectomised person alone was considered. According to that study 85 per cent was in the age group 30-49 years. When this age group is considered the figure is more or less the same for the two camps. The above percentages point out the trend in adoption of sterilisation. Very few adopt sterilisation in the early years of their married life. The comparison with the figures of the 1st camp shows that sterilisation is increasingly adopted by young couples. The percentage of sterilised persons in 20–29 age group has increased from 9·5 per cent in the first camp to 13·5 per cent in the 2nd camp.

The median age of sterilised persons in the 2nd camp works out to 37·3 years as against 39·1 years in the first camp. When the age of the wives of sterilised persons is considered, the median age works out to 30·7 years in the second camp. The age of wives of sterilised persons was not studied in the first camp and so the comparable figure in the first camp is not quoted.

7.3. *Religion.*—The differential acceptance of family planning by various religious groups is presented in Table 4 below:

TABLE 4

Distribution of sterilised persons according to religion

Religion		*Number*	*Percentage (2nd camp)*	*Corresponding percentage in the first camp*
(1)		(2)	(3)	(4)
Hindu	..	42836	68·1	54·9
Christian	..	16606	26·4	37·1
Muslim	..	3460	5·5	8·0
Total	..	62902	100·00	100·00

The percentage of Hindus is more than that in the 1st camp and those of Christians and Muslims are less than those in the 1st camp. The relative popularity among various religions cannot be assessed since the population from which the sterilised persons came is not exactly known in view of the fact that only 31 per cent of persons came from Ernakulam District and the rest came from other districts in varying proportions. However the expected percentage of the 3 religious groups in the population from which the sterilised persons came have been worked out as weighted average of the percentage of persons in each religion according to 1961 census in the 10 districts of Kerala, the weights being the number of persons sterilised from each district in the camp. These estimates indicate that the population from which the sterilised persons have been drawn in the 2nd camp is composed of 55·9 per cent Hindus, 34 2 per cent Christians and 9 9 per cent of Muslims. On the basis of these percentages it can be seen that among sterilised persons the percentage of Hindus is considerably higher and those of Christians and Muslims are considerably lower as compared to the corresponding estimated percentages in the general population from which the persons have come for sterilisation.

7.4. *Education.*—The common feature noticed about the educational status of sterilised persons is that illiterate persons adopt sterilisation only rarely. Comparatively higher percentage from the higher educational strata come forward to accept sterilisation. Table 5

given below presents the distribution of sterilised persons according to educational status:

TABLE 5

Distribution of sterilised persons according to educational status

Educational status	*Number*	*Percentage*
(1)	(2)	(3)
Illiterate	12832	20.4
Literate below primary	28690	45.5
Passed primary but below middle	16417	26.1
Passed middle but below matric	3397	5.4
Matric and above	1666	2.6
Total	62902	100.0

The impact of education can be studied by comparing the various educational status groups in the above frequency distribution with those in the general population. According to 1961 Census of Kerala, among males aged 20—59 years, 29.1 per cent of persons were illiterate, 48.5 per cent were literate without educational level, 14.6 per cent passed primary or junior basic and 7.8 per cent passed matriculation and above. A comparison of the distribution of sterilised persons with these figures shows that comparatively fewer persons from the illiterate group and matric or above group came for sterilisation. This comparison may not be fully valid because of the fact that the basic figures used for comparison relate to the whole of Kerala population which is not exactly the population from which the camp has attracted persons. The literates who have passed primary standard but have not attained matric constitute only 15 per cent of male population aged 20—59 years. But among sterilised persons their percentage is more than double that in the general population (31.5). It may be that while the lower proportionate representation of illiterates may be due to lack of sufficient motivation, that of the educated group may be due to the social inhibition in attending such a publicised camp.

7.5. *Income.*—The income of the sterilised person is an important factor in view of the fact that the incentives provided in the camp to the acceptors were very high compared to the usual incentive and this factor alone might have attracted many acceptors to the camp. The distribution of the acceptors according to income is given in Table 6 below:

TABLE 6

Distribution of sterilised persons according to monthly income

Monthly income	*Number*	*Percentage*	*Corresponding percentage in the first camp, 1970*
(1)	(2)	(3)	(4)
Below Rs. 50	6164	9.8	77.3
,, 50–99	43466	69.1	
,, 100–149	9561	15.2	19.6
,, 150–199	2013	3.2	2.5
,, 200–499	1447	2.3	
,, 500 and above	252	0.4	0.6
Total	62902	100.0	100.0

The income distribution shows that 79 per cent of the acceptors had a monthly income below Rs. 100, 18 per cent between Rs. 100–199 and only 3 per cent had a monthly income of Rs. 200 and above. The comparison with the figures of the last camp shows stricking similarity. The liberal incentives awarded in the camp have attracted a large number of acceptors from the lower income strata.

7.6. *Occupation.*—The distribution of sterilised persons according to occupation is given in Table 7:

TABLE 7

Distribution of sterilised persons according to occupation

Occupation	*Number*	*Percentage*	*Corresponding percentage in the first camp*
(1)	(2)	(3)	(4)
Agricultural labourers and other unskilled workers	37112	53.0	64.3
Cultivators and farmers	12769	20.3	15.7
Skilled worker	5787	9.2	9.7
Professional worker	1761	2.8	2.5
Trade and Commerce	2642	4.2	4.8
Clerical workers	252	0.4	0.4
Others	2390	3.8	2.4
No occupation	189	0.3	0.2
Total	62902	100.0	100.0

The distribution of the acceptors according to occupational pattern remained more or less the same in the first and second camps, the only difference being that from the agricultural sector, a relatively larger percentage of agricultural labour have been motivated for accepting sterilisation in the camp. This position further corroborates the fact that most of the acceptors in the camp came from the lower income groups.

7.7. *Number of children.*—Table 8 gives the distribution of the sterilised persons according to the number of children living:

TABLE 8

Distribution of sterilised persons according to number of children living

Number of children living	*Number*	*Percentage*	*Corresponding percentage in the first camp*
(1)	(2)	(3)	(4)
1	315	0.5	0.5
2	13776	21.9	22.3
3	16543	26.3	27.6
4	12580	20.0	18.6
5	9184	14.6	12.8
6	5725	9.1	11.7
7	2956	4.7	4.1
8	1258	2.0	1.3
9	377	0.6	1.1
10 and above	189	0.3	..
Total	62902	100.0	100.0

The percentage of acceptors with three or less children living was 49 per cent in the second camp as against slightly above 50 per cent in the first camp. The average number of children living per acceptor works out 3.89 in this camp as against 3.85 in the previous camp. Though the differences in the figures are only nominal, one may be led to think that comparatively speaking motivational efforts in second camp had not been as effective as in the first camp.

8. *Impact of the camp.*—The success of the camp has paved the way for organising similar camps in other parts of the State and outside the State. The demographic impact of the camp in terms of births saved, is assessed using the age distribution of the wives of sterilised persons given in Table 3 and the age specific marital fertility rates obtained from sample registration scheme conducted by

he Bureau of Economics and Statistics. The number of births that will be saved in the next year will be 15,098 births. The sterilisation will have their effect in saving births as long as the wives of sterilised persons are in reproductive period and both partners survive.

According to the general norm fixed by the Department of Family Planning, Government of India, about 1.7 births are saved during 10 years time as a result of each sterilisation. The total number of births saved according to this estimate is 106,933 in ten years.

The population of Kerala according to the provisional figures of 1971 census is 212.[illegible]0 lakhs. The sterilisations conducted in the camp work to 2.9[illegible] per 1000 population.

9. *Expenditure of the camp.*—The total expenditure of the camp is worked out as Rs. 92.06 lakhs—Rs. 91·21 lakhs for vasectomy operation and Rs. 0.85 lakh for tubectomy operations. The average expenditure for vasectomy works out to Rs. 145 and that per tubectomy to Rs. 166. About 79 per cent of the expenditure in the case of vasectomy and 81 per cent of the expenditure in the case of tubectomy form the incentives given to the acceptors. About 7 per cent of the expenditure for vasectomy and 6 per cent of expenditure for tubectomy form the benefits to the promoters.

The above details have been taken from the report issued by the District Collector, Ernakulam.

10. *Summary and conclusions.*—Only 31 per cent of the vasectomy cases are from Ernakulam District 80 per cent of the remaining cases are from the adjacent districts of Kottayam, Alleppey and Trichur.

Vasectomy is becoming popular among males in the younger age groups compared to the previous camp. Comparatively few illiterate persons have adopted vasectomy.

The average number of children living is 3.89 at the time of sterilisation.

It is estimated that about 1.07 lakh births will be saved in 10 years by the sterilisations conducted in the camp.

About 0.15 lakh births will be saved in the first year.

APPENDIX

Detailed tables on Block/Panchayat/Town-wise achievement in Massive Vasectomy Camps at Ernakulam

Name of Block and Panchayat	Population 1961	Achievement		Rate per 1000 population			Number of eligible couples	Rate per 100 couples		
		1st camp	2nd camp	1st	2nd	Total		1st	2nd	Total
1	2	3	4	5	6	7	8	9	10	11
1. *Vadavukode Block*—	83181	617	950	7·4	11·4	18·8	12876	4·8	7·4	12·2
Puthencruz Panchayat ..	15885	155	228	9·7	14·4	24·1	2390	6·5	9·5	16·0
Thiruvaniyoor ,, ..	12478	55	141	4·4	11·3	15·7	1925	2·9	7·3	10·2
Poothrikka ,, ..	12109	86	134	7·1	11.1	18·2	1836	4·7	7·3	12·0
Ikkaranad ,, ..	10998	81	118	7·4	10·7	18.1	1650	4·9	7·2	12·1
Kunnarapuram ,, ..	13555	72	149	5·3	11·0	16·3	2350	3·1	6·3	9·4
Mazhuvannoor/ Irapuram ,, ..	18156	168	180	9·3	9.9	19·2	2725	6·2	6·6	12·8
2. *Parakkadavu Block*— ..	74140	520	1203	7·0	16·2	23·2	11110	4·7	10·8	15·5
Nedumbassery Panchayat ..	15083	152	322	10·0	21·3	31·3	2250	6·8	14·3	21·1
Parakkadavu ,, ..	17015	110	217	6·5	12·8	19·3	2550	4·3	8·5	12·8
Chengamanadu ,, ..	13479	84	219	6·2	16·2	22·4	2025	4·1	10·8	14·9
Puthenvelikkara ,, ..	16728	121	246	7.2	14·7	21 9	2510	4·9	9·8	14·7
Kunnukara ,, ..	11835	53	199	4·5	16·8	21·3	1775	3·0	11·2	14·2
3. *Vyttila Block*— ..	31838	254	295	8·0	9·3	17·3	4775	5·3	6·2	11·5
Maradu Panchayat ..	17017	162	164	9·5	9·6	19·1	2550	6·4	6·4	1 ·8
Kumbalam ,, ..	14821	92	131	6·2	8·8	15·0	2225	4·1	5·9	10·0
4. *Paruo Block*—	94458	617	1250	6·5	13·2	19·7	14205	4·3	8·8	13·1
Chendamangalam Panchayat ..	21998	99	204	4·5	9·3	13·8	3 00	3·0	6·2	9·2
Eythikara ,, ..	11573	81	164	7·0	14·2	21·2	1700	4·6	9·3	13·9
Kottuvally ,, ..	20500	103	362	5·0	17·6	22·6	3045	3·3	11·7	15·0
Chitrapukara	17204	0	192	7·5	11·1	18·6	2610	5·0	7·4	12·4

APPENDIX—(*cont.*)

Name of Block and Panchayat	Population 1961	Achievement		Rate per 1000 population			No. of eligible couples	Rate per 100 couples		
		1st camp	2nd camp	1st	2nd	Total		1st	2nd	Total
1	2	3	4	5	6	7	8	9	10	11
Vadakkekara Panchayat ..	23073	204	328	8·8	14·2	23·0	3450	5·9	9·5	15·4
5. *Koovapoody Block*— ..	86117	491	887	5·7	10·3	16·0	13120	3·7	6·8	10·5
Mudakuzhi Panchayat ..	10224	75	137	7·3	13·4	20·7	1550	4·8	9·0	13·8
Asamamoor ,, ..	10230	94	163	9·2	16·0	25·2	1550	6·1	10·5	16·6
Vengoor ,, ..	13533	69	210	5·1	14·8	19·9	2025	3·5	9·9	13·4
Rayamangalam ,, ..	19251	145	146	7·5	7·5	15·0	3045	4·8	4·8	9·6
Koovappady ,, ..	32879	108	241	3·3	7·3	10·6	4950	2·2	4·9	7·1
6. *Kothamangalam Block*— ..	92849	460	1040	4·9	11·2	16·1	14250	3·2	7·3	10·5
Kavalangad Panchayat ..	11862	125	221	7·9	13·9	21·8	2400	5·2	9·2	14·4
Pindimana ,, ..	9995	52	108	5·2	10·8	16·0	1500	3·5	7·2	10·7
Kottapady ,, ..	9970	54	138	5·4	13·8	19·2	1500	3·6	9·2	12·8
Keerampara ,, ..	8939	44	95	4·8	10·6	15·4	1450	3·0	6·6	9·6
Kothamangalam ,, .	22541	116	227	5·1	10·1	15·2	3500	3·3	6·5	9·8
Varapetty ,, ..	9536	27	105	2·8	11·0	13·8	1450	1·9	7·2	9·1
Neelikuzhi ,, ..	16006	42	146	2·6	9·1	11·7	2450	1·7	6·0	7·7
7. *Pambakuda Block*—	99078	1175	1236	11·9	12·5	24·4	14920	7·9	8·3	16·2
Koothattukulam Panchayat ..	11363	156	239	13·7	21·0	34·7	1710	9·1	14·0	23·1
Palakuzha ,, ..	9701	60	77	6·1	7·9	14·0	1400	4·1	5·3	9·4
Thirumaradi ,, .	12717	117	150	9·2	11·8	21·0	1920	6·1	8·0	14·1
Elanji ,, ..	12998	59	99	4·5	7·6	12·1	1950	3·0	5·1	8·1
Pampakuda ,, ..	12216	171	110	13·9	9·0	22·9	1810	9·4	6·1	15·5
Ramamangalam ,, ..	10695	267	113	24·9	10·6	35.5	1630	16·2	7·0	23·2
Piravam ,, .	18337	223	271	12·2	14·8	27·0	2760	8·1	9·8	17·9
Maneed ,, ..	11051	122	177	11·0	16·0	27·0	1660	7·3	10·7	18·0

8. *Mulanthuruthy Block*—	103287	1154	1365	10·8	12·8	23·6	15960	7·2	8·6	15·8
Edakattuvayal Panchayat ..	11824	142	179	12·0	15·1	27·1	1800	7·1	10·0	17·1
Amballoor ,, ..	13724	123	209	8·9	15·2	24·1	1950	6·3	10·7	17·0
Udayamperoor ,, ..	17932	245	214	13·6	11·9	25·5	2700	9·1	8·0	17·1
Mulamthuruthy ,, ..	14135	133	191	9·4	14·0	23·4	2130	6·2	9·3	15·5
Thiruvamkulam ,, ..	18637	227	262	12·1	14·1	26·2	2790	8·1	9·4	17·5
Thripunithura ,, ..	30035	284	303	9·4	10·1	19·5	4590	6·2	6·6	12·8
9. *Vypeen Block*—	119037	936	1443	7·9	12·1	20·0	17890	5·2	8·1	13·3
Elamkunnapuzha Panchayat..	26468	217	315	8·1	11·9	20·0	3975	5·5	7·9	13·4
Narakkal ,, .	16105	103	206	6·4	12·8	19·2	2430	4·2	8·2	12·4
Nayarambalm ,, .	17129	62	142	3·1	6·3	11·4	2560	2·4	5·5	7·9
Edavanakad ,, ..	14023	88	71	6·3	5·1	11·4	2100	4·2	3·4	7·6
Kuzhupilly ,, ..	18858	93	132	10·5	14·9	25·4	1345	6·9	9·8	16·7
Pallipuram ,, ..	20103	253	427	12·4	20·9	33·3	3000	8·3	13·9	22·2
Mulavukad ,, .	10046	120	150	7·5	9·3	16·8	2400	5·0	6·2	11·2
10. *Edappilly Block*—	355[illegible]4	423	591	7·6	10·6	18·2	8330	5·1	7·1	12·2
Cherai[illegible]loor Panchayat ..	12401	56	84	4·5	6·8	11·3	1860	3·0	4·5	7·5
Kadamakkudy ,, ..	9229	41	114	4·4	12·3	16·7	1400	2·9	8·1	11·0
Thrikkakara ,, .	16674	221	146	13·2	8·8	22·0	2490	8·9	5·9	14·8
Kalamassery ,, .	17210	105	247	6·1	14·3	20·4	2580	4·1	9·6	13·7
11. *Alangad Block*—	81221	644	1011	7·9	12·4	20·3	12410	5·2	8·1	13·3
Varapuzha (Eloor) Panchayat ..	27939	216	324	7·7	11·6	19·3	4310	5·0	7·5	12·5
Karumalloor ,, .	16558	144	256	8·1	15·5	23·6	2490	5·8	10·3	16·1
Alangad ,, .	19821	137	248	7·1	12·9	20·0	3000	4·6	8·3	12·9
Kadungalloor ,, .	17103	147	183	8·4	10·4	18·8	2630	5·6	6·9	12·5
12. *Angamaly Block*	122695	934	1200	7·6	9·8	17·4	18440	5·1	6·5	11·6
Angamaly Panchayat .	18801	132	187	7·0	9·9	16·9	2840	4·6	7·6	12·2
Kalady ,, ..	16278	76	171	4·7	10·5	15·2	2410	3·1	7·0	10·1
Kanjoor ,, ..	12227	67	104	5·5	8·5	14·0	1860	3·6	5·6	9·2

APPENDIX—(*cont.*)

Name of Block and Panchayat	Population 1961	Achievement		Rate per 1000 population			No. of eligible couples	Rate per 100 couples		
		1st camp	2nd camp	1st	2nd	Total		1st	2nd	Total
1	2	3	4	5	6	7	8	9	10	11
Sreemoolanagaram ,, ..	12659	144	163	11·3	12·8	24·1	1970	7·5	8·5	16·0
Malayattoor ,, ..	13177	82	128	6·2	9·7	15·9	1900	4·1	6·4	10·5
Manjapra ,, ..	13182	131	131	9·9	9·9	19·8	1900	6·6	6·6	13·2
Thuravoor, Mookkannoor ,, ..	20183	161	176	7·9	8·7	16·6	3000	5·4	5·9	11·3
Karukutty ,, ..	16045	141	140	8·8	8·7	17·5	2400	5·9	5·8	11·7
13. *Vazhakulam Block*—	80062	923	785	11·5	9·8	21.3	11980	7·7	6·5	14·2
Vazhakulam Panchayat .	13355	113	94	8·5	7·0	15·5	2000	5·7	4·7	10·4
Vengola ,, .	17385	2·0	155	14·4	8·9	23·3	2590	9·0	6·0	15·0
Keezhumal ,, ..	13507	171	114	12·7	8·4	21·1	2020	8·5	5·6	14·1
Edathala ,, ..	9000	107	82	11·1	8.5	19·6	1440	7·4	5·7	13·1
Cheranelloor ,, ..	10.05	140	162	13·7	15·9	29·6	1580	9·2	10·6	19·8
Kizhakkambalam ,, ..	10009	142	178	8·9	11·1	20·0	2400	5·9	7·4	13·3
14. *Palluruthy Block*—	36786	276	443	7·5	12·0	19·5	5505	5·0	8·0	13·0
Kumbalangy Panchayat .	16500	178	239	10·8	14·5	25·3	2475	7·2	9·6	16·8
Chellanam ,, .	20286	98	204	4·3	10·1	14·4	3030	3·2	6·7	9·9
15. *Muvattupuzha Block*—	88298	452	766	5·1	8·7	13·8	13150	3·4	5·8	9·2
Piravam/Paipra Panchayat	14930	49	228	3·3	15·3	18·6	2250	2·2	10·1	12·3
Valadom ,, .	11965	178	92	14·9	7·7	22·6	1800	9·9	5·1	15·0
Marady ,, ..	7827	36	41	4·6	5·2	9·8	1200	3·0	3·4	6·4
Ayarana ,, ..	12203	34	67	2·8	5·5	8·3	1880	1·9	3·7	5·6
Pothanikkad ,, ..	11777	42	130	3·6	11·0	14·6	1770	2·4	7·3	9·7
Paigattoor ,, .	9989	80	101	8·0	10·8	18·8	1500	5·3	7.2	12·5
Avoly ,, ..	7945	15	29	1·9	3·6	5·5	1100	1·4	2·6	4·0
Arakkuzha ,, ..	11662	18	71	1·5	6·1	7·6	1740	1·0	4·1	5·1

16. *Thodupuzha Block*—	79857	289	488	3·6	6·1	9·7	11900	2·4	4·1	6·5
Kaikorkkad Panchayat ..	10139	15	56	1·5	5·5	7·0	1510	·9	3·7	4·6
Kumaramangalam ,, ..	12154	51	69	4·2	5·7	9·9	1820	2·8	3·8	6·6
Manjallur ,, ..	9937	35	44	3·6	4·4	8·0	1450	2·4	3·0	5·4
Manakkad ,, ..	10·27	47	68	4·3	6·3	10·6	1620	2·9	4·2	7·1
Purappuzha ,, ..	8495	25	55	2·9	6·5	9·5	1250	2·0	4·4	6·4
Thodupuzha ,, ..	19142	97	168	5·0	8·8	13·8	2900	3·3	5·8	9·1
Karinkunnam District ..	9163	19	28	2·1	3·1	5·2	1350	1·4	2·1	3·5
17. *Elavedesam Block*—	122459	529	1073	4·3	8·8	13·1	18240	2·9	5·9	8·8
Kudayathoor Panchayat ..	9723	29	43	3·0	4·4	7·4	1360	2·1	3·2	5·3
Vazhathope ,, ..	14169	122	190	16·1	27·2	43·3	2120	10·7	18·2	28·9
Arakkkulam ,, ..	..	106	196	..	..	..	.	..	..	..
Karikode ,, ..	11623	25	57	2·2	4·9	7·1	1740	1·4	3·3	4·7
Alakode ,, ..	17011	13	45	0·8	2·6	3·4	2550	0·5	1·8	2·3
Valliyamattam ,, ..	12070	48	92	4·0	7·6	11·6	1800	2·7	5·1	7·8
Kodikkulam ,, ..	15791	79	174	5·0	11·0	16·0	2370	3·3	7·3	10·6
Udumpannur ,, ..	17107	45	127	2·6	7·4	10·0	2550	1·8	5·0	6·8
Muttam ,, ..	7907	33	99	4·2	12·5	16·7	1200	2·8	8·2	11·0
Karimannur ,, ..	17058	29	50	1·7	2·9	4·6	2540	1·1	2·0	3·1
Unclassified ..	..	..	2	..	..	..	..	..	..	..
Total ..	1453897	10760	16028	7·4	11·0	18·4	219031	4·9	7·3	12·2
Urban—										
Alwaye Municipality ..	26800	104	102	3·9	3·8	7·7	3700	2·8	2·8	5·6
North Parur ,, ..	20350	101	207	4·8	9·9	14·7	3650	2·7	5·7	8·4
Perumbavoor ,, ..	16150	54	85	3·3	5·3	8·6	2420	2·2	3·5	5·7
Muvattupuzha ,, ..	22900	100	122	4·4	5·3	9·7	3400	2·9	3·6	6·5
Cochin Corporation ..	416830	3544	2709	8·5	6·5	18·0	62500	5·7	1·3	10·0
Total ..	503590	3903	3225	7·7	6·4	13·1	75670	5·1	4·3	9·4
Grand total ..	1957487	14663	19253	7·5	9·8	17·3	294701	5·0	6·5	11·5

1·8. TRICHUR MASS VASECTOMY CAMP 1972—AN ANALYSIS

TRICHUR MASS VASECTOMY CAMP, 1972—AN ANALYSIS*

1. *Introduction.*—The Mass Vasectomy Camps evolved during the course of implementation of the Family Planning Programme in India, have proved quite an innovation. The fore-runners of these camps are the famous Ernakulam Camps (November–December 1970 and July 1971) which have rightly earned world-wide attention and reputation. The demographic efficacy of quite a large number of sterilisations during a very short period, has been realised by the administrators of the programme. A month long vasectomy camp was held at Trichur during the period 7th February to 7th March 1972.

2. *Objects of the study.*—The present study proposes to analyse (1) the demographic and socio-economic characteristics of the persons sterilised at the camp, (2) the cost of running the camp, and (3) to assess the impact of the camp. Wherever possible the results of the analysis will be compared with the corresponding aspects of other camps. The data used for this study were collected by the District Statistical staff during the camp by interviewing all acceptors.

3. *Trichur District.*—As a background to the study, it may be relevant to sketch briefly, the demographic features of the district and achievements of family planning programme in the district prior to the camp. Trichur District is centrally located in the State with a population of 21·29 lakhs in 1971. This forms 9·99 of the States population. The decennial population growth rate of 26·09 per cent is very near to that of the State. The density of population per sq. km. is 702, as against 549 for the State as a whole. The district continues to hold the singular distinction of having the highest sex ratio 1081 females per 1000 males in 1971, while that of the State is only 1016. The literacy level is 61·6 per cent just above that of the State (60·4). The proportion of urban population of the district (11·75 per cent) is much less than that of the State (16·3 per cent). Of the population of the district, 25·18 per cent are Christians, 13·71 per cent Muslims and 61·11 per cent Hindus.

4. *Family Planning Programme in the district prior to the camp.*—The progress of achievement of the programme of family planning in the district prior to 1972, depends mostly on the number of vasectomies, which increased till 1967–68 and decreased thereafter. However, the number of tubectomy operations was on the increase. The number of vasectomy operations in 1971–72, was less than 500 until January. The achievement of tubectomy and I.U.C.D. also has been much lower than the State average during years. Table I in the appendix presents the performance of the programme in the district. The cumulative achievent in the district without considering attrition works out to only

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* This was prepared by Dr. R. S. Kurup and Sri P. S. Gopinathan Nair of the Demographic Research Centre, Trivandrum. The services of Sri P. Gopinathan Nair, Research Assistant are acknowledged.

15 per cent of the eligible couples in 1972. The magnitude of the work that remains is evident. This fact along with a very high density of population, relative industrial backwardness and increasing population growth rate in the district (from 20·32 per cent during 1951–61 to 26·09 per cent in 1961–71) ustify any measure which would be successful in controlling the population.

5. *Salient features of the camp.*—The camp was organised by the District Collector. The main camp for male sterilisation was held at the Town Hall, Trichur, and mini-camps at Koratty, Mulamkunnathukavu and Viyyur. Facilities for female sterilisation were provided at the various Maternity Hospitals in the District.

The target of the camp was 15,000 vasectomies but achievement was 20·223 including 126 in the mini-camps. Besides, 699 female sterilisations were also done.

The monetary incentive offered for each acceptor of sterilisation was Rs.65.50 in cash. Besides, free ration for one week, meals, light refreshments and transport facilities were provided to the acceptors. The remuneration for the promoter was Rs.7 for each case.

It is not known whether all the acceptors were entered previously in the eligible couple register for the villages in the District.

6. *Rejected cases.*—2,144 persons, who were registered for sterilisation were rejected, out of a total of 22,366 males registered. This accounts for 9·6 per cent of the total cases registered. It will be interesting to analyse the rejected cases on the basis of cause of rejection, as presented in the following Table:

TABLE 6 (a)

Distribution of rejected cases on the basis of cause of rejection

Cause of rejection	*Number*	*Percentage*
1. Operated earlier	465	21·7
2. Hydrocile	456	21·2
3. Scabies	363	16·8
4. Senility	316	14·7
5. Wife not in reproductive age/ attained menopause	223	10·3
6. Hernia	60	2·8
7. Not willing	31	1·4

Cause of rejection	Number	Percentage
8. Anaemia	20	0·9
9. Azoorpesnice	18	0·9
10. Only one child	16	0·7
11. Skin disease	15	0·7
12. Unmarried	13	0·7
13. Semen examination refused	11	0·6
14. Semen negative	9	0·5
15. Venerial disease	6	0·3
16. Other reasons	122	5·8
Total	2144	100·0

Nearly 22 per cent of the rejected cases were sterilised earlier and have again volunteered for sterilisation, perhaps in view of the higher incentive money. In the Trivandrum Camp also, 16 per cent of the rejected cases were sterilised earlier.

7. *Characteristics of the acceptors.*—The characteristics of the acceptors are usually analysed in great details, as the impact of the family planning achievement varies considerably with their characteristics. While the demographic impact is dependent on age and parity of the acceptor in the case of tubectomy, and wife of the acceptor in the case of vasectomy, the socio-economic characteristics will reveal those segments of the society that have already been brought into the fold of the programme and those segments that are resisiant and remain to be tackled.

7.1. *Age of acceptors.*—The age distribution of vasectomised person is given in Table 7.1(a) and that of the wives in Table 7.1(b) along with the corresponding percentages in Kerala during 1957–67, and in the 1st and 2nd Ernakulam Camps for purposes of comparison.

TABLE 7·1 (a)

Percentage distribution of vasectomised persons by age

Age-group	Trichur Camp	Kerala State 1957–67	Ernakulam 1st camp 1970	Ernakulam 2nd camp 1971	Trivandrum Camp–January 1972
15–19	..	..	0·01	..	..
20–29	8·9	8·1	9·48	13·5	131·0
30–39	49·5	54·2	44·28	48·3	45·95
40–49	42·9	37·7	40·88	36·0	21·61*
50 and above	7·7	..	5·35	2·2	17·01**

* Relates to the age-group 40–44.
** Relates to the age-group 45 and above.

In the above table, broad age-groups are given for purposes of comparison. 40·5 of the vasectomised cases belong to the broad age-group of 30–39 years while 49·4 per cent are below 40 years of age This is less than the corresponding percentage in the other columns, showing thereby that the sterilised persons in Trichur Camp are much older than in other places. The percentage of acceptors in the age-group 50 years and above, is also high. The mean age of the vasectomised persons works out to the rather high figure of 40·29 years.

TABLE 7·1 (b)

Age distribution (percentage) of the wives of persons vasectomised and of tubectomised persons

Age-group	*Trichur camp*	*Ernakulam 2nd camp*	*Trivandrum camp*	*Tubectomised Persons*	
				Trichur camp	*Trivandrum camp*
(1)	(2)	(3)	(4)	(5)	(6)
15–19	0·23	0·3	0·51	0·15	0·14
20–24	11·25	15·8	20·29	9·44	20·77
25–29	22·75	27·4	29·38	32·76	38·24
30–34	23·75	26·2	23·84	27·61	24·76
35–39	27·93	24·4	21·70	25·32	14·30
40–44	11·25	5·4	3·89	4·15	1·24
45 and above	2·84	0·5	0·37	..	0·41
Not recorded	..	..	0·02	0·57	0·14
Total	100·00	100·00	100·00	100·00	100·00

The mean age of the wives is 33·15, while the corresponding figures of the 1st and 2nd Ernakulam Camps are 32·2* and 31·3* years respectively and 33·7* years for Kerala State. In respect of tubectomised persons also, lower acceptance from younger age groups and higher acceptance from higher age groups, as compared to Trivandrum Camp is evident.

Bearing in mind the normal errors of age reporting and the possibilities of deliberate mis-statement of age during camps, the above tables reveal that a substantial chunk of sterilisations will not have much impact on fertility reduction. There is thus a need for motivating younger couples to accept family planning. The programme and camp administrators may therefore have to intensify propaganda to enlist younger couples in future camps, so as to ensure maximum benefit for

*Veena soni—The Ernakulam Camps, An analysis; page 32. The Ford Foundation, September 1971.

the expenditure incurred. Old couples may resort to the services available under the normal programme, where the compensation amount is less when compared to that in the camps.

7·2. *Religion.*—In a population consisting of sub-populations based on different religions, any serious difference in family planning practice leading to differential reduction in fertility among religious groups, is likely to be viewed with suspicion by those sub-populations whose rate of acceptance is relatively higher than others.

The analysis of characteristics of acceptors under the normal programme and of earlier camps has shown a lower rate of acceptance of Muslims. In the present case also, though the Muslims form 13 7 per cent of the population of the District their percentage among the persons vasectomised at the camp, is only 6·8 percent. Evidently their representation is only 50 percent. In the case of Christians who form 25 2 percent of the District population, their percentage among sterilised males is 21·6. They are better represented than the Muslims. 71·6 percent of the sterilised males are Hindus, their proportion in the total population being 61·1 percent.

Among the 699 tubectomy acceptors, 68·95 percent are Hindus, 25.77 per cent Christians and 5·28 per cent Muslims.

Looking into the age distribution of acceptors in each religious group, it is seen that a larger percentage of acceptors in the Muslim community are of lower age groups compared to others.

TABLE 7·2 (a)

Percentage distribution of sterilised males according to religion and age

Age-group	*Hindus*	*Christians*	*Muslims*
(1)	(2)	(3)	(4)
20–24	0·48	0·69	1·30
25–29	7·91	8·54	11·13
30–34	15·75	16·69	19·01
35–39	23·83	24·92	27 26
40–44	21·84	21·17	18·67
45 and above	30·12	27·91	22·57

The median age of Hindus, Christians and Muslims works out to 40·5, 40·1 and 38·8 respectively.

7.3. *Education.*—Perhaps educational backwardness, rather than religious considerations might be the primary cause of lower acceptance, among certain religious group.

In order to study this, the educational level of the sterilised will have to be compared with that of the general population. But the information on educational level by religion is not available for the district. Hence such a comparison is not possible. However the educational level of the sterilised persons is analysed in the following table:

TABLE 7·3 (a)

Percentage distribution of sterilised males according to religion and educational status

Educational status	*Hindus*	*Christians*	*Muslims*	*Total*
Illiterate	26·72	13·53	32·31	24·25
Below primary	44·38	57·55	37·92	46·78
Below middle	15·07	17·20	16·85	15·65
Below Matric	4·79	5·26	2·75	4·76
Matric and above	3·70	3·50	2·39	3·59
Literate but not specified	1·36	0·76	1·09	1·22
Not recorded	3·98	2·20	6·66	3·75

It is seen from the above Table that almost 1/3 of the Muslim acceptors are illiterate, as against only 13.5 among Christians and 26·7 per cent among Hindus. It is also noteworthy that the percentage of acceptors who are Matric and above from the Muslims is lower than from the other two groups. Again, more than 71 percent of the total acceptors are below the level of primary education. The wide publicity and extension work preceding the camp seem to have succeeded in netting a very large percentage from the educationally backward strata. The general level of literacy in the district is 48·6 percent in 1961 and 61.61 percent in 1971. The educational distribution of tubectomised persons reveal quite a different picture as may be seen from the following Table:

TABLE 7·3 (*b*)

Percentage distribution of sterilised females according to religion and educational status

Educational status	*Hindus*	*Christians*	*Muslims*	*Total*
Illiterate	8·30	5·00	5·41	7·30
Below primary	37·55	43·33	35·14	38·91
Below middle	13·90	14·44	5·41	13·59
Below matric	9·34	7·78	2·70	8·58
Matric and above	4·77	1·67	8·11	4·15
Literate but not specified	0·21	0·56	..	0·29
Not recorded	25·93	27·22	43·23	27·18

Quite unlike men, illiterate women do not seem to have been attracted by the camp to any appreciable extent, in any of the religious group. The more educated (Matric and above) among the Muslim women seem to have willing come forward in larger numbers to accept this method.

7·4. *Income.*—The distribution of male and female acceptors of sterilisation is given below:

TABLE 7·4 (a)

Percentage distribution on the basis of monthly income

Monthly Income	*Sterilised males*		*Sterilised female*	
	Number	*Percentage*	*Number*	*Percentage*
Below Rs. 50	1456	7·2	34	4·9
50—99	13330	65·9	146	20·9
100—149	3257	16·1	5	0·7
150—199	1117	5·5	3	0·4
Above Rs. 200	783	3·9	6	0·9
Not recorded	280	1·4	505	72·2
Total	20223	100·00	699	100·0

It is evident from the table that the large majority of the male acceptors are in the low income category of Rs. 100 per month. Only a very small minority of just 4 percent are in the income group Rs. 200 and above per mensem. As regards tubectomy cases 72 per cent has not given this information.

To enable comparison of the income distribution of acceptors of Trichur camp, two tables are given below—One for males and the other for females.

TABLE 7·4 (b)

Trend in the percentage distribution of vasectomised persons on the basis of monthly income

Income group (Rs.)	*Ernakulam 1st camp (1970)*	*Ernakulam 2nd camp (1971)*	*Trivandrum camp (1972)*
Below Rs. 50	77·3	9·8	2·1
50–99		69·1	45·7
100–149	19·6	15·2	28·4
150–199		3·2	14·3
200 and above	3·1	2·7	8·5
Not recorded	..	..	1·0

TABLE 7·4 (c)

Trend in the percentage distribution of tubectomised persons on the basis of monthly income

Income group	*Kerala State*			
	*1967–68**	*1968–69**	*1969–70**	*Trivandrum camp–1972*
Below Rs. 50	29·8	22·6	9·5	4·4
50–99	57·8	59·0	74·7	23·7
100–149	6·9	8·9	6·9	1·0
150–199	3·3	4·3	4·4	0·1
Rs. 200 and above	2·2	5·2	4·5	2·3
Not recorded	..	..	..	68·5

* Not recorded cases not considered.

7·5. *Occupation.*—The differential acceptance by various occupational groups and the corresponding data for some other camps are given in the following Table:

TABLE 7·5 (a)

Occupation distribution (percentage) of sterilised persons

Occupation	Males		Females			
			Ernakulam			
	Trivandrum	Trivandrum	1st camp	2nd camp	Trichur camp	Trivandrum camp
Agricultural labourer ..	20·8	40·17	64·3*	59·0*	5·3	2·34
Skilled workers ..	15·7	16·30	9·7	9·2	0·3	21·75
Unskilled workers ..	41·0	21·80	..	..	16·2	23·80
Cultivators and farmers ..	7·7	5·22	15·7	20·3	..	..
Professional workers ..	0·8	1·42	2·5	2·8	0·6	1·93
Traders and business men ..	6·7	5·61	4·8	4·2	0·4	0·14
Clerical workers ..	1·1	1·41	0·4	0·4	..	0·41
Others ..	5·1	7·41	2·4	3·8	..	0·27
No occupation ..	0·1	0·15	0·2	0·3	4·0	67·95
Not recorded ..	1·0	0·51	..	..	73·2	0·41
Total ..	100·00	100·00	100·00	100·00	100·00	100·00

* Includes unskilled workers also.

As may be seen from the above table, in all the camps, among the vasectomised persons, the large majority is from the category of agricultural labourers and unskilled workers. Compared to the two camps at Ernakulam a much smaller percentage of cultivators and farmers only have been netted for the Trichur camp; as against a higher percentage of skilled workers. This pattern is in conformity with that of Trivandrum camp.

Among the tubectomy cases of Trichur camp, for 73 of the cases occupation is not recorded at all. As such no reliable conclusion can be drawn. It is likely that the large percentage of no occupation cases of Trivandrum camp, might be of house wives. The same may apply to a substantial portion of the not recorded cases of Trichur camp.

7.6. *Number of living children.*—The number of living children to the acceptors at the time of sterilisation is an important indicator of the extent of possible reduction in fertility that could be attained and indirectly of the number of children desired by the acceptors. Among the vasectomy cases 42.4 per cent are having 3 or less than three children. The corresponding percentage for Trivandrum camp is 50.9 per cent and for the 2nd camp at Ernakulam 49 per cent. The detailed percentage distribution is given below, along with the figures available for other camps.

TABLE 7 6 (a)

Distribution per cent of sterilised males according to the number of children living

No. of children living	*Trichur camp*	*Trivandrum camp*	*Ernakulam 1st camp*	*Ernakulam 2nd camp*
(1)	(2)	(3)	(4)	(5)
0	..	..	..	..
1	0·9	0·7	0·5	0·5
2	18·8	24·7	22·3	21·9
3	22·7	25·6	27·6	26·3
4	19·6	17·6	18·6	20·0
5	15·5	13·2	12·8	14·6
6	10·9	8·9	11·7	9·1
6+	11·6	9·3	6·5	7·6

A higher proportion of acceptors with larger number of children, in Trichur camp is evident from the above Table.

Of the tubectomy acceptors, 42·8 percent are having less than three children, as against 53 4 per cent in respect of those who accepted tubectomy of Trivandrum camp.

Incidently, it may be remarked here that on analysing by sex of children living to acceptors, 5·6 percent did not have any male child

living and 9·8 per cent did not have any female child living. 84·6 per cent of the acceptors have children of both sexes.

8. *Type of promoters.*—As the camp aimed at total Community involvement, different categories of personnel were engaged in promoting cases. The relative effectiveness of these various categories could be judged by an analysis of the percentage of cases promoted by each promoter category. However, the data collected do not permit a detailed analysis. The available details are given in the following table. For tubectomy, the data are not of any use due to a large percentage (81·5) of "Not recorded" cases.

8 (a)—Percentage distribution of cases on the basis of promotor category

Type of promotor	*Percentage of cases (Vasectomy)*
Health staff	26·1
Village Revenue staff	35·3
Government servants	4·7
Others	29 4
No promoter	1·9
Not recorded	2·6

The predominant role of health and village staff in promoting cases is evident from the above table. The organisation of the camp under the leadership of the District Collector seems to have brought in a greater involvement of the village revenue staff. With their grass root contacts with the rural people, it is worth considering how their participation in the programme could be made more effective and on a permanent footing. It is also worth mentioning that the percentage of self promoted cases is only 1·9, as against 8·9 per cent for the 1st Ernakulam camp.

9. *Cost of the programme.*—The total expenditure incurred for the camp is Rs. 19·25 lakhs. The break-up of the total amount spent under various heads is given below:

TABLE 9 (a)

Breake-up of total expenditure

Item of expenditure		*Amount spent Rs.*
1. Allowances to acceptors.—		
(*a*) Vasectomy	..	13,24,541·00
(*b*) Tubectomy	..	51,376· 0
2. Fee to promoters:	..	1,44,998·00

TABLE 9 (a)—(*cont.*)

Item of expenditure		*Amount spent* *Rs.*
3. Allowances to Medical staff.—		
(*a*) Medical Officers	..	52,610·00
(*b*) Nurses	..	20,919·00
(*c*) Attenders	..	20,919·00
4. Lottery tickets	..	6,500·00
5. Medicine	..	34,874·00
6. Free food	..	29,700·00
7. Camp and publicity	..	83,227·40
8. Establishment	..	50,892·50
9. Miscellaneous and contingencies	..	11,756·55
10. Cost of petrol	..	75,368·25
11. Bus fare refund	..	17,343·50
Total	..	19,25,026·50

The expenditure per operation works out to Rs. 92. A statement showing the comparative expenditure per operation, average payment to acceptor etc., for the various camps held in the State, is given below.

TABLE 9 (b)

Comparative statement of cost and some of its components

Nature of item	Trichur camp February 1972	Ernakulam 1st camp November 1970	Ernakulam 2nd camp July 1971	Cannanore camp March 1972
1	2	3	4	5
	Rs.	Rs.	Rs.	Rs.
Average cost per vasectomy ..	92·00	*113·00	*145·00	93·00
Average payment to acceptor ..	69·86	**86·00	**114·00	81·90
Average promoter ..	7·00	**5·00	**10·00	8·00

*The story of the Ernakulam experiment in Family Planning—Published by the Government of Kerala.

**The Ernakulam camps—by Veena Soni—Ford Foundation, New Delhi.

It may be noted from the above table, that both the average, cost per vasectomy and payment to acceptor are the least in respect of Trichur camp.

10. *Births averted by the performance of the camp and economic benefit.*—It is seen that one sterilisation in Kerala will prevent 2·54 births during the course of 23 years. On this basis, the total sterilisations done at the main and mini camps, would prevent an estimated number of 53142 births, during the course of 23 years from 1973 onwards. The cost per birth prevention therefore will be only Rs. 36·22. Applying the same number of births prevention per sterilisation as above namely 2·54 the total prevented births that would result from the 2nd Ernakulam camp works out to 161082, with a cost of Rs. 57 per birth prevented. Thus, it is evident that the average cost per birth prevention of Trichur camp is much lower than that of the Ernakulam 2nd camp. Here, the differentials in age or number of children of acceptors of these individual camps or the prevailing fertility and mortality levels and the like are not considered due to paucity of data, though they are very important for purposes of comparison. The average economic value of a prevented birth is the difference between the cost of rearing a child during its period of dependency and the stream of benefits that would accrue during the period of work, after the child grows up. Since such a value is spread over a long period of time, its present value is obtained by applying a rate of discount. A conservative estimate of such a value is Rs. 1,500/. Since the births prevented by the sterilisations done at the camp, will be over a period of 23 years the equivalent number of births prevented as of the present date has to be considered. Alternately the economic value itself can be discounted once more. In that case the average economic value of a birth averted could be taken as Rs. 950*/. Applying this estimate to the number of births averted by the Trichur camp, the economic benefits that would accrue from this camp is of the order of Rs. 50·48 millions. Since the total cost of the Trichur camp is Rs. 19·25 lakhs, the benefit–coast ratio is 26 to 1. This is certainly much higher than that of other camps and of other programmes even though the figures may not be strictly comparable in all cases.

11. *Policy Implications.*—The above analysis leads to certain policy implications. In camps where distinctly higher incentive is offered, there is greater need to ensure the acceptance by persons from lower age and parity groups, so as to get better yield in terms of births averted. That a very large percentage (71 per cent) of camp acceptors is only rarely literate and have no education above primary standard shows that this stratum has been attracted to the camp, mainly by the higher incentive offered, supplemented perhaps by the motivational

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*The Ernakulam camps—An analysis by Veena Soni—The Ford Foundation of India, New Delhi.

efforts to a small extent. The need for intensifying the educational campaign, among this stratum is evident. Similarly the less than proportionate representation of Christians and Muslims, shows that new ways have to be devised to attract more acceptors from these religious groups.

APPENDIX

TABLE I

Progress of Family Planning in Trichur District

Year	*No. of male sterilisations*	*No. of female sterilisations*	*No. of IUCD insertions*
1964–65	1631	344	..
1965–66	3721	411	..
1966–67	4016	676	..
1967–68	5670	1001	3220
1968–69	4379	1137	2434
1969–70	3493	1463	2676
1970–71	2986	2026	2638
1971–72	429**	3042	..

**Excluding the achievement of the camp.

1·9. FAMILY PLANNING FESTIVAL AT CANNANORE (11-3-1972 to 10-4-1972)

CONTENTS

10. FAMILY PLANNING FESTIVAL AT CANNANORE

(11-3-1972 to 10-4-1972)

Introduction.—Family Planning Festival at Cannanore is one among the series of camps conducted in Kerala in 1972. A large number of persons accepted vasectomy as in the case of the two mass vasectomy camps held at Ernakulam. This has helped to exceed the targets fixed for the camp. The subsequent camps at Trivandrum and Trichur also showed the very same trend.

In the Cannanore camp, 15,409 persons have been sterilised. An amount of Rs. 14,33,463 has been spent on this camp which means an expenditure of Rs. 93 per sterilisation.

The present study is an analysis of the socio-economic and demographic characteristics of persons who accepted vasectomy in the camp held at Cannanore during the one month period from 11th March 1972 to 10th April 1972.

2. *Sterilisation in Cannanore District.*—The table below gives the progress of sterilisation in Cannanore District since 1964.

Period		*Number of sterilisation*	
1964–65	..	2024	19,352 sterilisation in 7 years.
1965–66	..	2012	
1966–67	..	2068	
1967–68	..	2126	
1968–69	..	2186	
1969–70	..	2247	
1970–71	..	2310	
1971–72	..	2403	

It is seen that the performance in the one month camp is about 80 per cent of the achievement in the seven years before the camp.

3. *Age composition.*—The median age of males who have undergone vasectomy operation in Cannanore camp is 40·25 years and that of their wives comes to 30·9 years. In Trivandrum camp and Ernakulam 1st camp and 2nd camp, the median age of acceptors stood at 37·2, 39 and 37·3 years respectively. It is obvious that the vasectomy acceptors of Cannanore camp are on an average older than the acceptors of other camps.

52 per cent of the persons sterilised in Cannanore camp are above 40 years of age where as only 41 per cent of the acceptors in Trivandrum camp and 38 per cent of the Ernakulam camp are above 40 years

of age. One noticeable feature with regard to the age of wives of persons sterilised in the Cannanore camp is that 80 per cent of the wives are in the age group 25–39 as against 70 per cent in Trivandrum camp and 78 per cent in Ernakulam 2nd camp.

In Trivandrum camp, a preliminary screening has been done before a person is accepted for vasectomy operation. Nearly 5 per cent of those who have come for vasectomy operation have been rejected on the ground that they are too old for vasectomy. In Cannanore camp, no such screening is done. So, 8 percent of the persons sterilised in this camp are above 50 years of age. In Ernakulam camp held in July 1971 only 2·2 per cent are reported to have passed 50 years (Table 1).

TABLE I

Distribution of persons vasectomised and their wives according to age in Cannanore, Trivandrum and Ernakulam II camps

Age-group	Age of male persons sterilised				Wives of persons sterilised			
	No. of persons sterilised in Cannanore camp	Cannanore camp held in 4/72	Trivandrum camp held in 1/72	Ernakulam camp held in 7/71	Wives of persons sterilised in Cannanore camp No.	Cannanore camp held in 4/72	Trivandrum camp held in 1/72	Ernakulam camp held in 7/71
1	2	3	4	5	6	7	8	9
15–19 ..	..	..	..	..	82	0·53	0·51	0·3
20–24 ..	42	0·27	0·63	1·4	2031	13·18	20·29	15·8
25–29 ..	924	6·00	12·47	12·1	4536	29·44	29·38	27·4
30–34 ..	2277	14·78	20·19	21·4	4108	20·66	23·84	26·2
35–39 ..	4084	26·50	25·76	26·9	3776	24·31	21·70	24·4
40–44 ..	3505	22·75	21·61	20·8	793	5·15	3·89	5·4
45–49 ..	3265	21·19	17·01	15·2	83	0·53	0·39	0·5
50–54 ..	1038	6·74	..	2·2	..	..	..	..
55–59 ..	249	1·61	..	..	..	..	..	..
60 and above ..	24	0·16	..	..	..	..	..	..
Total ..	15409	100·00	100·00	100·00	15409	100·00	100·00	100·00

4. *Religion.*—People from all major religious groups have accepted vasectomy in Cannanore camp. The differential acceptance of vasectomy by religious groups brings to light that Hindus are over

represented and Christians are fully represented and Muslims under represented if we consider the population of these religious groups in the district (Table II).

TABLE II

Distribution of persons sterilised according to religion

Religion	*No. of persons sterilised*	*Percentage*	*Percentage of population religion-wise in Cannanore district*
Hindus ..	12,679	82·28	66·23
Christians ..	1,516	9·84	9·40
Muslims ..	1,213	7·87	24·30
Others ..	1	0·01	0·03
Total ..	15,409	100·00	100·00

Age specific rate of acceptance of vasectomy by religion reveals that Hindu acceptors are older than Christian and Muslim acceptors. In the case of Christians, the largest number has come from 35–39 age group, while the largest number of Hindus and Muslims comes from 45 years and above age group. Another characteristic noticed is that only 4·7 per cent of the Hindu acceptors are below 30 years of age while 14 per cent of Christian acceptors and 11 per cent Muslim acceptors are below 30 years of age (Table III).

TABLE III

Age specific rate of acceptance of vasectomy operation by religions

Age group	Religions									
	Hindus		Christians		Muslims		Others		Total	
	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage
20–24 ..	21	0·165	7	0·461	14	1·154	..	..	42	0·27
25–29 ..	591	4·661	209	13·786	124	10·222	..	..	924	6·00
30–34 ..	1772	13·975	299	19·722	206	16·982	..	..	2277	14·78
35–39 ..	3332	26·279	427	28·166	324	26·710	1	..	4084	26·50
40–44 ..	2988	23·566	308	20·316	209	17·230	..	..	3505	22·75
45+ ..	3975	31·351	266	17·546	336	27·699	..	..	4577	29·70
Total ..	12679	100·00	1516	100·00	1213	100·00	1	.	15409	100·00

5. *Education*—Among the persons sterilised, 27 per cent are illiterate, 69 per cent are literate below matric standard and 3·5 per cent are above matric standard (Table IV). Table IV reveals that literates favour vasectomy more than illiterates. An interesting point to be noted here is that the main bulk of literates is from below matric standard. On an analysis of the educational standard of the sterilised persons of the various religious groups it is seen that 27·7 per cent of Hindus, 37·7 per cent of Muslims and 13 per cent of Christians are illiterates. The predominance of literates in this camp is partly due to the high literacy rate in Kerala as a whole. If the acceptance of family planning by the literates is a conscious attempt on the part of these persons it is a favourable symptom for the future of the programme.

TABLE IV

Distribution of sterilised males according to educational status and religion

Educational status	Religion									
	Hindus		Christian		Muslims		Others		Total	
	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage
1	2	3	4	5	6	7	8	9	10	11
Illiterates ..	3521	27·77	201	13·26	459	37·84	..	..	4181	27·13
Literate but below primary ..	4788	37·77	731	48·22	462	38·09	..	..	5981	38·82
Primary but below matric ..	3912	30·85	512	34·17	272	22·42	..	..	4702	30·51
Matric and above ..	458	3·61	66	4·35	20	1·65	1	100	545	3·54
Total ..	12679	100·00	1516	100·00	1213	100·00	1	100	15409	100·00

6. *Income*.—The incentive offered per sterilisation in the camp is greater than what is offered in the local hospitals. 85 per cent of persons sterilised in Cannanore camp have a monthly income, less than Rs. 100. In the Ernakulam camp held in 1971 and Trivandrum camp held in 1972, the percentages of persons with less than Rs. 100 are 79 and 48 respectively. Persons from the lower income

group are being attracted to vasectony camp in larger numbers. Table V reveals the distribution of persons according to monthly income in Cannanore, Ernakulam and Trivandrum camps.

TABLE V

Monthly income	No. of persons sterilised, Cannanore camp	Percentage distribution of sterilised persons		
		Cannanore camp held in 4/72	Ernakulam camp held in 1/72	Trivandrum camp held in 7/71
1	2	3	4	5
Less than Rs. 50 ..	2915	18·92	9·8	2·09
Rs. 50—99 ..	10118	65·66	69·1	45·70
Rs. 100—149 ..	1257	8·16	15·2	28·40
Rs. 150—199 ..	504	3·27	3·2	14·31
Rs. 200 and above ..	615	3·98	2·7	9·50
Total ..	15409	100·00	100·00	100·00

7. *Occupation.*—The occupational distribution of sterilised persons in the Cannanore camp brings to light that agricultural labourers form 41 per cent. The unskilled workers from 18 per cent and cultivators 17 per cent. This means that 3/4th of the persons sterilised in Cannanore camp are drawn from these 3 occupational groups.

TABLE VI

Distribution of sterilised persons according to occupation

Occupation	*No. of persons sterilised*	*Percentage*
(1)	(2)	(3)
Agricultural labourers ..	6280	40·76
Other unskilled workers ..	2741	17·79
Cultivators and farmers ..	2608	16·92
Skilled workers ..	2140	13·89
Professional workers ..	285	1·85
Traders and businessmen ..	696	4·52
Clerks ..	343	2·22
Other services ..	224	1·45
No occupation ..	92	0·60
Total	15409	100·00

8. *Number of children living.*—The average number of children living to a sterilised person is 4·17 at the time of seterilisation. Among the sterilised persons 6 percent have no male children living and 9 per cent have no female children living at the time of sterilisation as may be seen from Table VII.

TABLE VII

Distribution of sterilised males according to number of children living in each sex

No. of male children living	Number of female children living									
	0	1	2	3	4	5	6	7 and above	Total	Percentage
1	2	3	4	5	6	7	8	9	10	11
0	..	38	340	303	141	51	21	13	907	5·89
1	72	1675	1436	728	342	150	39	15	4457	28·92
2	552	1615	1297	779	359	137	42	9	4790	31·69
3	433	845	815	533	233	238	83	90	8	19·37
4	180	383	385	254	117	47	14	4	1384	8·98
5	87	177	163	95	47	18	1	3	591	3·84
6	36	64	47	43	11	3	2	1	207	1·34
7 and above	11	31	22	17	4	3	..	..	88	0·57
Total	1371	4828	4505	2752	1259	492	149	53	15409	100·00
Percentage	8·90	31·33	29·24	17·86	8·17	3·19	0·97	0·34	100	..

Impact of sterilisation on future births.—15409 sterilisation operations have been conducted in the camp at Cannanore. These sterilisations have their effect in saving future births as long as the wives of sterilised persons are alive and are in the reproductive ages. As one sterilisation in Kerala will prevent along 2·54 births in the course of 23 years, it can be seen that nearly 39139 births will be saved by the sterilisations done in the camp.

9 *Policy implications.*—Even in a district like Cannanore, where the progress of sterilisation under the normal programme has been in significant the concerted efforts of various departments and higher incentives could bring in a significantly higher number of acceptors in the short span of a month. This should be

an eye opener for administrators, in launching an intersified programme in districts, which lag behind in family planning performance. In order, that such achievements may not be followed by periods of lull, it is worth considering whether the gap between the incentives offered under the normal programme and the camp, could not be narrowed down.

The need to eliminate acceptors of higher age groups is also obvious. Innovative methods of motivating Muslims so as to increase the rate of acceptance among them, have to be devised.

Summary and conclusions.—The bulk of the sterilised persons belongs to 30–49 age group. 81 per cent of the wives of the sterilised persons are in 25–39 age group. Considering the general population of Cannanore district, one can see that Hindus among sterilised are over represented by 16 per cent and Muslims are under represented by 16 per cent. Christians among the sterilised showed the same proportion as in the general population of the district. A substantial number of Hindu and Muslim acceptors belongs to the ages 45 years and above.

Twenty seven per cent of the acceptors of vasectomy are illiterate. 69 per cent are literate but are below primary standard. 85 per cent of the acceptors have a monthly income of less than Rs. 100·75 per cent of the sterilised persons are drawn from the three categories—Agricultural labourers, unskilled workers and cultivators.

An average of 4·17 children are living at the time of sterilisation, 6 percent have no male children living and 9 per cent have no female children living at the time of sterilisation.

1.10. A FOLLOW UP STUDY OF THE FAMILY PLANNING ACCEPTORS IN THE MASS CAMP, TRIVANDRUM

CONTENTS

A FOLLOW UP STUDY OF THE FAMILY PLANNING ACCEPTORS IN THE MASS CAMP, TRIVANDRUM

1. *Introduction.*—The introduction of the mass vasectomy camps in Kerala has opened up a new chapter in the history of Family Planning Programme in India. The mass camp was concerned with the psychology of a mass movement and mass participation in the programme. Arrangements for bringing people together to the camp in the large groups that dispelled the stigma and taboos about the acceptance of birth control methods were really the magic of the mass camp.

History of the Mass Camps.—The mass vasectomy camp, as an experiment, was organised first in Ernakulam in November 1970 and subsequently in July 1971. In the first camp 15,005 and in the second camp 62,902 operations had been performed. An incentive valuing about Rs. 75 was given to every acceptor for undergoing vasectomy.

The demographic and some socio-economic characteristics of the acceptors in the two Ernakulam camps were published in the Demographic Research Centre reports numbered 66 and 73 of the Demographic Research Centre of the Bureau during the year 1971 and 1972 respectively.

Another mass camp of similar nature was organised for 15 days in Trivandrum from 16th January 1972. In this camp 15,582 persons had accepted vasectomy. The demographic characteristics of these acceptors were published under the title "A Report on the Family Planning Festival, Trivandrum" as D.R.C. report No. 74 of the Demographic Research Centre during the year 1972.

The findings in the above reports were based on the data collected from the acceptors at the camp site just before they proceeded to the operation theatre for sterilisation. These data represent the particulars of persons who have already taken a decision and are ready for sterilisation at the camp. This study could not cover several important factors like, the after-effects of sterilisation, the real cause of motivation, opinion about camp arrangements, suggestions for improvements to be made in the future camps, etc.

This report contains the results of the followup study conducted in respect of the vasectomy acceptors in the Trivandrum camp. It may be mentioned in this context that no follow up studies of this nature was undertaken about the vasectomy acceptors in the two earlier camps organised at Ernakulam. The present study is the first attempt in this direction by the Demographic Research Centre.

2. *Scope of the study.*—The main objectives of the study are to know:

(*i*) the socio-economic and demographic particulars of sterilised persons

(*ii*) their opinions and impressions about the camp arrangements

(*iii*) the role of incentives to motivate the acceptors

(*iv*) source of knowledge of the acceptors about the birth control methods

(*v*) Reasons for preference for the camp and

(*vi*) the after-effects of sterilisation

3. (*a*) *Method of data collection.*—The data for the study were collected on a sampling basis by two trained Investigators of the Bureau of Economics and Statistics under the supervision of the District Statistical Officer, Trivandrum. The respondents were selected randomly from among the persons sterilised at the mass camp, Trivandrum. The selected persons were interviewed in their households by the field investigators. The answers to the questions embodied in the schedules were carefully recorded. Certain questions that are of a subjective nature were explained and clarified to the respondents so as to aviod ambiguity of information.

(*b*) *Sample size and coverage.*—Out of a total of 15,582 persons sterilised in the mass camp, 312 persons were selected representing 2 per cent of the total acceptors. But only 256 persons could be actually interviewed. The sample was drawn randomly.

(*c*) *Period of the Survey.*—The survey started in July 1972 i.e., five months after the camp. The field survey continued for six months i.e. upto the end of December 1972.

4. Demographic characteristics of the acceptors.

4.1. *Religious distribution.*—Religious distribution of the persons interviewed is given in Table I. This shows that 73·83 per cent of the total sterilised persons are Hindus, 19·53 per cent Christians and only 6·64 per cent Muslims. The lower percentages of Christians and Muslims may be accounted for by their reluctance to accept family planning methods especially vasectomy.

Among the various Hindu communities, Nairs account for the largest number fo'lowed by Ezhavas and Nadars respectively. Pulayas and Asari communities rank fourth and fifth respectively.

Among Christians largest number is reported from among Nadars.

4.2. *Age distribution.*—Age distribution of acceptors is given in Table II. This table shows that 23·05 per cent of the acceptors belong to the age group 40–44, 21·09 per cent to 35–39 and 19·92 per cent to 30–34 age groups respectively.

The age distribution of the wives of vasectomy acceptors given in Table III shows that more than 63 per cent of the acceptors have their wives belonging to the age-group of 19–34. In more than 5 per cent of the cases, the wives belonged to 45–49 age group which is normally considered to be outside the reproductive span. The wives of some of the acceptors are above the age of 50 even though their proportion is very small.

4.3. *Educational status of acceptors.*—Educational status of acceptors is given in Table IV. This table shows that 67·19 per cent of the husbands have formal schooling. The corresponding figures for the wives is 57·81 per cent. The percentage of acceptors who can "read only" is 6·25 and read and write 1·56. As compared to the husbands the percentage of wives who can read and write is very low as 0·39. It is clear from Table IV that only 25 per cent of the acceptors have no formal schooling.

Table V shows the distribution of acceptors by education and religion. According to this table, no illiterate from any of the three religious groups have accepted vasectomy. 20·11 per cent of the Hindu acceptors are literate but below primary level while the corresponding figures for Christians and Muslims are 8 per cent and 41·18 per cent respectively. As compared to the other two religious groups, the Muslims have the highest percentage below primary. One of the notable points is that there is no Christian acceptor whose educational level is above that of middle standard. 42 per cent of the christians belong to the educational groups primary but below middle. All the Muslim acceptors are below matric level.

4.4. *Occupational status.*—According to Table VI, 46·10 per cent of the acceptors are agricultural labourers, 26·56 per cent unskilled workers and 12·89 are businessmen and merchants. Cultivators among the acceptors form only 4·30 per cent. It is seen that unskilled workers and agricultural labourers together form 72·66 per cent of the total acceptors. Skilled workers form only 1·56 per cent of the total acceptors.

Occupational status of the wives of the acceptors is shown in Table VII. As much as 84·77 per cent of the wives are household workers 6·64 per cent agricultural labourers and 5·08 per cent unskilled workers.

Occupational status of the acceptors and their wives as shown in Table VI and VII shows that most of the acceptors belong to the lower occupational groups like unskilled workers and agricultural labourers.

5. *Socio-economic conditions and family size of the acceptors.*

5 1. *Expenditure group.*—The distribution of acceptors according to their monthly expenditure is given in Table VIII. Table VIII shows that 49·22 per cent of the acceptors belong to the monthly expenditure group of Rs. 150-199, 20·31 per cent above Rs. 200. Only 1·95 per cent belong to the monthly expenditure below Rs. 50. It is seen from this table that 69·53 per cent of the total acceptors belong to the monthly expenditure of Rs. 150 and above.

5.2. *Type of houses.*—Table IX shows the type of houses of the vasectomy acceptors. Houses are categorised into three groups, namely (1) Hut, (2) Kutcha and (3) Pucca. A hut is defined as one with a thatched roof but with no wall, while kutcha is one with a thatched roof and walls. A pucca house is one with tiled or concrete roof and with walls. Among the three types 69·92 per cent of the acceptors reside in kutcha, 24·61 per cent in hut and 3·91 per cent in pucca and in the remaining 1·56 per cent cases the type of house is not recorded.

Types of houses of acceptors may be taken as indicators of their (1) economic conditions and (2) convenience for practising temporary birth control methods i.e., use of contraceptives in their own houses. 94·53 per cent of the total acceptors coming from kutcha houses and huts can be accounted for their economic backwardness.

5.3. *Number of children born.*—Table X shows the distribution of acceptors by the number of children born. It is seen that nearly 2/3 acceptors have 4 or more children born. About 3 per cent of the acceptors have no child and about 30 per cent have 3 or less children. Percentage of acceptors having one or two children is less than 15. The average number of children born to each acceptor is 4·5.

The distribution of acceptors according to the number of living children is given in Table XI. About 5·9 per cent of the acceptors have no living children and 21·1 per cent of the acceptors have only one or two living children. About 44·9 per cent of the acceptors have 3 or less living children including the acceptors having no living children. Average number of living children for an acceptor is 3·8 as against 4·5 born children.

5.4. *Occupation and number of children.*—Occupation of the acceptors and the number of living children to them is presented in Table XII. According to this table about 50 per cent of the acceptors are agricultural labourers, 27 per cent are unskilled labourers and 12 per cent are businessmen and merchants. As 90 per cent of the acceptors belong to the above three categories their number of children is relevant to indicate the relation if any between occupation and the number of children at the time of acceptance. Occupational groups other than the above three are not of much significance here.

There is not much significance regarding the average number of children at the time of acceptance among these three occupational groups. Average number of children for the acceptors belonging to agricultural labourers is 3·9 while the corresponding figures for unskilled workers and businessmen and merchants are 4 and 3·8 respectively.

Greater percentage of acceptors among the agricultural labourers and unskilled labourers have 3 children. But lager percentages of cultivators and businessmen have only 2 children. Table XII does not show any marked difference between occupation groups and the number of children at the time of acceptance of the occupational groups shown in Table XII.

Occupations of the wives of acceptors and the number of children are given in Table XIII. This table shows that 217 out of 256 wives are household workers. 24·43 per cent of the household workers have 3 children, 18·89 per cent have 4 children and 19·36 per cent have only 2 children. Average number of children for a household worker is 3·8.

5.5. *Education and number of children living.*—Table XIV shows the educational standard and the number of living children of the acceptors. The acceptors are classified into (1) literate below primary, (2) primary below middle, (3) below matric, (4) matric and above matric and (5) illiterates. It is seen in Table XIV that there is an inverse relation between educational standard and average number of children. In other words acceptors with higher educational level have lesser number of children on an average.

Average number of children for the acceptors who are literate but below primary is 4·6 which is decreasing to 3·5 for acceptors below middle, 3·2 for those who are below matric and 2·7 for matric and above. The average number of children for the illiterate acceptors is 4·6 which is exactly equal to that of literate below primary revealing thereby that the educational difference between the two groups is not in any way significant in their average number of children.

Educational standard of the wives of the acceptors and the number of children is given in Table XV to study the impact if any of wife's education, on the number of children. It is seen from this table also that there is a negative relationship between education and the number of children; the number of children is decreasing with the increase in educational standard. Average number of children for both the illiterates and the literates below primary standard is 4. Education below primary level has no impact in reducing the number of children as compared to the illiterates. Average number of children for the wives primary below middle is 3·6 as against 3·3 for those below matric and 2·5 above matric.

5.6. *Age at marriage and number of children.*—The relationship between age at marriage of wife and number of children will generally show the impact of the variation in age at marriage on the number of children born. It is particularly important at a time when the official view is to increase the marriage age of girls to reduce fertility. Age at marriage of the wives of vasectomy acceptors and their number of children is given in Table XVI.

No clear inference is possible from this table due to the very small sample size in the different categories considered.

6. *Knowledge of family planning.*

6.1. Table XVII shows the percentage of acceptors who had knowledge of family planning before accepting vasectomy in the mass camp. It is seen from this table that 87·49 per cent of the total acceptors had knowledge of family planning before coming to the camp.

The reason for the postponement of their acceptance of vasectomy until the mass camp are classified in Table XVIII. The major reasons why these acceptors had not accepted sterilisation earlier are (1) desire for more children and (2) fear of after effect. About 33 per cent of the acceptors feared adverse after-effects of vasectomy performed in the traditional health centres. 19·20 per cent were reluctant to undergo vasectomy operation due to the insufficiency of incentives. A fairly larger amount of monetary incentive in the camp was their attraction. Unfavourable health condition prevented 9·82 per cent of the acceptors from undergoing operation earlier. Only negligible proportion of cases are reported under other reasons.

Table XIX shows the percentage of acceptors who know the various family planning methods. According to this table 87·50 percent knew vasectomy, 6·24 per cent nirodh, 3·13 per cent P.P.S., 3·13 per cent I.U.C.D. and other methods. It appears from this table that knowledge of methods other than vasectomy was not known to many of the acceptors. Only 3·13 per cent of the acceptors knew about P.P.S.

6.2. *Prior use of Family Planning Methods.*—Table XX-A shows the number of persons who had used family planning methods before the camp. Out of 2·6 acceptors only 23 persons had used family planning methods before the camp. Average number of children, for those acceptors who had used family planning methods before the camp is 4·5. Nearly 34 per cent of them have only 2 children. Nearly 35 per cent of the users of family planning method used them for 1 o 3 years duration, 17·39 per cent for more than 5 years as is seen in Table XX-B.

Distribution of acceptors according to the age of the youngest child is given in Table XXI. It is seen from this table that the age

of the youngest child of 27·34 per cent of the total acceptors is 1—2 years, of 24·61 per cent 2–3 years, 15·63 per cent below one year. Age of the youngest child of 11·72 per cent of the acceptors is 3–4 years.

Table XXII shows, that the wives of 16·39 per cent of the acceptors were pregnant at the time of sterilisation.

7. *Reasons for preference for the camp.*—Table XXIII shows the distribution of acceptors by reason for preferring the mass camp to other health centres for vasectomy operation. Only 224 persons had preference for the camp and 32 persons had no preference even though they accepted vasectomy in the camp. Their acceptance was an accidental coincidence.

Out of 224 persons who preferred the camp, the reasons for the preference for 14·29 per cent was that they did not know vasectomy until the camp was organised 32·14 per cent preferred the camp for getting more remuneration, while 20·09 per cent for the services of expert doctors. It is significant to note that 17·86 per cent preferred the camp because of mass influence. Proximity to the camp promoted 8·03 per cent of the persons to accept vasectomy operation in the camp.

It is clear from Table XXIII that as much as 70·09 per cent of the people preferred the camp on account of such major reasons as the services of expert doctors, more remuneration and mass influence. Remuneration is seen to be all the more important from the fact that as much as 32·14 per cent of the acceptors preferred the camp only for more remuneration without any other consideration. Other reasons are of minor importance.

8. *Discussion with wives.*—Table XXIV shows the distribution of acceptors on the basis of their discussion with their wives about operation. It is seen that 66·80 per cent of the acceptors had discussed with their wives before they underwent vasectomy while 32·42 per cent had no discussion at all.

9. *Source of influence.*—

9.1. The distribution of acceptors on the basis of their knowledge or lack of knowledge of acceptance of vasectomy operation by their relatives, before the camp are shown in Table XXV. Nearly 68 per cent of the acceptors had knowledge of their relatives having undergone vasectomy prior to the camp. About 31 per cent of the acceptors had no such knowledge. That the persons having had previous knowledge of their relatives' acceptance constituting 68 per cent of the total acceptors shows that such knowledge might have induced them to undergo vasectomy operation. Propaganda about harmless acceptance of vasectomy will have impact upon the friends and relatives. This fact should not be lost sight of in the programming of family planning.

9.2. Distribution of acceptors by the source of influence for undergoing vasectomy is given in Table XXVI. According to this table 47·66 per cent of the persons accepted vasectomy without any external influence. Their acceptance was their own decision. But 25·39 of the respondents accepted vasectomy by the influence of their friends belonging to different professional categories as shown in the table. Out of all the persons who influenced the acceptors Health Assistants constitute 31·63 per cent, Midwives 15·31 per cent and Nurses 5·10 per cent. The fact that as much as 47·66 per cent of the total respondents accepted vasectomy with self decision shows their knowledge and need of birth control and the absence of fear or apprehension about the adverse after-effects of sterilisation.

10. *Source of knowledge of the camp.*—Table XXVII shows the various sources of knowledge about the camp. It is seen that 57 per cent of the total acceptors came to know about the mass vasectomy camp from publicity, which includes such audio-visual media as radio, mike, drama, kathaprasanga, etc. Newspaper accounts for only 5·90 per cent of the acceptors who have undergone vasectomy with external influence and 20 per cent from friends and relatives. All other source are of minor importance.

It is interesting to note that the role of professional promotors in spreading the knowledge of mass vasectomy camp is insignificant. Only 5·47 per cent of the acceptors came to know of the mass vasectomy camp from the promotors. It is reasonable to conclude from this table that to spread the knowledge of the camp publicity machinery should be improved and utilised. This is the most effective source of knowledge as is seen from the above table.

11. *Role of Remuneration.*—Acceptors preference for cash remuneration is displayed in Table XXVIII. About 94 per cent of the total acceptors preferred cash and only 5·47 per cent expressed their willingness to receive cash with their things. It is significant to note that the overwhelming importance given to cash remuneration shows that persons are undergoing vasectomy as if only for cash. A clear question was put to the acceptors to ascertain their willingness to accept Rs. 21, the amount of cash remuneration prevailing in the family planning health centres for a vasectomy operation. Their answers are classified and embodied in Table XXIX.

It is seen from the above table that 75·76 per cent of the acceptors are not willing to receive Rs. 21 as remuneration. This means that they want to get more remuneration in cash as is seen in Table XXVIII. Only 23·07 per cent of the total acceptors are prepared to receive Rs. 21 as remuneration. And most of the acceptors, in the course of their interview, expressed their views that substantial enhancement of remuneration alone could attract people to the vasectomy centres.

Incentives in kind include food articles, free entertainment, free transport, free food, clothings, etc.

12. *Period of convalascence.*—Distribution of persons according to the length of convalascence to resume their normal work is given in Table XXX. Nearly 40 per cent of the acceptors took 30–40 days to become fit for their normal work, 19 per cent took more than 50 days and only 5·86 per cent could do their work within 10 days.

Usually persons undergoing vasectomy operation, can resume their normal work after a week excepting certain hazardous work like climbing trees, cycling, sawing, etc. The period of convalascence is usually a week for the acceptors. But here about 64 per cent of the acceptors took more than 30 days to become fit for their normal work. The hazardous nature of work as well as the seriousness of complaints may be the reasons for this unusual length of time that 64 per cent of the acceptors took to resume their normal work. If this simple operation, results in the loss of several working days and thereby the wages for the poor labourers, an unwillingness among them, to undergo the operation is likely to develop. Hence, special attention may be bestowed upon the performance of operation in such a way as to reduce the period of convalascence to the maximum extent possible.

13. *Precautions observed.*—Table XXXI shows that 98·83 per cent of the acceptors have got advice for precaution after the operation. The percentage of acceptors who have observed various precautions advised for, are given in Table XXXII. It is seen from this table that all the acceptors have abstained from sexual relation and taken rest. Some of them used condom, some were free from alcoholic drinks, 25·30 per cent did not take alcohol in addition to rest for a few days.

The length of period during which the acceptors observed precaution is given in Table XXXIII. This table shows that 36·71 per cent of the acceptors did not assume normal work for 7 days, 10·94 per cent for 5 days and 21·87 per cent for 9 days. Vasectomy acceptors are usually advised to take rest for 7 days. Therefore, most of the persons assumed their normal work after 7 days. Only 10·60 per cent went to their normal work before 5 days.

Table XXXIV shows that 93·75 per cent of the acceptors removed their bandage by themselves. Only 6·25 per cent went to hospitals and health centres for removing bandage.

It is seen from Table XXXV that only 37·50 per cent of the total acceptors used condoms after operation. Use of condoms is one of the precautions usually suggested by doctors in the mass camp. But according to the figures in the table most of the persons have not paid any importance to this suggestion.

14. *Reasons for the preference of vasectomy.*—Distribution of acceptors by reasons for preferring vasectomy to other known methods is given in Table XXXVI. It is seen that 35·16 per cent prefer vasectomy as a less dangerous method while 27·73 per cent prefer it due to the unhealthy condition of their wives to accept permanent birth control methods. It is interesting to note that 12·89 per cent of the persons prefer vasectomy for remuneration. Since vasectomy fetches greater amount of monetary remunerations as compared to other methods, it is preferred by 12·11 per cent as a permanent method and by 8·98 per cent as more effective birth control method.

It is clear that 35·16 per cent who prefer it as less dangerous method, might have understood the after effects of vasectomy as compared to that of other methods. Permanency and effectiveness of this method was also appreciated by some of the acceptors. In short, Table XXXVI reveals that the acceptors of vasectomy knew the various aspects and after effects of this method.

15. *After effects of sterilisation.*—

15.1. Table XXXVII shows that 33·20 per cent of the acceptors have complaints due to vasectomy in spite of the services of expert doctors with proper care and attention in the camp. There will be a tendency to attribute all complaints to sterilisation of acceptors happen to have any complaints after operation. The fear of adverse effects of sterilisation may affect the easier acceptance of this method on a wider scale. Therefore, this aspect should be seriously taken into account in sterilisation centres. Lack of follow up and the negligence of precautions advised may be the reasons for complaints.

15.2. The various complaints of the acceptors are given in Table XXVIII. Out of 256 acceptors 85 persons have complaints. As much as 28·24 per cent of 85 persons have pain at the operation site. This is the major complaints. Pain on the back of stomach is another complaint which is suffered by 13 per cent of those who have complaint. Pus formation at the operation site is also a complaint which attached 9·4 per cent, 10·58 per cent have swelling at the operation site, 8·23 per cent have physical weakness and 3·53 per cent became impotent. Only 2·36 per cent had bleeding after two days of operation and only 1 per cent suffered from loss of appetite.

It is clear from Table XXXVIII that pain at the operation site is a common complaint suffered by a large number of acceptors.

According to Table XXXIX all these 85 persons had no complaints before the operation and hence all the complaints are attributable to vasectomy operation.

The number of persons who having complaints, contacted family planning staff is shown in Table XL. This table shows that only 50 per cent of these persons contacted family planning staff for cure. The lack of such contact is one of the reasons for the non-cure and fear of adverse after-effects of sterilisation.

Table XLI shows that diseases of only 20 persons out of 35 who contacted family planning staff have been cured.

It is seen from Table XLII that 99·22 per cent of the acceptor could resume their normal work without any difficulty after the period of convalascence. This operation did not render them unable to do their normal work.

16. *Role of family planning staff in followup.*—Table XLIII shows that 81·64 per cent of the total acceptors have not contacted any family planning staff after the operation. Family planning staff visited only 11·72 per cent of the acceptors. This seems to be a serious omission on the part of the family planning staff especially Health Assistants. If there is no follow up of any kind it would not be possible to locate acceptors with complaints and give necessary medical advice to them.

17. *Recommendation to friends and relatives.*—The percentage of acceptors who recommended vasectomy to their friends and relatives as a permanent birth control method is given in Table XLIV. This table shows that 93·36 per cent of the acceptors recommended vasectomy to their friends and relatives. This means that whatever be the complaints some of them are suffering from, they strongly favour vasectomy and recommend its adoption as an ideal method of birth control.

18. *Suggestions for changes.*

18.1. Table XLV shows the distribution of persons by their opinion for changes in the existing family planning programme. Out of 256 acceptors only 239 expressed opinions. Eighty-four per cent of these persons suggested that top priority should be given to vasectomy among the various birth control methods in the family planning programme; 16 per cent said that the services of expert doctors should be made available for performing vasectomy operation.

According to Table XLVI only 15 persons have expressed opinion for making vasectomy more acceptable. Out of these 15 persons 6 have suggested that vasectomy operation should be conducted by expert doctors, 8 persons said that greater monetary remuneration would make vasectomy more attractive and acceptable. Only one person suggested for improvement on the publicity machinery to make it attractive.

18.2. Suggestions of the acceptors for the type of publicity to be arranged in subsequent camps are given in Table XLVII. This

table shows that arrangements of mike in the camp is favoured by about 29 per cent of the acceptors.

Next to mike comes radio in the order of importance. 24·22 per cent of the acceptors suggested radio as the medium for publicity. Illiterate persons can understand the message conveyed through mike and radios. Thus 53·13 per cent of the total acceptors together preferred mike and radios.

Other types of publicity like newspaper, notice, banner, etc. require some educational standard to read and understand with the result that most of the acceptors are not sensitive to those types of publicity. It is seen from Table XLVII that 20·70 per cent of the acceptors prefer newspaper, 17·19 per cent banner, 5·47 per cent picture and 1·17 per cent notice. Thus it is clear that more of the acceptors like audio publicity rather than visual ones. Their preference for publicity may be a reflection of their educational standard about the comprehension of the message of family planning conveyed through various communication apparatus or publicity media.

Table XLVIII shows the opinion of acceptors about the adequacy of publicity arranged in the camp. Almost all the acceptors are satisfied with the publicity arrangements and no inadequacy of publicity was pointed out.

18.3. *Suggestions for improvement of the camp.*—Opinions of the acceptors for improvement of similar camps are embodied in Table XLIX. Out of 256 acceptors only 9 have comments for improvement of the camp. Of the 9 acceptors 4 suggested more monetary incentive to the acceptors. Better transport facilities to and from the camp was suggested by two acceptors. One of the 8 acceptors suggested that remuneration should be given only in cash.

Other 247 acceptors seem to have been satisfied with the existing arrangements of the camp and hence they have no comments at all.

19. *Summary.*—1. About 74 per cent of the acceptors are Hindus, 19·53 per cent Christians and only less than 7 per cent Muslims. Among the castes who follow Hinduism, Nairs rank first followed by Ezhavas.

2. About 21·09 per cent of the acceptors belong to 35–39, 23·05 per cent to 40–44 and 19·92 per cent to 30–34 age-groups. Nearly 50 per cent of the wives of the acceptors belong to 25–34 age-group and 5·08 per cent to 45–49 age-group.

3. Regarding educational status 67·19 of the acceptors have formal schooling while the corresponding figures for the wives is 57·81 per cent. There is a positive relationship between education and percentage of acceptance.

4. Most of the acceptors belong to the lower occupational groups like unskilled work and agricultural labour.

5. About 50 per cent of the acceptors belong to the expenditure group of Rs. 150–199 and 20·31 per cent Rs. 200 and above.

6. Nearly 70 per cent of the acceptors reside in Kutcha, 24·61 per cent in huts and only 3·91 per cent in puckal.

7. Another notable point is that 3·13 per cent of the acceptors have no children at all. Average number of children born to each acceptor is 4·5 and living children 4.

8. Occupational differences have no impact on the number of children at the time of acceptance.

9. There is a negative relationship between educational standard of the acceptors and their wives and the number of children. Average number of living children for the acceptors who are literate but below primary is 4·6 while the corresponding figures for acceptors below middle, below matric and matric and above are 3·5, 3·2 and 2·7 respectively. This trend is seen in the case of their wives also.

10. Increase in the age at marriage of wives of acceptors does not seem to have any impact on the number of children.

11. Of the total acceptors 87·49 per cent had knowledge of family planning before the camp was arranged. Fear of after-effects, non-attainment of target number of children, insufficiency of incentives, etc. prevented them from accepting vasectomy before the camp.

12. Nine per cent had used family planning methods before the camp.

13. Of the 224 acceptors who had preference for the camp 32·14 per cent preferred it for getting more remuneration 17·86 due to mass influence and 20·09 per cent for the services of expert doctors.

14. Nearly 4 per cent of the acceptors underwent vasectomy operation without any external influence and 25·39 per cent accepted it with the influences of friends and relatives belonging to different professional categories.

15. About 57 per cent of the acceptors came to know about the camp from publicity while 20·31 per cent from friends and relatives. The role of professional promotors in spreading the knowledge of mass camp is negligible.

16. About 94 per cent of the acceptors preferred cash remuneration; 76 per cent of the acceptors are not willing to accept Rs. 21 as remuneration prevalent in vasectomy centres other than camps. This means that they want to get more remuneration.

17. Of the total acceptors 40 per cent took 30–40 days to become fit for their normal work and 19 per cent took more than 50 days.

18. Almost all the acceptors observed precautions advised by doctors.

19. A large number of acceptors preferred vasectomy as a less dangerous method of birth control while 27·73 per cent preferred it due to the unhealthy conditions of their wives to accept permanent birth control methods. Nearly 13 per cent preferred it for more monetary incentives.

20. About 33 per cent of the acceptors have complaints, 28·24 per cent of them have pain at the operation site, 13 per cent have pain at the back of stomach, 9·41 per cent suffered from pus formation, 10·58 per cent have swelling at the operation site and 2·38 per cent have bleeding.

21. Nearly 82 per cent of the acceptors have not been visited by any family planning staff after the operation.

22. About 93 per cent of the acceptors recommend vasectomy to their friends and relatives as a method for permanent birth control.

23. Only 15 persons out of 256 have suggestions for making vasectomy more acceptable. Services of expert doctors, more monetary remuneration, etc., have been suggested for making vasectomy more popular.

24. About 53 per cent of the acceptors preferred publicity through mike and radio to other media.

25. Only 9 persons out of 256 have suggestion for improvement of similar camp. Enhancement of remuneration and arrangement of conveyance are the suggested improvements of such camps.

TABLE

Distribution of sterilised persons by religion and castes

Religion	Cheemar	Malan Kunnan	Asari	Nadar	Mannar	Chetty	Mukkuva	Velan	Ganakan	Muslim	Parava
1	2	3	4	5	6	7	8	9	10	11	12
Hindu ..	5	1	9	24	3	3	..	3	3	..	2
Christian ..	13	..	..	20	..	1	12	..	..	..	..
Muslim ..	..	..	..	..	..	..	..	..	..	17	..
Total ..	18	1	9	44	3	4	12	3	3	17	2

Religion	Nair	Pulayan	Panan	Veluthe-dathu Nair	Ezhava	Chakkiliyan	Sambava	Kollan	Yogbetti	Total	Percentage
	13	14	15	16	17	18	19	20	21	22	23
Hindu ..	60	14	2	2	48	5	2	2	1	189	73·83
Christian ..	..	3	..	..	..	..	1	..	..	50	19·53
Muslim ..	..	..	..	..	..	..	..	..	..	17	6·64
Total ..	60	17	2	2	48	5	3	2	1	256	100·00

TABLE 2

Distribution of sterilised persons according to age

Age group	*Sterilised persons*	
	Number	*Percentage*
(1)	(2)	(3)
15–19	..	..
20–24	..	..
25–29	22	8.59
30–34	51	19.92
35–39	54	21.09
40–44	59	23.05
45–49	46	17.98
50–54	14	5.47
55	8	3.12
Not reported	2	0.78
Total	256	100.00

TABLE 3

Distribution of wives of acceptors according to age group

Age group	*Wives*	
	Number	*Percentage*
(1)	(2)	(3)
15–19	2	0.78
20–24	35	13.67
25–29	62	24.22
30–34	63	24.61
35–39	51	19.92
40–44	26	10.16
45–49	13	5.08
50–54	..	0.78
55	..	..
Not reported	2	0.78
Total	256	100.00

TABLE 4

Distribution of sterilised persons according to education

	Education level									
	Formal schooling		Number of female schooling							
			Can read only		Can read and write		None		Total	
	No.	Percentage	No.	Percentage	No.	Percentage	No.	Percentage	No.	Percentage
1	2	3	4	5	6	7	8	9	10	11
Husband ..	172	67·19	16	6·25	4	1·56	64	25·00	256	100·00
Wife ..	148	57·81	10	3·91	1	0·39	97	37·89	256	100·00

TABLE 5

Distribution of acceptors according to education

	Hindu		Christian		Muslim		Total	
	No.	Percentage	No.	Percentage	No.	Percentage	No.	Percentage
1	2	3	4	5	6	7	8	9
Illiterate ..	..	..	..	..	..	..	..	..
Literate below primary ..	38	20·11	4	8·00	7	41·18	49	..
Primary below middle ..	70	37·03	21	42·00	5	29·41	96	..
Below matric ..	18	9·52	..	..	2	11·76	20	..
Matric and above ..	4	2·12	..	..	..	..	04	..
Not reported ..	59	31·22	25	50·00	3	17·65	87	..
Total ..	189	100·00	50	100·00	17	100·00	256	100·00

TABLE 6

Distribution of acceptors according to occupation

		Husband	
		Number	*Percentage*
Skilled work	..	4	1·56
Unskilled work	..	68	26·56
Agricultural labour	..	118	46·10
Cultivators	..	11	4·30
Business and Merchants	..	33	12·89
Clerk	..	2	0·78
Professional	..	18	7·03
No occupation	..	..	..
Not reported	..	2	0·78
Total	..	256	100·00

TABLE 7

Distribution of wives of acceptors according to occupation

		Wife	
		Number	*Percentage*
Unskilled work	..	13	5·08
Agriculture labour	..	17	6·64
Business and merchants	..	5	1·95
Household	..	217	84·77
Not reported	..	4	1·56
Total	..	256	100·00

TABLE 8

Distribution of acceptors according to monthly expenditure

Monthly expenditure		*Persons*	
		Number	*Percentage*
50	..	5	1·95
50–99	..	28	10·94
100–149	..	41	16·02
150–199	..	126	49·22
200 and above	..	52	20·31
Not reported	..	4	1·56
Total	..	256	100·00

TABLE 9

Distribution of acceptors according to the type of house

Type of houses		*No. of persons*	*Percentage*
Hut	..	63	24·61
Kutcha	..	179	69·92
Pucca	..	10	3·91
Not reported	..	4	1·56
Total	..	256	100·00

TABLE 10

Distribution of acceptors according to number of Children born

Number of Children	*Born*		*Total No. of Children*
	Number	*Percentage*	
0	8	3·13	Average 4·5
1	20	7·81	20
2	17	6·64	34
3	40	15·62	120
4	44	17·19	176
5	49	19·14	245
6	26	10·16	156
7	19	7·42	133
8	17	6·64	136
9	10	3·91	90
10	1	0·39	10
10+	3	1·17	33
Not recorded	2	0·78	..
Total	256	100·00	1153

TABLE 11

Distribution of acceptors according to number of Children living

No. of Children	*Living*		*Total No. of Children*
	Number	*Percentage*	
0	15	5·86	..
1	22	8·59	22
2	32	12·50	64
3	46	17·98	138
4	48	18·76	192
5	39	15·23	195
6	23	8·98	138
7	15	5·86	105
8	9	3·51	72
9	4	1·56	36
10	..	..	..
11	1	0·32	11
Not recorded	2	0·78	..
Total	256	100·00	973

TABLE 12

Occupation of acceptors by number of living children at the time of acceptance

No. of children	A. L.		S. K.		U.S.K.		Cultivator		B & M		Clerk		Professional		N.R.		Total
	N	P	N	P	N	P	N	P	N	P	N	P	N	P	N	P	
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
1	8	6·78	1	25·00	4	5·88	..	..	1	3·08	..	..	..	..	..	..	14
2	17	14·41	..	..	12	17·65	4	36·37	9	27·28	..	..	4	22·22	..	..	46
3	30	25·42	1	25·00	16	23·53	3	27·27	8	24·24	..	..	6	33·33	..	..	64
4	26	22·03	..	..	10	14·71	2	18·18	6	18·18	1	50·00	2	11·11	..	..	47
5	20	10·95	1	25·00	5	7·35	2	18·18	5	15·15	..	..	3	16·67	..	..	36
6	9	7·63	..	..	11	16·18	..	..	..	..	..	..	1	5·56	..	..	21
7	4	3·39	1	25·00	5	7·35	..	..	2	6·06	1	50·00	..	..	..	..	13
8	3	2·54	..	..	4	5·88	..	..	..	..	..	..	..	..	..	..	7
9	1	0·35	..	..	1	1·47	..	..	1	3·03	..	..	..	..	..	..	3
10	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
11	..	..	..	..	..	..	..	..	1	3·03	..	..	..	..	..	..	1
Not recorded	..	..	..	..	..	..	..	..	..	..	..	..	2	11·11	2	100·00	4
Total	118	100·00	4	100·00	68	100·00	11	100·00	33	100·00	2	100·00	18	100·00	2	100·00	256

TABLE 13

Occupation of wives and number of children

No. of children	A.L.		U.S.K.		B and M		Household		Not recorded		Total
	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	
1	2	3	4	5	6	7	8	9	10	11	12
1	..	..	2	15·38	..	..	12	5·54	..	..	14
2	2	11·76	1	7·69	..	..	42	19·36	1	25·00	46
3	2	11·76	7	53·86	2	40·00	53	24·43	..	..	64
4	6	36·30	2	..	..	..	41	18·89	..	..	47
5	1	5·88	2	15·38	2	40·00	31	14·27	..	..	36
6	4	23·54	..	..	..	..	17	7·83	..	..	21
7	..	..	1	7·69	1	20·00	11	5·07	..	..	13
8	..	..	..	..	..	..	7	3·23	..	..	7
9	2	11·76	..	..	..	..	..	..	1	25·00	3
10	..	..	..	..	..	..	..	..	..	..	..
11	..	..	..	..	..	..	1	0·46	..	..	1
Not recorded	..	..	..	..	..	..	2	0·92	2	50·00	4
Total	17	100·00	13	100·00	5	100·00	217	100·00	4	100·00	256

TABLE 14

Educational standard of the acceptors and the number of children

No. of children	Literate but below primary		Primary below middle		Below matric		Matric and above		Illiterate		Not recorded		Total
	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	
1	2	3	4	5	6	7	8	9	10	11	12	13	14
1	4	8·16	3	3·12	..	..	..	..	7	8·43	..	..	14
2	8	16·33	16	16·67	9	45·00	2	50·00	10	12·05	..	..	45
3	3	6·12	35	36·46	5	25·00	1	25·00	12	14·46	..	..	56
4	10	20·42	22	22·92	2	10·00	1	25·00	13	15·66	1	25·00	49
5	5	10·20	11	11·46	2	10·00	..	..	13	15·66	..	..	31
6	8	16·33	4	4·17	1	5·00	..	..	12	14·47	..	..	25
7	5	10·20	2	2·08	1	5·00	..	..	7	8·43	..	..	15
8	5	10·20	..	..	..	..	..	..	5	6·02	..	..	10
9	1	2·04	1	1·04	..	..	..	..	4	4·82	..	..	6
10	..	..	..	..	..	..	..	..	..	..	1	25·00	1
11	..	..	..	..	..	..	..	..	..	..	2	50·00	2
Not recorded	..	..	2	2·08	..	..	..	..	..	..	..	..	2
Total	49	100·00	96	100·00	20	100·00	4	100·00	83	100·00	4	100·00	256

TABLE 15

Educational standard of wives and number of children

No. of children	Literate below primary		Primary below middle		Below matric		Matric and above		Illiterate		Not recorded		Total
	N	P	N	P	N	P	N	P	N	P	N	P	
1	2	3	4	5	6	7	8	9	10	11	12	13	14
1 ..	..	..	3	6·12	1	3·23	..	..	9	8·49	1	25·00	14
2 ..	10	15·62	10	20·41	9	29·03	1	50·00	16	15·09	..	..	46
3 ..	19	29·68	11	22·45	9	29·03	1	50·00	24	22·65	..	..	64
4 ..	18	28·12	11	22·45	4	12·90	..	..	14	13·20	..	..	47
5 ..	6	9·38	7	14·29	4	12·90	..	..	18	16·98	1	25·00	30
6 ..	6	9·38	3	6·12	3	9·68	..	..	9	8·49	..	..	21
7 ..	2	3·13	3	6·12	..	..	..	..	8	7·55	..	..	13
8 ..	..	..	1	2·04	1	3·23	..	..	5	4·72	..	..	7
9 ..	2	3·13	..	..	..	..	..	..	1	0·94	..	..	3
10 ..	..	..	..	..	..	..	..	..	..	..	..	..	..
10+ ..	1	1·56	..	..	..	..	..	..	..	..	..	..	1
Not recorded ..	..	..	..	..	..	..	..	..	2	1·89	2	50·00	4
Total ..	64	100·00	49	100·00	31	100·00	2	100·00	106	100·00	4	100·00	256

TABLE 16

Age at marriage of wives and the number of children living

No. of children	14		15–19		20–24		25–29		30–34		35–39		Not recorded		Total
	N	P	N	P	N	P	N	P	N	P	N	P	N	P	
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1 ..	1	9·09	9	6·00	3	3·57	1	33·33	..	..	..	..	..	..	14
2 ..	2	18·18	24	16·00	19	22·62	..	..	1	50·00	..	..	..	..	46
3 ..	5	45·46	37	24·66	22	26·19	..	..	..	..	..	..	..	..	64
4 ..	2	18·18	27	18·00	17	20·24	1	33·33	..	..	..	..	..	..	47
5 ..	1	9·09	22	14·67	13	15·48	..	..	..	..	..	..	..	..	36
6 ..	..	..	13	8·67	6	7·14	..	..	1	50·00	1	50·00	..	..	21
7 ..	..	..	10	6·67	3	3·57	..	..	..	..	..	..	..	..	13
8 ..	..	..	5	3·33	..	..	1	33·34	..	..	1	50·00	..	..	7
9 ..	..	..	3	2·00	..	..	..	..	..	..	..	..	..	..	3
10 ..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
10+ ..	..	..	..	..	1	1·19	..	..	..	..	..	..	..	..	1
Not recorded ..	..	..	..	..	..	..	..	..	..	..	..	..	4	100·00	4
Total ..	11	100·00	150	100·00	84	100·00	3	100·00	2	100·00	2	100·00	4	100·00	256

TABLE 17

Distribution of acceptors who had knowledge of vasectomy before the camp

Yes		No		Not reported		Total	
Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage
1	2	3	4	5	6	7	8
224	87·49	12	4·69	20	7·82	256	100·00

TABLE 18

Distribution of acceptors who had knowledge of vasectomy before the camp by reasons for not having undergone operation before the camp

	Number	*Percentage*
Use of contraceptive	1	0·45
Unfavourable health	22	9·82
Disliked operation	2	0·89
Need for more children	76	33·92
Insufficient incetives	43	19·20
Fear of after effects	74	33·04
Objection from wife	5	2·23
Objection from relatives	1	0·45
Total	224	100·00

TABLE 19

Distribution of acceptors by the knowledge of some other Family Planning Methods

	Number	*Percentage*
1. Vasectomy	224	87·50
2. Nirodh	16	6·24
3. P.P.S.	8	3·13
4. I.U.C.D. and others	8	3·13
5. Total	256	100·00

TABLE 20 A

Distribution of acceptors who had used Family Planning method before the camp and the number of children

Serial number	Nirodh		I.U.C.D.		Use of condom		Total		Average number of children
	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	
1	2	3	4	5	6	7	8	9	10
1	..	..	..	..	..	..	..	..	..
2	6	33·33	..	..	2	100·00	8	34·78	..
3	4	22·22	..	..	..	..	4	17·39	..
4	4	22·22	1	33·33	..	..	5	21·74	..
5	1	5·56	..	..	..	..	1	4·35	..
6	..	..	..	..	..	..	..	..	..
7	3	16·67	2	66·67	..	..	5	21·74	..
8	..	..	..	..	..	..	..	..	..
9	..	..	..	..	..	..	..	..	..
10	..	..	..	..	..	..	..	..	..
10*	..	..	..	..	..	..	..	..	..
Not recorded	..	..	..	..	..	..	..	..	..
Total	18	100·00	3	100·00	2	100·00	23	100·00	..

TABLE 20 B

Distribution of acceptors who used contraceptives by duration of use

	Number	*Percentage*
Below 1 year	1	4·35
1–2	4	17·30
2–3	8	34·78
3–4	1	4·35
4–5	2	8·70
5 and above	4	17·40
Not recorded	3	13·04
Total	23	100·00

TABLE 21

Distribution of acceptors by the age of youngest child

Age of youngest child	*Number*	*Percentage*
1	40	15·63
1–2	70	27·34
2–3	63	24·61
3–4	30	11·72
4–5	7	2·73
5–6	8	3·13
6 and above	32	12·50
Not recorded	6	2·34
Total	256	100·00

TABLE 22

Distribution of acceptors according to percentage of wife at the time of sterilisation

Yes		No		Not recorded		Total	
Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage
42	16·39	211	82·43	3	1·18	256	100·00

TABLE 23

Distribution of persons by reasons for preferring the camp

Reasons	*Number*	*Percentage*
1. Did not know vasectomy before the camp	32	14·29
2. Services of expert Doctors	45	20·00
3. More remuneration	72	32·14
4. Mass influence	40	17·86
5. Proximity to the camp	18	8·03
6. Others	17	7·59
7. Total	224	100·00

TABLE 24

Distribution of acceptors according to their discussion with wives

Yes		No		Not reco ded		Total	
No.	Percentage	No.	Percentage	No.	Percentage	No.	Percentage
1	2	3	4	5	6	7	8
171	66·80	83	32 42	2	0 78	256	100·00

TABLE 25

Distribution of acceptors by their knowledge about relatives having undergone sterilisation before their acceptance Yes/No

Yes		No		Not recorded		Total	
No.	Percentage	No	Percentage	No.	Percentage	No.	Percentage
1	2	3	4	5	6	7	8
174	67·97	79	30·86	3	1 17	256	100·00

TABLE 26

Distribution of acceptors according to the type of persons who influenced them for accepting vasectomy

	Family Planning voluntary worker		Midwife		No profession		Newspaper agent		Health Assistant		Nurse		Compounder	
	N	P	N	P	N	P	N	P	N	P	N	P	N	P
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Friends ..	6	..	14	..	10	..	1	..	16	..	1	..	2	..
Sister-in law ..	..	..	1	..	..	..	..	..	..	..	4	..	..	..
Brother-in-law ..	..	..	..	..	1	..	..	..	9	..	..	..	..	..
Neighbour ..	..	..	..	..	..	..	..	..	2	..	..	..	..	..
Cousin ..	..	..	..	..	..	..	..	..	4	..	..	..	..	..
Brother ..	..	..	..	..	1	..	..	..	..	..	..	..	..	..
Newspaper ..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Self ..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Others ..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Not recorded ..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Total ..	6	..	15	..	12	..	1	..	31	..	5	..	2	..

TABLE 26—(*cont.*)

	Teacher		Gramasevak		Clerks		Family Planning Social worker		Businessman		Total	
	N	P	N	P	N	P	N	P	N	P	N	P
	16	17	18	19	20	21	22	23	24	25	26	27
Friends ..	..	..	8	..	4	..	..	..	3	..	65	25·39
Sister-in-law ..	..	..	..	..	..	..	..	..	..	..	5	1·95
Brother-in-law ..	2	..	..	..	..	..	..	..	..	..	12	4·69
Neighbour ..	..	..	..	..	4	..	4	..	..	..	10	4·30
Cousin ..	..	..	..	..	..	..	..	..	..	..	4	1·56
Brother ..	..	..	..	..	..	..	..	..	..	..	1	0·39
Newspaper ..	..	..	..	..	..	..	..	..	..	..	18	7·03
Self ..	..	..	..	..	..	..	..	..	..	..	122	47·66
Others ..	..	..	..	..	..	..	..	..	..	..	10	3·91
Not recorded ..	..	..	..	..	..	..	..	..	..	..	8	3·12
Total ..	2	..	8	..	8	..	4	..	3	..	256	100·00

TABLE 27

Distribution of acceptors by various source of knowledge of the camp

Publicity *		Friends and relatives		Panchayat member		Professional promoter		Newspaper agent		Health staff		F.P. field worker		Newspaper		Not recorded		Total	
N	P	N	P	N	P	N	P	N	P	N	P	N	P	N	P	N	P	N	P
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
146	57·00	52	20·31	7	2·73	14	5·47	15	5·86	2	0·78	1	0·39	15	5·90	4	1·56	256	100·00

* Publicity includes such media as radio, mike, kathaprasanga, drama, cinema, etc.

TABLE 28

Distribution of sterilised persons according to their willingness to undergo sterilisation for cash and kind remuneration

Cash		Cash and kind		Not recorded		Total	
Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage
1	2	3	4	5	6	7	8
240	93·75	14	5·47	2	0·78	256	100·00

TABLE 29

Distribution of sterilised persons according to their willingness to accept Rs. 21 on remuneration for undergoing sterilisation

Not willing		Willing		Not recorded		Total	
No.	Percentage	No.	Percentage	No.	Percentage	No.	Percentage
1	2	3	4	5	6	7	8
202	75·76	51	23·07	3	1·7	256	100·00

TABLE 30

Distribution of acceptors according to length of period of absence for work (days)

Days		*Persons*	
		Number	*Percentage*
(1)		(2)	(3)
1—9	..	15	5·86
10—19	..	49	19·14
20—29	..	28	10·94
30—39	..	79	30·86
40—49	..	33	12·89
50 and above	..	50	19·53
Not recorded	..	2	0·78
Total	..	256	100·00

TABLE 31

Distribution of acceptors on the basis of advice received for precautions Yes/No

Yes		No		N.R.		Total	
No.	P	No.	P	No.	P	No.	P
1	2	3	4	5	6	7	8
253	98·83	1	0·39	2	0·78	256	100·00

TABLE 32

Distribution of acceptors by the nature of precautions

(1)		*No.* (2)	*Percentage* (3)
Nature of precautions	..	6	2·37
Absence for a period	..	9	3·56
Use of condom	..	12	4·74
Rest and avoiding of cycling	..	60	23·71
Rest of some days	..	5	1·98
Use of condom and rest for some days	..	64	25·30
Avoiding and Alcohol and rest for some days	..	29	11·46
Rest and avoiding of hard work observe instruction	..	65	25·69
Not recorded	..	6	1·19
Total	..	256	100· 0

TABLE 33

Distribution of acceptors according to the length of period before normal work

Length of period (1)		*Number* (2)	*Percentage* (3)
1 day	..	..	..
2 days	..	..	..
3 ,,	..	12	4·69
4 ,,	..	10	3·91
5 ,,	..	28	10·94
6 ,,	..	10	3·91
7 ,,	..	94	36·71
8 ,,	..	10	3·91
9 ,,	..	56	21·87
10 ,,	..	16	6·25
Above 10	..	17	6·64
Not recorded	..	3	1·17
Total	..	256	100·00

TABLE 34

Distribution of acceptors according to the place of removed of bandage

Place		*Persons* Number	*Percentage*
(1)		(2)	(3)
Self	..	240	93·75
Hospital	..	9	3·52
Private centre	..	3	1·17
Primary Health Centre	..	2	0·78
Not recorded	..	2	0·78
Total	..	256	100·00

TABLE 35

Distribution of acceptors who have used and not used condoms after the operation Yes/No

Yes		No		Not recorded		Total	
No.	Percentage	No.	Percentage	No.	Percentage	No.	Percentage
1	2	3	4	5	6	7	8
96	37·50	158	61·72	2	0·78	256	100·00

TABLE 36

Distribution of acceptors by reason for preferring vasectomy

			Number	*Percentage*
1.	More effective birth control	..	23	8·98
2.	Permanent method	..	31	12·11
3.	Unhealthy condition of wife	..	71	27·73
4.	Less dangerous method	..	90	35·16
5.	For remuneration	..	33	12·89
6.	Others	..	8	3·13
	Not recorded	..	..	..
	Total	..	256	100 00

TABLE 37

Distribution of acceptors by complaints Yes/No

Yes		No		Not recorded		Total	
No.	Percentage	No.	Percentage	No.	Percentage	No.	Percentage
1	2	3	4	5	6	7	8
85	33·20	169	66·02	2	0·78	256	100·00

TABLE 38

Distribution of acceptors by the nature of complaints

		Number	*Percentage*
Pain	..	4	4·70
Pain at the operation part	..	24	28 24
Pus formation	..	8	9·41
Impotency	..	3	3 58
Occasional pain on both side of the lower most part of my stomach	..	11	12·94
Swelling on the operation site	..	9	10·58
Occasional feeling of weakness for both legs and hands	..	7	8·23
Skin effect	..	1	1·18
Bleeding after the 2nd day of the operation	..	2	2·36
I cannot take as much food I used to take before the operation	..	1	1·18
Others	..	15	17 65
Total	..	85	100·00

TABLE 39

Distribution of complaints according to their relation with operation

		Acceptors
After this operation	..	84
Before the operation	..	1
Total	..	85

TABLE 40

Distribution of acceptors who consulted and not consulted for remedy

Consulted		*Not consulted*		*Total*	
Number	*Percentage*	*Number*	*Percentage*	*Number*	*Percentage*
(1)	(2)	(3)	(4)	(5)	(6)
35	40·48	50	59·52	85	100·00

TABLE 41

Distribution of acceptors according to the nature of results of a consultation

Cared		*Not cared*		*Total*
Number	*Percentage*	*Number*	*Percentage*	
(1)	(2)	(3)	(4)	(5)
20	57·00	15	43·00	100·00

TABLE 42

Distribution of acceptors who could and could not work as a result of operation Yes/No

Yes		*Not reported*		*Total*	
Number	*Percentage*	*Number*	*Percentage*	*Number*	*Percentage*
(1)	(2)	(3)	(4)	(5)	(6)
254	99·22	2	0·78	256	100·00

TABLE 43

Distribution of acceptors who were visited and not visited by F. P. Staff Yes/No

Yes		No		Not recorded		Total	
No.	Percentage	No.	Percentage	No.	Percentage	No.	Percentage
1	2	3	4	5	6	7	8
30	11·72	209	81·64	17	6·64	256	100·00

TABLE 44

Distribution of acceptors who recommended vasectomy to friends, relatives Yes/No

Yes		No		Not reported		Total	
Number	Percentage	No.	Percentage	No.	Percentage	No.	Percentage
1	2	3	4	5	6	7	8
239	93·36	15	5·86	2	0·78	256	100

TABLE 45

Distribution of acceptors by their suggestions for changes that government should make in the Family Planning Programme

Changes	*Number*	*Percentage*
(1)	(2)	(3)
Top priority to Vasectomy	210	84
Services of expert doctors	29	16
Total	239	100

TABLE 46

Distribution of acceptors according to their suggestions for changes to make vasectomy more acceptable

	Number	*Percentage*
	(1)	(2)
Operation to be conducted by expert doctor	6	40·00
More financial help	8	53·33
The method of publicity has to be developed	1	6·67
Total	15	100·00

TABLE 47

Distribution of acceptors by their suggestion for the type of publicity to be arranged in the camp

Newspaper		Radio		Banner		Mike	
No.	P.	No.	P.	No.	P.	No.	P.
1	2	3	4	5	6	7	8
53	20·70	62	24·22	44	17·19	74	28·91

Picture		Notice		Not recorded		Total	
No.	P.	No.	P.	No.	P.	No.	P.
9	10	11	12	13	14	15	16
14	5·47	3	1·17	6	2·34	256	100

TABLE 48

Distribution of acceptors by their opinion about the adequacy of publicity in the same

Yes		Not reported		Total	
No.	Percentage	No.	Percentage	No.	Percentage
1	2	3	4	5	6
247	96·48	9	3·52	256	100·00

TABLE 49

Distribution of acceptors according to their suggestions for changes in the arrangements of the camp

	Yes	
	Number	*Percentage*
More incentive	4	44·45
Incentive should be given in cash	1	11·11
Bus or cars	2	22·22
Attend in the camp should be careful in their duties	1	11·11
Queue system arranged in the camp was not properly enforced	1	11·11
Total	9	100·00

750
237 50
1047-00
418-50
628-50

KNOWLEDGE AND PRACTICE OF FAMILY PLANNING IN RURAL KERALA 1969

1. *Introduction.*—The family planning programme had its official beginning in the State during the Second Five Year Plan period. Several studies on the knowledge, attitude and practice of family planning methods have been conducted in the State. But a State wide survey covering the rural areas of the State has not been attempted so far. During 1969 at the instance of the Government of India a small schedule on family planning was canvassed in the rural households in all the villages selected for the Sample Registration Scheme in the State. Information on knowledge and method of family planning was collected from currently married males below 35 years, by the Local Registrars appointed for the Sample Registration Scheme. The data collected from this enquiry are analysed and presented in this report.

2. *Objects.*—The study is intended to throw light on the awareness of couples about family planning, knowledge of the specific methods and practice of the methods. The relation of these with related factors like age, religion, education and occupation is also proposed to be studied.

3. *Coverage and method of data collection.*—The survey was proposed to be conducted in all the 150 villages selected for the Sample Registration Survey in the State. But data from only 94 villages could be obtained and the available data have been used for the study. The selection of villages for sample registration was done by systematic random sampling after stratification of villages on the basis of natural divisions and population size The number of villages selected in each stratum and the number of villages from which the data for this study have been obtained are given below:

Natural division	*Population size*	*Total No. of villages selected for Sample Registration*	*Total No. of villages from which data on family planning are available*
(1)	(2)	(3)	(4)
Lowland ..	Below 500	1	1
	500— 999	1	..
	1000—1999	5	2
	2000 and above	29	15
	Total	36	18

Natural division	*Population size*	*Total No. of villages selected for Sample Registration*	*Total No. of villages from which data on family planning are available*
(1)	(2)	(3)	(4)
Midland ..	Below 500	1	..
	500— 999	6	4
	1000—1999	18	10
	2000 and above	66	49
	Total	91	63
Highland ..	Below 500	..	..
	500— 999	1	1
	1000—1999	3	1
	2000 and above	19	11
	Total	23	13
All ..	Below 500	2	1
	500— 999	8	5
	1000—1999	26	18
	2000 and above	114	75
	Total	150	94

The data collected in the family planning schedule include age, religion, education, occupation awareness of family planning, knowledge of family planning methods and the extent of practice of known methods. Questions on these items were asked by the Local Registrars to currently married males below 35 years in all the households in the villages selected for the sample registration scheme. The data were collected by the interview method.

4. Awareness of family planning.

4.1. The term awareness of family planning means knowledge of family planning in a very general way without knowing specific methods. The awareness of family planng implies only the knowledge of the existence of methods which when used can limit family size. Awareness does not imply knowledge of any specific family planning methods.

4.2. *Religion and awareness*—Table 1 gives the distribution of males contacted in each religion according to awareness of family planning

Among the married males below 35 years of age contacted about 57 per cent are Hindus, 13 per cent Christians and 30 per cent Muslims 68 per cent of the persons contacted are aware of family planning methods. On a religion-wise break-down it is reported that 67 per cent of Hindus, 76 per cent Christians and 65 per cent Muslims are aware of family planning methods.

4.3. *Age and awareness.*—The effect of age on the awareness of family planning is examined in Table 2. Awareness is seen increasing with age. The lowest percentage of persons aware of family planning is reported from the age group 15-19 and the highest percentage from the age group 30-34 the percentage being 48 for the 15-19 age group and 69 for the 30-34 age group.

The percentage increase to sixty-four in 20—24 age group which further increase to 66 in 25—29 age group. It may be seen from the table that among the married persons contacted only less than 0·5 per cent belongs to the age groups 15—19 while 10·8 per cent belongs to the age group 20—24, 34·2 per cent to the age group 25—29 and 54·5 per cent to the age group 30—34.

4.4. *Education and awareness.*—The figures given in Table 3 testified the effect of education on the awareness of Family Planning. The percentage of persons aware of Family Planning is found to be increasing with the increase in the level of educational standard. While only 50 per cent of the illiterates are aware of the Family Planning method, the percentage goes as much as 84 per cent in the case of matriculates and above.

4.5. *Awareness and occupation.*—The difference in the awareness of Family Planning among the various occupational groups is discernible in the fi ures reported in Table 4. Among the occupational categories listed, the largest number of persons contacted belong to miscellaneous workers and labourers, constituting about 41 per cent of the total persons in the sample. About 64 per cent of the persons belonging to this occupational group—"Workers and labourers not elsewhere classified"—are aware of family planning. Next to this category, the largest number of the sampled persons belonged to the category of "Farmers, fishermen, etc." constituting about 38 per cent total persons in the sample. About 64 per cent of persons in this occupational group are aware of Family Planning. The category "Miners, quarrymen and Related workers" is seen to be the least informed about Family Planning as only 22 per cent of persons contacted in this occupational group are reported to be aware of the Family Planning. The percentage of married males aware of Family Planning is seen to be relatively higher in the occupational groups like professional, technical and related workers, clerical workers, etc. This indirectly shows again the positive relation between awareness of Family Planning and education as the persons belonging to these occupational groups are those having higher educational status.

4.6. *Awareness in the different districts.*—In Tables 5 and 6 the variation in awareness of Family Planning among persons belonging to the various geographical areas is examined. Table 5 gives data for the different districts in the State. Figures for all districts except Alleppey are given. No schedules have been received from the samples in Alleppey District. It is seen that there is considerable variation between districts in the matter of dissemination of knowledge on Family Planning. The awareness seems to be least in Kottayam district where only about 27 per cent of rural married males contacted are reported to be aware of Family Planning. The percentage of persons aware of Family Planning is seen to be the highest in Trichur District, the percentage being 98. In the three districts of Quilon, Ernakulam and Trichur the percentage of persons aware of Family Planning is near about 90 or above. The two districts Trivandrum and Kottayam report only less than 50 per cent on this, characteristic. For the revenue district (except Alleppey) the percentages vary between 60 and 76. We have seen that the two factors, namely age and education are positively related to the awareness. But the district-wise data presented in Table 5 do not corroborate this and so the results are quite disturbing. It is seen that the districts which have low percentages of awareness have relatively higher educational level and vice versa. The reasons for this disturbing results have to be found out by further study.

4.7. *Awareness in the different natural divisions.*—The percentages of persons aware of Family Planning in the three natural divisions of the State, namely, Lowland, Midland and Highland as well as in the different population strata in each natural division are presented in Table 6. It is seen that the awareness is relatively least in the midland region, and most in the lowland region. The result do not conform to what can normally be expected. The reasons for this can be found out by further study only.

5 Knowledge of Family Planning methods.

5.1. The question regarding knowledge of specific methods was asked to all those who reported awareness of Family Planning. Eight methods were mentioned by the respondents. The methods in the order of popularity are: (1) Sterilisation, (2) I.U.C.D., (3) Oral pills, (4) Condom, (5) Rhythom, (6) Jelly, (7) Foam Tablets and (8) Diaphram. Even the most known method of sterilisation is known only to 71 per cent of those who are aware of Family Planning. This means that only less than 48 per cent of the 6,687 married males contacted during the survey have knowledge about the sterilisation method. Diaphrem is the least known method. Only 3 persons among the 6,687 males contacted know of the method.

5.2. Tables 7 to 12 give the percentage of males who know various methods of birthcontrol according to the various characteristics

of the persons contacted. The percentages are based on those who are aware of family planning. Since knowledge of each method is taken separately, persons who know more than one method will be counted as many times as they know the methods. Thus a man knowing sterilisation, I.U.C.D. and condom will be taken against each of these three methods. The analysis according to methods each person known is not attempted since this will be lead to numerous combinations.

5.3. *Knowledge by religion.*—In Table 7 the knowledge of each method according to religion of the respondent is analysed. In each of these religious groups sterilisation is the most known method, followed by I.U.C.D. condom. Near about 70 per cent know sterilisation and about 65 per cent know of I.U.C.D. in all the religious groups. Knowledge of oral pills is also more or less the same, in the three religious groups, the percentage being near about 25. The major difference in knowledge of methods between religious groups occurs in the case of rhythm method. A comparatively higher percentage (15 per cent) of Christians know of this method against 7 per cent Hindus and 4 per cent Muslims. The reason may be that Orthodox Christians who have sentimental objections to other methods try to know of this method.

5.4. *Knowledge by educational status.*—The figures for education groups given in Table 8 reveal some peculiarities. Sterilisation method is equally known among all educational status groups. I.U.C.D. is also known among all groups though the percentage in the illiterate group is slightly less compared to other groups. But the difference is marked in the case of other methods. Knowledge of other methods is comparatively very high among persons in the higher educational status groups. While only 36 per cent persons in the illiterate group knew of condom method about 59 per cent of persons of matric and above level of education know of the method. This trend is seen in respect of the methods foam tablets, jelly and rhythm also. Knowledge about oral pills is relatively the least among the illiterates. Among other educational groups percentage of persons knowing the method of oral pills is more or less the same.

5.5. *Knowledge and age.*—The relationship between age and knowledge of methods is examined with the help of the figures presented in Table 9. The differential knowledge about the family planning method among persons belonging to different age groups of 15—19, 20—24, 25—29 and 30—34 is not so marked as it is among persons belonging to different educational groups. Sterilisation, I.U.C.D., condom and oral pills are the methods known widely. The percentage of persons knowing the method is more or less the same in all the age groups. But from Table 2, it may be seen that the awareness of family planning increases with age.

5.6. *Knowledge and occupation.*—The figures presented in the Table 10 show that there is very little difference between various occupational groups regarding knowledge of family planning.

5.7. *Knowledge of family planning method in the different geographical units.*—Table 11 shows that the difference in the awareness of family planning methods noticed among the various districts (see paragraph 4.6) is seen in respect of knowledge of the methods also. The percentage of persons reporting knowledge of sterilisation is the highest (85 per cent) in Trichur District and it is the lowest (41 per cent) in Trivandrum District. In the other districts the percentages vary between 64 and 80. In the case of I.U.C D., Kottayam District reports the lowest percentage of 1.5. Regarding other methods also Kottayam reports only very low percentages except for the rhythm method. In the rhythm method the percentage (18 per cent) reported from Kottayam District is the highest in relation to other districts. It may be noted that Kottayam District has reported also the lowest percentage of persons aware of family planning. Thus the figures indicate that even among the small percentage of persons who are aware of family planning in the district only very few persons know the methods of family planning. Another point which deserves mention is that the condom method is relatively less popular in Kottayam and Trichur districts as seen from the fact that the percentage of persons reporting knowledge of this method from these districts is 8 and 21 respectively while the corresponding percentage for the remaining districts is more than 42.

5.8. According to Table 12, sterilisation is the most known method in all strata. The difference between strata is only nominal. Regarding the other methods also there is not much difference. Some of the exceptions are the comparatively higher percentage of persons having knowledge of rhythm method in the lowland (1000–1999) and the midland (500–999) regions and low percentage of persons having knowledge about oral pills in these strata.

5.9. The foregoing analysis regarding knowledge of family planning methods reveals that only sterilisation, I.U.C.D. and condom are the methods known to a considerable percentage of the population. The above methods are known to more than one-third of all the persons contacted and to about 50 per cent of the persons who are aware of the family planning. The other methods are known to less than 5 per cent of persons contacted, the only exception being oral pills which is known to about 16 per cent.

6. Practice of family planning.

6.1. The question of practising any family planning method arises only when the persons know of such methods. Hence the

percentages are worked out on the basis of the number of persons who know each method.

6.2 From Table 13.4 it can be seen that only very few practice methods of family planning. It is seen that only 13 per cent of the persons contacted in the survey practice any of the family planning methods.

6.3. When the percentage of persons practising the methods is worked out on the basis of the number of persons knowing each method the following results are obtained:

Method		*Percentage of persons practising among those who knew the method*
Sterilisation	..	9
I.U.C.D.	..	4
Condom	..	14
Foam tablets	..	2
Jelly	..	9
Rhythm	..	36
Oral pills	..	3

The highest percentage of persons practising among those who know the methods of family planning is reported under the rhythm method. Next in order comes condom and sterilisation respectively. It may be noted that these percentages do not indicate the popularity of the methods because of the fact that the percentages are built up from the number of persons knowing each method and that the number of persons knowing the various methods differ videly.

6.4. Another fact revealed from the figures in Table 13.4 is that a significant beginning of the practice of this various methods has been made only from the year 1967 onwards.

6.5. *Practice and Religion.*—A study of the differential acceptance by the various religious groups shows that only a very low percentage (4) of Muslims who know sterilisation method, practice it. The corresponding percentage for Hindus and Christians is 10. Rhythm is equally popular among the three religious groups and more than one-third of the persons knowing the method, practice it in all the three religious groups. Condom and I.U.C.D. are seen to be comparatively more popular among Christians.

The differential gap between knowledge and practice among the three religious groups in respect of the two most effective methods, namely, sterilisation and I.U.C.D. is revealed from the following table:

Method	* Percentage of persons having knowledge/practice among					
	Hindus		Christians		Muslims	
	Knowledge	Practice	Knowledge	Practice	Knowledge	Practice
1	2	3	4	5	6	7
Sterilisation ..	72	11	67	10	70	4
I.U.C.D. ..	63	4	65	6	67	1

It is seen from the above the gap between knowledge and practice is the widest among persons belonging to the Muslim religion.

6.6 *Practice and educational status.*—An analysis of the prevalence of family planning practice among the different educational status groups given in Table 14.1 to 14.4 does not reveal much difference in the percentage of persons practising sterilisation and I.U.C.D. cases. The condom method is found to be more prevalent among the educated persons. The percentage of those practising condom increased as educational status increase. In the two methods the rhythm and oral pills also, the above trend is noticed.

6.7. *Practice in different Districts.*—From Table 15.1 it is seen that there is wide disparity in the practice of sterilisation between the Districts. In terms of the percentage of persons practising the method, Trivandrum District leads the other districts followed by Quilon and Ernakulam, Palghat District takes the lowest rank in this regard with only about 2 per cent persons knowing sterilisation and practising it. Only Trivandrum and Quilon have percentages above 20. The percentage figures for Palghat, Malappuram and Cannanore Districts is below 5. In this connection it is worth recollecting that wide disparity between the districts was noticed in respect of the persons knowing the different methods also.

*Percentage of persons having knowledge is based on the number of persons aware of family planning and percentage of persons practising if based on the number of persons having knowledge of the methods.

In the case of I.U.C.D., also the variation between districts is noticed. In Kottayam District all the persons who know the I.U.C.D. method are reported as practising the method. Palghat District reports the lowest percentage of practice under I.U.C.D. method.

In respect of condom method the gap between knowledge and practice is least in Kottayam District as may be seen from the highest percentage reported for the district in Table 15.3. The next place goes to Ernakulam District.

Foam tablets and jelly are known to only very few persons. The methods are practised only very rarely.

Rhythm method appears to be known and practised in all districts. 90 per cent among those who know the method in Trichur, 77 per cent in Quilon and 48 per cent in Kozhikode practise the method. In Trichur only 10 have reported knowledge of the method. In other districts only very few know the rhythm method and among them only a small percentage practise the method.

The method of oral pills is known to persons in all districts. But the practice of the pills is very rare in all the districts.

7. Summary.

7.1. The report gives an overall picture of the awareness, knowledge and practice of family planning among the married couples in the rural areas of the State. About two-thirds of the persons contacted are aware of family planning. Increase in age and educational status are seen to be two factors contributing to the awareness of family planning.

7.2. Among the persons who are aware of family planning a substantial percentage does not know the methods of family planning. Sterilisation is the most known method. 71 per cent of those who are aware of family planning know about sterilisation. The I.U.C.D. and condom methods are known to 64 per cent and 49 per cent respectively of those who are aware of family planning. Much difference is not noticed between age, education and occupation groups in the case of knowledge of family planning methods.

7.3. The practice of family planning methods has not become popular among the couples in Kerala until the year 1967 as revealed by the study. Only about 13 per cent persons contacted have practised any method. A large percentage of those who know the methods, do not practise them. Thus there is a wide gap between knowledge and practice of family planning method among the married couples in the rural areas. As the reasons for the non-practice of the methods is not included in the enquiry it is not known why a large percentage refrain from practice in spite of their knowledge.

8. *Limitation of the study.*—This study on family planning was made only as a subsidiary enquiry along with the sample registration survey. The enumerators who canvassed the schedule cannot be considered as an experienced team of Investigators for making enquiry in family planning even though the schedule used for the enquiry is a very simple one.

Along with the survey each enumerator who canvassed the schedule was also asked to make an assessment of the accuracy of the replies to each question. From the enumerator's assessment of the answers it is seen that most of the enumerators have expressed doubt about the quality of the answers.

The data also suffers from incomplete coverage as the data could be collected only from 94 sample villages against 150 villages planned. It may further be noted that the enquiry does not cover all the married couples but only currently married males below 35 years.

9. *Appendix.*—The following tables derived from the analysis to the data and a facsimile of the schedule used for the enquiry are appended to the report as detailed below:—

Sl. No.	*Table No.*	*Description*
(1)	(2)	(3)
1	1	Distribution of persons contacted according to awareness of family planning and religion
2	2	Distribution of persons contacted according to awareness of family planning and age group
3	3	Distribution of persons contacted according to awareness of family planning and educational status
4	4	Distribution of persons contacted according to awareness of family planning and occupation
5	5	Distribution of persons contacted according to awareness of family planning—District-wise
6	6	Distribution of persons contacted stratum-wise according to awareness of family planning
7	7	Distribution of persons in each religious group who know methods of family planning

Sl. No.	*Table No.*	*Description*
(1)	(2)	(3)
8	8	Distribution of persons who know methods of family planning in each education status group
9	9	Distribution of persons who know methods of family planning in each age group
10	10	Distribution of persons who know methods of family planning in each occupation group
11	11	Distribution of persons who know methods of family planning—District-wise
12	12	Distribution of persons who know methods of family planning—Stratum-wise
13	13.1	Distribution of those practising various methods by religious groups—Hindus
14	13.2	Do. Christians
15	13.3	Do. Muslims
16	13.4	Do. All religions
17	14.1	Distribution of those practising various methods by educational status—Illiterate
18	14.2	Do. Literate below primary
19	14.3	Do. Passed primary below matric
20	14.4	Do. Matric and above
21	15.1	Distribution of those practising various methods—District-wise—Sterilisation
22	15.2	Do. I.U C.D.
23	15.3	Do. Condom
24	15.4	Do. Foam tablets
25	15.5	Do. Jelly
26	15.6	Do. Rhythm method
27	15.7	Do. Oral pills

28 Facsimile of the schedule and the enumerator's assessment questionnaire.

APPENDIX

TABLE 1

Distribution of persons contacted according to awareness of family planning and religion

Religion	Aware of family planning		Not aware of family planning		Not recorded		Total	
	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage
Hindu ..	2576	67·03	1225	31·88	42	1·09	3843	100·00
Christian ..	659	75·83	204	23·48	6	0·69	869	100·00
Muslim ..	1281	65·16	680	34·59	5	0·25	1966	100·00
Not recorded ..	6	66·67	3	33·33	..	..	9	100·00
Total ..	4522	67·62	2112	31·59	52	0·79	6687	100·00

TABLE 2

Distribution of persons contacted according to awareness of family planning and age-groups

Age-group	Aware of family planning		Not aware of family planning		Not recorded		Total	
	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage
15—19 ..	15	48·39	16	51·61	..	..	31	100·00
20—24 ..	462	63·90	260	35·96	1	0·14	723	100·00
25—29 ..	1520	66·43	749	32·74	19	0·83	2288	100·00
30—34 ..	2525	69·27	1037	29·82	33	0·91	3645	100·00
Total ..	4522	67·62	2112	31·59	53	0·79	6687	100·00

TABLE 3

Distribution of persons contacted according to awareness of family planning and educational status

Serial number	Educational status	Aware of family planning		Not aware of family planning		Not recorded		Total	
		Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage
1	2	3	4	5	6	7	8	9	10
1	Illiterate ..	706	49·51	697	48·88	23	1·61	1426	100·00
2	Literate but below primary ..	1820	72·19	687	27·25	14	0·56	2521	100·00
3	Passed primary but below matric ..	1585	74·07	546	25·51	9	0·42	2140	100·00
4	Matric and above ..	332	84·27	56	14·21	6	1·52	394	100·00
5	Not recorded ..	79	38·35	126	61·17	1	0·48	206	100·00

TABLE 4

Distribution of persons contacted according to awareness of family planning and occupation

Serial number	Occupation	Aware of family planning		Not aware of family planning		Not recorded		Total	
		Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage
1	2	3	4	5	6	7	8	9	10
1	Professional, technical and related workers ..	198	86·46	29	12·66	2	0·88	229	100·00
2	Administrative, executive and managerial workers ..	8	61·54	5	38·46	..	..	13	100·00
3	Clerical and related workers ..	123	79·87	31	20·13	..	..	154	100·00
4	Sales workers ..	524	71·20	208	28·26	4	0·54	736	100·00
5	Farmers, fishermen, hunters, loggers, etc. ..	1673	66·63	818	32·58	20	0·79	2511	100·00
6	Miners, quarrymen and related workers ..	2	22·22	7	77·78	..	..	9	100·00
7	Workers in transport and communication occupation ..	63	86·30	10	13·70	..	..	73	100·00
8	Craftsman, production process workers and labourers not elsewhere classified ..	1736	63·89	958	35·26	23	0·85	2717	100·00
9	Service, sports and recreation workers ..	90	80·37	22	19·63	..	..	112	100·00
10	Workers not classifiable by occupation ..	105	78·95	24	18·05	4	3·00	133	100·00

TABLE 5

Distribution of persons contacted according to awareness of family planning—District-wise

District	Aware of family planning		Not aware of family planning		Not recorded		Total	
	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage
1	2	3	4	5	6	7	8	9
Trivandrum ..	189	46·67	207	51·11	9	2·22	405	100·00
Quilon ..	479	93·92	26	5·10	5	0·98	510	100·00
Alleppey ..				Not recorded				
Kottayam ..	199	26·71	545	73·15	1	0·14	745	100·00
Ernakulam ..	464	89·06	51	0·79	6	1·15	521	100·00
Trichur ..	283	97·92	6	2·08	..	..	289	100·00
Palghat ..	657	66·63	321	32·56	8	0·81	986	100·00
Malappuram ..	795	60·69	511	39·01	4	0·30	1310	100·00
Kozhikode ..	886	75·28	290	24·64	1	0·08	1177	100·00
Cannanore ..	570	60·45	354	37·54	19	2·01	943	100·00

TABLE 6

Distribution of persons contacted stratum-wise according to awareness of family planning

Stratum	Aware of family planning		Not aware of family planning		Not recorded		Total	
	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage
1	2	3	4	5	6	7	8	9
Lowland ..	704	77·96	199	22·04	..	..	903	100·00
Below 500 ..	10	50·00	10	50·00	..	..	20	100·00
1000—1999 ..	107	86·29	17	13·71	..	..	124	100·00
2000 and above ..	587	77·34	172	22·66	..	..	759	100·00
Midland ..	2851	64·62	1542	34·95	19	0·43	4412	100·00
500—999 ..	116	97·48	3	2·52	..	..	119	100·00
1000—1999 ..	577	58·82	393	40·06	11	1·12	981	100·00
2000 and above ..	116	65·16	1146	34·60	8	0·24	3312	100·00
Highland ..	977	71·21	366	26·68	29	2·11	1372	100·00
500—999 ..	29	69·05	13	30·95	..	..	42	100·00
1000—1999 ..	38	29·01	85	64·89	8	6·10	131	100·00
2000 and above ..	910	75·90	268	22·35	21	1·75	1199	100·00

TABLE 7

Distribution of persons in each religious group who know methods of family planning

Method	Hindus		Christians		Muslims		Not recorded		Total	
	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage
1	2	3	4	5	6	7	8	9	10	11
Sterilisation ..	1855	72·01	441	66·91	895	69·87	2	33·33	3193	70·61
I.U.C.D. ..	1610	62·50	430	65·25	852	66·51	3	50·00	2895	64·02
Condom ..	1318	51·16	322	48·86	565	44·11	5	83·30	2210	48·87
Diaphragm ..	1	0·04	..	..	2	0·16	..	..	3	0·07
Foam tablets ..	45	1·75	17	2·58	26	2·03	..	..	88	1·95
Jelly ..	132	5·12	25	3·79	81	6·32	1	16·67	239	5.29
Rhythm ..	172	6·68	96	14·57	48	3·75	2	33·33	318	7·03
Oral pi ls ..	574	22·28	160	24·28	319	24·90	2	33·33	1055	28·33

Note:—Percentage of those knowing each method to those aware of family planning are worked out.

TABLE 8

Distribution of persons who know methods of family planning in each education status group

Method	Illiterate		Literate but below primary		Passed primary but below matric		Matric and above		Not recorded	
	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage
1	2	3	4	5	6	7	8	9	10	11
Sterilisation ..	509	72·10	1248	68·57	1145	72·24	229	68·97	62	78·48
I.U.C.D. ..	361	51·13	1239	68·08	1029	64·92	209	62·95	57	72·15
Condom ..	252	35·69	839	46·10	879	55·46	197	59·34	43	54·43
Diaphragm ..	..	..	2	0·11	1	0·06	..	..	..	..
Foam tablets ..	11	1·56	19	1·04	45	2·84	13	3·92	..	..
Jelly ..	28	3·97	100	5·49	77	4·86	34	10·24	..	..
Rhythm ..	24	3·40	136	7·47	105	6·62	50	15·06	3	3·80
Oral pills	139	19·69	466	25·60	352	22·21	83	25·00	15	18 99

TABLE 9

Distribution of persons who know methods of family planning in each age group

Method	15–19		20–24		25–29		30–34	
	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage
1	2	3	4	5	6	7	8	9
Sterilisation ..	10	66·67	308	66·67	1073	70·59	1882	71·37
I.U.C.D. ..	12	80·00	318	68·83	1001	65·86	1564	61·94
Condom ..	7	46·67	220	47·62	791	52·04	1192	47·21
Diaphragm ..	..	..	..	..	..	..	2	0·08
Foam tablets ..	..	..	6	1·30	26	1·71	56	2·22
Jelly ..	1	6·67	29	6·28	77	5·07	132	5·23
Rhythm ..	1	6·67	21	4·55	115	7·57	181	7·17
Oral pills ..	5	33·33	133	28·79	379	24·93	538	21·31

TABLE 10

Distribution of persons who know methods of family planning in each occupation group

Method	Professional, technical and related workers	Administrative, executive and managerial workers	Clerical and related workers	Sales workers	Farmers, Fishermen hunders, loggers, etc.	Miners, quarrymen and related workers	Workers in transport and communication	Craftsmen, production process workers etc.	Service sports and recreation workers	Workers not classifiable by occupations
1	2	3	4	5	6	7	8	9	10	11
Sterilisation—										
Number ..	141	6	87	368	1121	2	54	1271	58	85
Percentage ..	71·21	75·06	70·73	70·23	67·01	100·00	85·71	73·21	64·44	80·95
I.U.C.D.—										
Number ..	123	7	74	345	1040	2	35	1143	55	71
Percentage ..	62·12	87·50	60·16	65·84	62·16	100·00	55·56	65·84	61·11	67·62
Condom—										
Number ..	102	6	77	291	816	1	26	796	45	50
Percentage ..	51·52	75·00	62·60	35·53	48·77	50·00	41·27	45·85	50·00	47·62
Diaphragm—										
Number ..	..	..	..	2	1	..	..	..	..	..
Foram Percentage ..	..	..	..	0·38	0·05	..	..	..	..	..
Tablets—										
Number ..	7	..	4	18	20	..	..	30	6	3
Percentage ..	3·54	..	3·25	3·44	1·20	..	..	1·73	6·67	2·86
Jelly—										
Number ..	15	..	7	32	105	..	4	67	8	..
Percentage ..	7·58	..	5·69	6·11	6·34	..	6·35	3·86	8·89	..
Rhythm—										
Number ..	31	1	15	21	178	..	2	59	4	7
Percentage ..	15·66	12·50	12·20	4·01	10·64	..	3·17	3·40	4·44	6·67
Oral pills—										
Number ..	50	..	41	122	431	..	16	347	21	27
Percentage ..	25·25	..	33·33	2·33	25·76	..	25·40	19·99	23·33	25·71

TABLE 11

Distribution of persons who know methods of family planning—district-wise

Method		Trivandrum	Quilon	Kottayam	Ernakulam	Trichur	Palghat	Malappuram	Kozhikode	Cannanore
1		2	3	4	5	6	7	8	9	10
Sterilisation	No.	77	327	159	318	240	444	516	659	453
	Percentage	40·74	68·27	79·90	68·53	84·80	67·58	64·91	74·38	79·47
I.U.C.D.	No.	128	241	3	337	240	501	460	516	469
	Percentage	67·72	50·31	1·51	72·63	84·80	76·26	57·86	58·24	82·28
Condom	No.	128	202	15	273	60	349	348	573	452
	Percentage	67·72	42·17	7·54	58·84	21·20	53·12	43·77	64·67	79·30
Diaphragm	No.	..	..	..	1	..	1	..	..	..
	Percentage	..	..	..	0·22	..	0·15	..	..	..
Foam tablets	No.	1	1	2	25	13	8	26	11	1
	Percentage	0·53	0·21	1·01	5·39	4·59	1·22	3·27	1·24	0·18
Jelly	No.	..	8	2	41	13	48	38	23	66
	Percentage	..	1·67	1·01	8·84	4·59	7·31	4·78	2·60	11·58
Rhythm	No.	6	70	36	55	40	18	36	60	27
	Percentage	3·17	14·61	18·09	11·85	3·53	2·74	4·53	6·77	4·74
Oral pills	No.	66	16	10	80	92	184	220	207	180
	Percentage	34·92	3·34	5·03	17·24	32·51	28·01	27·67	23·36	31·58

TABLE 12

Distribution of persons who know methods of family planning stratum-wise

Method		Low land			Midland			High land		
		Below 500	1000–1999	2000 and above	500–999	1000–1999	2000 and above	500–999	1000–1999	2000 and above
1		2	3	4	5	6	7	8	9	10
Sterilisation	No.		81	478	100	430	1360	21	20	703
	Percentage		75·70	81·43	86·21	74·52	63·02	72·41	52·63	77·25
I.U.C.D.	No.		68	334	65	364	1443	26	28	567
	Percentage		63·55	56·90	56·03	63·08	66·87	89·66	73·68	62·31
Condom	No.		64	352	45	364	946	17	22	400
	Percentage		59·81	59·97	38·79	63·08	43·84	58·62	57·89	43·96
Diaphragm	No.		..	1	..	..	1	..	..	..
	Percentage		..	0·17	..	..	0·05	..	..	..
Foam tablets	No.		6	20	..	17	25	1	..	19
	Percentage		5·61	3·41	..	2·95	1·16	3·45	..	2.09
Jelly	No.		..	41	1	10	81	5	..	101
	Percentage		..	6·98	0·86	3·47	3·75	17·24	..	11·10
Rhythm	No.		25	27	25	27	167	2	..	45
	Percentage		23·36	4·60	21·55	4·68	7·74	6·90	..	4·95
Oral pills	No.		11	89	4	48	691	15	..	197
	Percentage		1·03	15·16	3·45	8·32	32·02	51·72	..	21·65

TABLE 13·1

Distribution of those practising various methods by religious groups

(Hindus)

Method	Before 1963		1963–66		1967–69		Total	
	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage
1	2	3	4	5	6	7	8	9
Sterilisation ..	4	0·2	30	1·62	161	8·68	195	10·52
I.U.C.D. ..	..	..	4	0·25	62	3·85	66	4·10
Condom ..	1	0·03	4	0·30	184	13·96	189	14·34
Diaphragm ..	..	..	..	..	..	..	..	..
Foam tablets ..	..	..	..	..	1	2·22	1	2·22
Jelly ..	..	..	..	..	17	12·88	17	12·88
Rhythm ..	5	2·91	8	4·65	48	27·91	61	35·47
Oral pills ..	..	..	2	0·35	14	2·44	16	2·79

TABLE 13·2

Distribution of those practising various methods by religious groups

(Christians)

Method	Before 1963		1963–66		1967–69		Total	
	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage
1	2	3	4	5	6	7	8	9
Sterilisation ..	1	0·23	4	0·90	40	9·07	45	10·20
I.U.C.D. ..	..	..	4	0·93	22	5·12	26	6·04
Condom ..	..	..	4	1·24	61	18·94	65	20·18
Diaphragm ..	..	..	..	..	..	..	..	..
Foam tablets ..	..	..	..	..	1	5·88	1	5·88
Jelly ..	..	..	..	..	1	4·00	1	4·00
Rhythm ..	1	1·04	8	8·33	28	29·17	37	38·54
Oral pills ..	1	0·63	1	0·63	6	3·75	8	5·00

TABLE 13·3
Muslims

Method	Before 1963		1963–66		1967–69		Total	
	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage
1	2	3	4	5	6	7	8	9
Sterilisation ..	..	..	1	0·11	33	3·69	34	3·80
I.U.C.D. ..	..	..	1	0·12	10	1·17	11	1·29
Condom ..	..	..	..	..	55	9·73	55	9·73
Diaphragm ..	..	..	..	..	..	..	..	..
Foam tablets ..	..	..	..	..	..	..	..	..
Jelly ..	..	..	..	..	3	3·70	3	3·70
Rhythm ..	..	..	1	2·03	16	33·33	17	35·42
Oral pills ..	..	..	..	..	3	3·13	3	3·13

TABLE 13·4
Distribution of those practising various methods by all religions

Method	Before 1963		1963–66		1967–69		Total	
	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage
1	2	3	4	5	6	7	8	9
Sterilisation ..	5	0·16	35	1·10	240	7·52	280	8·78
I.U.C.D. ..	..	..	9	0·31	94	3·25	103	3·50
Condom ..	1	0·05	8	0·36	300	13·57	309	13·98
Diaphragm ..	..	..	..	..	..	..	..	..
Foam tablets ..	..	..	..	..	2	2·27	2	2·27
Jelly ..	..	..	..	..	21	8·79	21	8·79
Rhythm ..	6	1·89	17	5·35	92	28·93	115	36·16
Oral pills ..	1	0·10	3	0·28	23	2·18	27	2·56

TABLE 14·1

Distribution of those practising various methods by educational status

Illiterate

Method	Before 1963		1963–66		1967–69		Total	
	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage
1	2	3	4	5	6	7	8	9
Sterilisation ..	1	0·19	8	1·57	33	6·48	42	8·25
I.U.C.D. ..	..	..	1	0·28	9	2·49	10	1·77
Condom ..	..	..	..	..	16	6·35	16	6·35
Diaphragm ..	..	..	..	..	..	..	..	..
Foam tablets ..	..	..	..	..	..	..	..	..
Jelly ..	..	..	..	..	1	3·57	1	3·57
Rhythm ..	1	4·17	1	4·17	6	25·00	8	33·33
Oral pills ..	..	..	..	..	2	1·44	2	1·44

TABLE 14·2

Literate below Primary

Method	Before 1963		1963–66		1967–69		Total	
	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage
1	2	3	4	5	6	7	8	9
Sterilisation ..	1	0·03	11	0.88	101	8·09	113	9·05
I.U.C.D. ..	..	..	2	0·16	52	4·20	54	4·36
Condom ..	..	..	1	0·12	85	10·13	86	10·25
Diaphragm ..	..	..	..	..	..	..	..	..
Foam tablets ..	..	..	..	..	..	..	..	..
Jelly ..	..	..	..	..	5	5·00	5	5·00
Rhythm ..	3	2·21	9	6·62	35	25.74	47	34·56
Oral pills ..	1	0·21	2	0·43	11	2·36	14	3·00

TABLE 14·3
Passed Primary below Matric

Method	Before 1963		1963–66		1967–69		Total	
	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage
1	2	3	4	5	6	7	8	9
Sterilisation ..	3	0·26	11	0·96	83	7·25	97	8·47
I.U.C.D. ..	..	..	5	0·49	25	2·43	30	2·92
Condom ..	1	0·11	5	0·57	156	17·75	162	18·43
Diaphragm ..	..	..	..	..	..	..	..	..
Foam tablets ..	..	..	..	..	1	22·22	1	22·22
Jelly ..	..	..	..	..	7	9·09	7	0·09
Rhythm ..	2	1·90	2	1·90	35	33·33	39	37·14
Oral pills ..	..	..	..	..	7	1·99	7	1·99

TABLE 14·4
Matric and above

Method	Before 1963		1963–66		1967–69		Total	
	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage
1	2	3	4	5	6	7	8	9
Sterilisation ..	..	..	4	1·75	13	5·68	17	7·42
I.U.C.D. ..	..	..	1	0·48	7	3·35	8	3·83
Condom ..	..	..	2	1·02	41	20·81	43	21·83
Diaphragm ..	..	..	..	..	..	..	..	..
Foam tablets ..	..	..	..	..	1	7·69	1	7·69
Jelly ..	..	..	..	..	8	23·53	8	23·53
Rhythm ..	..	..	3	6·00	16	32·00	19	38·00
Oral pills ..	..	..	1	1·20	3	3·61	4	4·82

TABIE 15·1

Distribution of those practising various methods—District-wise

STERILISATION

District	Before 1963		1963–66		1967–69		Total	
	No.	Percentage	No.	Percentage	No.	Percentage	No.	Percentage
1	2	3	4	5	6	7	8	9
Trivandrum ..	1	1·30	3	3·90	17	22·08	21	27·27
Quilon ..	2	0·61	8	2·45	58	17·74	68	20·80
Alleppey ..				Not reported				
Kottayam ..	1	0·63	..	..	10	6·29	11	6·92
Ernakulam ..	..	..	5	1·57	40	12·58	45	14·15
Trichur ..	1	0·42	6	2·50	21	8·75	28	11·67
Palghat ..	..	..	3	0·68	7	1·58	10	2·25
Malappuram ..	..	..	1	0·19	19	3·68	20	3·88
Kozhikode ..	1	0·15	6	0·91	51	7·74	53	8·80
Cannanore ..	..	..	2	0·44	11	2·43	13	2·87

TABLE 15·2
I.U.C.D.

District	1963		1963–66		1966–69		Total	
	No.	Percentage	No.	Percentage	No.	Percentage	No.	Percentage
1	2	3	4	5	6	7	8	9
Trivandrum ..	..	..	..	..	4	3·13	4	3·13
Quilon ..	..	..	2	0·83	33	13·69	35	14·52
Alleppey ..	Not reported							
Kottayam ..	..	..	..	..	3	100·00	3	100·00
Ernakulum ..	..	..	5	1·48	19	5·64	24	7·12
Trichur ..	..	..	1	0·42	5	2·08	6	2·50
Palghat ..	..	..	1	0·20	5	1·00	6	1·20
Malappuram ..	..	..	..	..	8	1·74	8	1·74
Kozhikode ..	..	..	..	..	12	2·33	12	2·33
Cannanore ..	..	..	..	..	5	1·07	5	1·07

TABLE 15·3

Condom

District	1963		1963–66		1966–69		Total	
	No.	Percentage	No.	Percentage	No.	Percentage	No.	Percentage
1	2	3	4	5	6	7	8	9
Trivnadrum ..	..	..	..	..	..	..	..	..
Quilon ..	..	..	1	0·50	38	18·81	39	19·31
Alleppey ..				Not reported				
Kottayam ..	..	..	..	..	8	53·33	8	53·33
Ernakulam ..	..	..	5	1·83	88	32·23	93	34·07
Trichur ..	..	..	..	..	11	18·33	11	18.33
Palghat ..	..	..	1	0·29	13	3·72	14	4·01
Malappuram ..	1	0·29	..	..	32	9·20	33	9·48
Kozhikode ..	..	..	1	0·17	96	16·75	97	16·93
Cannanore ..	..	..	..	..	14	3·10	14	3·10

TABLE 15·4

Foam Tablets

District	1963		1963–66		1966–69		Total	
	No.	Percentage	No.	Percentage	No.	Percentage	No.	Percentage
1	2	3	4	5	6	7	8	9
Trivandrum ..	..	..	..	..	..	..	..	..
Quilon ..	..	..	..	..	..	..	..	..
Alleppey ..	Not reported							
Kottayam ..	..	..	..	..	..	..	..	..
Ernakulam ..	..	..	..	..	..	..	..	..
Trichur ..	..	..	..	..	1	7·69	1	7·69
Palghat ..	..	..	..	..	..	..	..	..
Malappuram ..	..	..	..	..	..	..	..	..
Kozhikode ..	..	..	..	..	..	..	..	..
Cannanore ..	..	..	..	..	1	100·00	1	00·00

TABLE 15·5

Jelly

District	1963		1963–66		1967–69		Total	
	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage
1	2	3	4	5	6	7	8	9
Trivandrum ..	..	..	..	..	..	..	..	..
Quilon ..	..	..	..	..	..	..	..	..
Alleppey ..	Not reported							
Kottayam ..	..	..	..	..	..	..	..	..
Ernakulam ..	..	..	..	..	10	2·44	10	2·44
Trichur ..	..	..	..	..	1	7·69	1	7·69
Palghat ..	..	..	..	..	..	..	..	..
Malappuram ..	..	..	..	..	1	2·63	1	2·68
Kozhikode ..	..	..	..	..	..	..	..	..
Cannanore ..	..	..	..	..	9	13·64	9	13·64

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TABLE 15·6

Rhythm method

District	1963		1963–66		1967–69		Total	
	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage
1	2	3	4	5	6	7	8	9
Trivandrum ..	..	..	..	..	1	16·67	1	16·67
Quilon ..	5	5·14	12	12·14	36	56·43	54	73·71
Alleppey ..	Not reported							
Kottayam ..	1	2·78	..	..	5	13·89	6	16·67
Ernakulam ..	..	..	..	..	5	9·09	5	9·09
Trichur ..	..	..	1	10·00	8	80·00	9	90·00
Palghat ..	..	..	1	5·56	..	..	1	5·56
Malappuram ..	..	..	1	2·22	7	15·56	8	17·78
Kozhikode ..	..	..	1	1·67	28	46·67	29	48·33
Cannanore ..	..	..	1	3·70	3	11·11	4	14·81

TABLE 15·7

Oral pills

District	1963		1963–66		1967–69		Total	
	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage
1	2	3	4	5	6	7	8	9
Trivandrum ..	..	..	..	..	2	3·03	2	3·03
Quilon ..	1	6·25	2	12·50	9	56·25	12	75·00
Alleppey ..	Not reported							
Kottayam ..	..	..	..	..	..	..	..	..
Ernakulam ..	..	..	..	..	2	2·50	2	2·50
Trichur ..	..	..	..	..	..	..	..	..
Palghat ..	..	..	..	..	1	0·54	1	0·54
Malappuram ..	..	..	..	..	1	0·45	1	0·45
Kozhikode ..	..	..	1	0·48	3	1·45	4	1·93
Cannanore ..	..	..	..	..	1	0·56	1	0·56

SURVEY ON ATTITUDE TO FAMILY PLANNING AMONG WORKERS IN FACTORIES AND ESTATES

CONTENTS

APPENDIX

SURVEY ON ATTITUDE TO FAMILY PLANNING AMONG WORKERS IN FACTORIES AND ESTATES

1. *Introduction.*—Family planning has been accepted as a Government policy. Efforts are being made to propagate the message of family planning among all sections of the population. The impact of the programme on various sections of the population is different. Some sections of the population are more receptive to new ideas. The workers in the organised sector of factories and estates constitute a sizable and important segment of the population. They are different from the general population in many respects. Since they are generally more educated than the general population and have more opportunities for contacts, new ideas are propagated among them rather easily. They will be better motivated to accept new ideas and methods. So the implementation of the family planning programmes will be comparatively easier in this sector.

The present survey has been intended to provide some base line data which will be helpful for an intensive campaign among workers in estates and factories.

2. *Objects.*—The survey is intended to provide information regarding the attitude, knowledge and practice of family planning among ever married workers in estates and factories. The demographic and socio-economic characteristics like age, sex, religion, occupation, income and education of the workers and the influences of these factors on their behaviour with regard to family planning are also studied. The reasons for non-acceptance of family planning methods and preference of various methods are also investigated.

3. *Sampling design, coverage and field work.*—The coverage is a sample of 1 per cent of the workers in the organised sector. The selection is done in 2 stages. At the first stage, 20 per cent of the estates/factories are selected. Selection has been done for the factories and the three types of estates separately. For this the list of registered factories available from the Labour Department and the list of estates in Plantation Directory published by the U.P.A S.I. have been used. The list has been prepared in the Head Office. The investigators visited the selected units and prepared the list of workers in each unit. Wherever the marital status of workers was readily available without contacting each individual, the list of married persons was prepared. 5 per cent of them were selected by systematic sampling The selected persons were interviewed by the Investigators of the Department. Where a list of all employees only was available, irrespective of their marital status, the selection was done from this list. If unmarried persons were selected, they were omitted. The selection was continued

till the requisite number of persons was obtained. Since the sampling fraction was subjected to correction to the nearest integer at each stage and due to the variation in number between units, the ultimate coverage was not exactly 1 per cent. The number of units surveyed, number of workers in these units and the number of workers actually contacted are given in Table 1.

The field work was started in January 1970 and completed in all the Districts by August 1970. A total number of 2222 workers was contacted for the survey.

Some of the selected units were left out due to various reasons. In the case of factories, the list available related to the year 1967. A large number of units were not functioning at the time of the survey in 1970. All the units which were functioning were surveyed. In the case of estates, omission was due to other causes. In the tea estates in Kottayam District there are a large number of workers from Tamilnad. The field work in these cases could be done only through an interpreter. More over they go for work in the estates early in the morning and return only late in the evening. The Investigators found the field work in these cases extremely difficult. Hence they were left out from the purview of the survey.

4. *Schedules.*—For the survey, two schedules have been designed. Schedule I contains general information on the factory/estate selected. The details collected in this schedule include the total number of workers in the unit, nature and scope of family planning activities in the establishment if any and details regarding the scheme of giving incentives or other benefits to family planning adopters.

Schedule 2 is an individual schedule relating to each persons selected for the interview. This schedule contains information on the socio-economic characteristics of the persons like age, sex, religion, educational status, income and occupation. The other details collected in the schedule are the number of children born, number of children living at the time of the survey, still births and abortions. Questions on the opinion of the respondents on age at marriage and spacing of births are also included in addition to those on attitude, knowledge and practice of family planning methods.

Copies of the schedules and instructions are appended.

5. *Approach to the study.*—The present survey is intended only as a base line survey which will give indications of the degree of knowledge, attitude towards family planning and extent of practice. The number of persons selected from each category of industry is very small. Hence the industries other than the major industries of weaving, transport, cashew and rayons are grouped into one category 'other industries'. These four types of industries are taken separately. Thus altogether

there are the following eight categories. The results for each of the categories are given separately. The categories are:—

1. Weaving
2. Transport
3. Cashew
4. Rayons
5. Other factories
6. Coffee estates
7. Tea estates
8. Rubber estates

6. *Family planning activities in the selected units.*—In schedule 1 the details of family planning activities in the selected units are collected. The easy availability of family planning services is a prompting influence for couples to adopt birth control methods. Since the workers spend a major portion of their time in the premises of the factory/estate, it is advantageous if a family planning clinic is established their place of work. From the data collected it is seen that only very few establishments have family planning clinics in their premises (8 out of 507). It is necessary that all those establishments which have not less than 50 workers, should have a family planning clinic in their premises. There should also be schemes for giving incentives to persons who have adopted family planning methods.

7. *Characteristics of persons interviewed.*—The persons selected for interview belong to different socio-economic groups. The age, education, religion, income and occupation are studied in this section.

7.1 *Age and sex composition.*—According to the procedure adopted for selection, only evermarried persons were selected for interview. 1373 currently married males and 765 currently married females were interviewed by Investigators. 16 males and 68 females who were widowed, divorced and separated were also interviewed. More than 80 per cent, of the persons interviewed belong to the 25-49 age group. In the category cashew, the workers are mainly females—53 males against 669 females. In the other categories males exceed females. From the category of transport, no female was interviewed. The percentage of males interviewed in the 50 and above age group, is more than 10 in weaving, transport, other factories, tea estates and rubber estates. The percentage of females 50 and above years in coffee estates, weaving and other factories is more than 10 (Vide Tables 1 and 2).

7.2 *Educational status.*—A large percentage of illiterate persons were interviewed in the traditional industries of weaving and cashew. In the three types of estates also, a large percentage of the persons (31 per cent in rubber estates, 53 per cent in tea estates and 59 per cent in coffee estates) interviewed are illiterate. In rayons and transport

most of the persons are literates. In rayons, more than 69 per cent and in transport about 20 per cent have passed matriculation. In all categories of industries except rayons, the largest percentage of persons belong to the category 'literate below primary' (Vide Table 3).

According to the 1961 Census, among males aged 20-59 years, 29·1 per cent are illiterate, 48·5 per cent are literate, but below primary 14·6 per cent have passed primary but below matric and 7·8 per cent have passed matriculation and above. A comparison of this distribution (of general population on the basis of educational status) with the distribution of selected males reveals close identity except for the personnel in the factories under rayons, transport and other groups. Here the selected males have a better educational status than the general population. In the estates tea and coffee, the males have a lower level of educational status than the general population.

Among females in 15-44 age group in Kerala, 48 per cent are illiterates, 34 per cent are literate below primary 14 per cent have passed primary but below matric and 4 per cent are matric and above. As in the case of selected males the pattern holds good for most of the categories.

7.3 *Religious distribution.*—According to the 1961 Census of the general population 61 per cent are Hindus, 21 per cent Christians and 18 per cent Muslims. A comparison of this with the selected persons reveals certain dissimilarities. In the case of transport, cashew and tea estates the percentage of Hindus is much higher than that in the general population. In rayons the percentage of Hindus is much lower. In other categories both percentages are more or less equal to that of the population of Kerala. The percentage of Christians selected is much less in weaving, cashew and coffee estates. In the case of Muslims the percentage is substantially lower in transport, cashew, other factories and tea estates (Vide Table 4).

7.4 *Occupation.*—Since the selection of couples has been done from specified categories of industries, the stratification itself provides a broad industrial classification. Hence the occupational classification in each industry is not very relevant. The persons in the three types of estates are classified in the occupational group 'agriculture and animal husbandry'. In the factories sector most of the persons belong to the categories—Crafts and manufacture, professional, technical and executive (Vide Table 5).

7.5 *Monthly income.*—Though persons from all income groups are selected for interview, only a small percentage of the selected persons belong to the income group below Rs. 50. In the category 'rayons' all the persons and in transport 63 per cent belong to the income group of Rs. 200 and above. In the other categories most of the persons interviewed belong to the income group Rs. 50-149 (Vide Table 6).

8. *Fertility.*—The fertility status of the persons interviewed has been studied. For each category the analysis has been done on the number of children born, number of children living at the time of survey still births and abortions according to marriage duration. The average number of children born alive for males interviewed ranged from 3·52 to 5·15. For females the range is wider and is from 3·80 to 6·00. The average number of children born alive is, near about 4 in most of the categories (Vide Table 7.1).

While the average number living is less than 4, the only exceptions are females in rayons, coffee estates and rubber estates (Vide Table 7.2).

The average number of still births and abortions is very low in most of the categories. In the category 'weaving' no still birth or abortion has been enumerated. It is to be doubted whether of the 115 persons in this category, there had not been even a single still birth or abortion. The maximum number of still births is reported in the category rayons. The maximum number of abortions is reported in the category of 'rubber estates'.

9. *Awareness of family planning.*—The basic requisite for awareness of family planning is the knowledge of the physiology of reproduction. It is noteworthy that a substantial percentage of couples have yet to realise the fact that we can decide the number of children we should have and that by adopting suitable methods we can limit the size of the family. Table 8.1 and 8.2 give the percentage of persons in each age group and educational group who believe in their power to decide the number. Among the percentage of these males who believe that they can decide the number of children ranges from 41 to 77, the least being the category 'tea estates' and highest in 'weaving' among females the range is from 7 to 100. No systematic relationship is seen between the awareness and age of the respondent and between education and awareness. Only the illiterates in the category of transport have a very low percentage believing in their power to decide the number of children. In the other categories illiterates have also an equal, if not higher, percentage as believing in their power to decide the number of children they should have.

10. *Knowledge of family planning.*—The small family ideal is known to a large percentage of the couples. This ideal can be realised only if the methods are known as knowledge is a precondition for adoption. The analysis of knowledge of family planning among the different industrial categories reveals that a substantial percentage of males (ranging from 72 per cent to 98 per cent) had knowledge of family planning. The percentage among females is less in all categories except rayons and rubber etsates. In rayons only 5 females are interviewed and all of them have reported knowledge of family planning.

The knowledge of family planning has been analysed according to age, religion, income and education also.

Generally a higher percentage of males and females in the younger age groups have knowledge of family planning compared to older age groups (Table 9.1). A review of the percentage in the various religious groups does not show any relationship between religion and knowledge of family planning (Table 9.2).

Income has also not shown any influence on the knowledge of family planning (Table 9.3).

The most important factor affecting knowledge of family planning is the educational status. The percentage of those who have knowledge of family planning increases with education. This general trend has only very few exceptions in the case of both males and females. The illiterates have naturally the least knowledge of family planning. In the matric and above educational group, more than 95 per cent males in all categories have knowledge of family planning (Table 9.4).

To those who have knowledge of family planning a question was asked about the methods they know. As it is felt that the most important factor influencing the knowledge is educational status, analysis is done according to educational status (Table 10.1 to 10.4). The methods reported are P.P.S., vasectomy, I.U.C.D., condom, diaphragm, foam tablets, abstinence and withdrawal. Among all educational status group, P.P.S. vasectomy and I.U.C.D., are the most known methods. Most of the males and females know these three methods. The only exception to this general pattern is the females in tea and rubber estates where only a very few females know the sterilisation methods. The next popularly known method is condom. The method has yet to gain popularity among males and females in the lower educational strata. Abstinence is also a widely known method. Diaphragm and foam tablets are known to only very few in most of the categories. Withdrawal is reported only by 14 per cent males in the weaving industry who have education above matriculation. No one in the other categories know of this method.

10.1 *Source of knowledge.*—The source of knowledge of family planning was elicited from those who have knowledge about family planning (Table 11.1 to 11.4). Newspaper has some influence in the case of those who have educational status above matriculation standard. Only very few get the knowledge from cinema. The role of family planning clinics and family planning field staff is clear from the answers. The sources of knowledge of a substantial percentage of males and females are family planning clinic and family planning field staff. Other sources reported are friends, radio and publication.

11. *Attitude to family planning.*—It is seen that majority of the couples contacted had knowledge of family planning. A question was

asked to those who had no knowledge of family planning whether they are willing to learn family planning or not. Those who were willing were to specify the source they prefer and those who were not willing were required to specify the reason for reluctance. Only very few have expressed their willingness to learn family planning. Females only in one category (tea estates) are willing to learn family planning methods. The source preferred by all except 71 per cent males in the category 'other factories' is hospital/clinic. The only other source specified is family planning workers (Vide Table 12.1).

The majority of couples without knowledge of family planning were not willing to learn about family planning (Vide Table 12.2). They have given various reasons for their reluctance. Health reasons are given by about 1/3rd males in transport and rayons industries. About ¼th in cashew industry also give the same reason. A substantial percentage in cashew industry, rubber and tea estates are reluctant because they think family planning is not necessary for them. Religious objection is stated by a good percentage in rayons and coffee estates. In weaving industry the main reason given is that they have reached old age and hence family planning is not necessary for them.

11.1 *Preference for permanent and temporary methods.*—The couples were asked whether they prefer permanent or temporary mehtod. They were also asked to specify the reasons for their preference. Permanent methods can be said to be more preferred in most of the categories. Exceptions to this are the females in weaving industry, couples in coffee estates and rubber estates.

In coffee estates and rubber estates where temporary methods are more preferred the reason given is that temporary methods are not harmful to health. In weaving industry the reason is the easiness of temporary methods. In other categories also the health reason is a major cause given for preference of temporary methods (Vide Table 13.1).

The reasons given for preference of permanent methods are mainly the permanent nature of the method and that no more children are necessary. The couples in rayons industry prefer permanent methods because they are more safe (Vide Table 13.2).

It is seen that permanent methods are preferred to temporary methods. The persons for preferring permanent methods were asked whether they are willing to undergo sterilisation operation. A substantial percentage have expressed their willingness to undergo operation or have already undergone sterilisation operation. Only very few have given specific reasons for not willing to undergo operation. The fear of after effects and the fear that operation is not good for health are two major reasons given for not willing to undergo operation (Vide Table 14).

The couples who have expressed their willingness to undergo operation were asked about the incentive they suggest for undergoing operation. A large percentage in most of the categories suggested that the present rate is sufficient. A large percentage of couples in transports and rayons have suggested rates higher than the present rate (Vide Table 14.1).

12. *Practice of family planning.*—Substantial percentage of those who have knowledge of family planning is not practising the methods. Among males, vasectomy is most popular method practised. Other methods practised by males (wives of those contacted) most of the categories are P.P.S. and abstinence. The percentage of females practising family planning methods is very small. Among the females also sterilisation methods are the most popular methods. An analysis of the distribution of those practising according to age reveals that in all categories, very few from the younger age groups (below 30 years) practise methods of family planning. The abstinence method is found to be largely practised by males in the older age groups (above 35 years).

The methods of family planning are seen to be practised by couples in all religious groups. No aversion to any particular method is seen among the 3 religious groups. P.P.S. and I.U.C.D are seen to be less popular among Christians and Muslims compared to Hindus.

Analysis of the practise of family planning according to education reveals that sterilisation methods and I.U.C.D. are practised more by the couples in the lower educational status groups. Couples who have passed primary or above show more preference to condom. Abstinence method is also not very popular among couples in the higher educational strata.

12.1 *Reasons for preference.*—The couples who are practising the family planning methods are asked about the reasons for the preference of method they have adopted. The reasons given for each method are presented in the tables (18.1 to 18.6).

Most of the couples who have adopted vasectomy, preferred it because of its permanent nature. Couples in coffee estates have preferred it because it is a simple operation and permanent in nature. In transport and cashew a large percentage (67 and 78) have not specified the reason. Those, who have specified the reason have stated the 'permanent nature' as the basis for their preference. In weaving industry, the reasons of convenience, cheapness and health reason are also stated in addition to the permanent nature of the methods. Only 20 per cent in this industry have preferred it because it is a permanent method

In respect of P.P.S., couples in all industries have preferred P.P.S. because it is a permanent method. 1/3rd males and 98 per cent

females in the category of cashew have not specified their reasons for preference.

In the case of I.U.C.D. 3 reasons are given by couples for their preference of the method. The reasons given are that it is easy, convenient and not harmful to health.

Condom is also preferred mostly for its easiness. Another reason given by couples in other factories and tea estates is that it is suitable for spacing. 23 per cent couples in tea industry have preferred condom under the wrong assumption that it is a permanent method.

Regarding diaphragm and foam tablets also the common reason given for preference is the case with which the method can be applied. These two methods are practised by only very few couples.

12.2 *Reasons for not practising.*—Though the family planning methods are known to a large percentage of the couples, only a small percentage of them practise the methods. In this context, it is relevant to examine the reasons given by those who are not practising family planning. The reasons given by couples in each educational group are considered separately (vide Table 19.1 to 19.4). A large percentage (in coffee estates more than 60 per cent) of the illiterate couples give the reason that family planning is not necessary for them. Another major reason is that they want more children. Only very few give religious objection as the reason for not practising. Among couples who do not practise on religious grounds, Christians and Muslims exceed Hindus.

In the higher education strata also the main reasons stated are that family planning is not necessary and they want more children. Non-practise due to religious objection is less in the higher educational strata compared to lower strata.

The above analysis brings out the fact there is no organised opposition to family planning. Those not practising are mainly couples who do not attain the desired family size. Among those who have given the reason 'not necessary' may be couples who do not exceed further births even if no family planning methods are adopted by them.

Since there is no opposition on theoretical grounds, the couples can be persuaded to adopt family planning methods by proper motivation. This is highly necessary in view of the small percentage of couples who practise family planning methods.

13. *Opinion on age at marriage.*—The fertility of a couple is largely determined by the age at marriage and spacing between terminations. The higher the age at marriage and spacing suggested the smaller will be the family size. The raising of marriage age is a topic which is in

the active consideration of the Government. In this context, the opinion on age at marriage is very important. The age at marriage of sons preferred by more than 80 per cent of males in all categories except tea and rubber estates is 25 or above. In these categories also the percentage is above 60.

In the case of females also 25 years and above is the age preferred by the largest percentage for marriage of sons. Here also females in tea and rubber estates prefer a lower age at marriage for sons.

The age at marriage preferred for daughter is lower in all categories. Only very few males prefer an age below 18 for marriage of daughters. Exceptions to this are males in weaving and coffee estates. Here more than 30 per cent prefer an age below 18 for marriage of daughters. Largest percentage of females in all categories except weaving, other factories and coffee estates prefer 18 or above as age at marriage of daughters. The above figures suggest that the general opinion is in favour of a higher age at marriage of boys and girls. Only very few are in favour of early marriages.

Opinion on spacing.—The spacing between terminations is also as important as age at marriage. From percentage distribution of males and females it is seen that they are not in favour of a very short spacing or a very long spacing. A spacing of 3 years is the most favoured period. This accounts for more than 40 per cent males in all categories and more than 30 per cent females in all categories. The spacing of 2 years and 4 years is also preferred by a substantial percentage.

Opinion on desired family size.—The question of desired family size arises only if the respondent believes that the number of children can be decided by them. So the question on the number of children desired was asked only to those who believed in their power to decide the number of children. The tables are presented according to the total number of children desired and the number of male children desired. Since above 4 is considered a large family the sex-wise analysis was not attempted. The percentage of couples favouring a family of only one child is very low. A family of 3 or 4 children with 2 male children can be said to be the most favoured family size. This feature is noticed irrespective of age and industrial category. The desire for small family is noticed in all age groups and industrial categories. The distribution of couples in each age group according to the number of children desired is given in Tables 22.1 to 22.8.

14. *Summary and conclusions.*—The main object of the survey is to provide information regarding knowledge, attitude and practice of family planning.

The survey has revealed that most of the couples have knowledge of family planning. The activities of the Health Services Department have been successful in dessiminating the knowledge.

The practice of family plann'ng is not as widespread as knowledge. A large percentage of couples do not practise family planning even though they have the knowledge. This is due to several causes. A large percentage of the couples think that family planning is not necessary for them. It is therefore necessary to convince them of the necessity for family planning.

From their opinion on age at marriage, number of children desired and the spacing preferred, it can be seen that the couples are in favour of a small family and long interval between terminations.

In conclusion it can be said that the couples are in general in favour of family planning and if properly motivated all couples who require family planning can be brought to the family planning fold.

APPENDIX I

SURVEY IN ESTATES AND FACTORIES

SCHEDULE I

Stratum No.
Sl. No. of establishment

1. District ..
2. Name and address of the establishment
3. Type of industry and year of starting of the establishment
4. No of workers employed per day as on date of survey
5. Is there a family planning clinic functioning under the auspices of the factory/estate — Yes/No
6. Is there any scheme for giving incentives for sterilisations — Yes/No

   If yes, give details ..

   Do you think that the incentives have been misused — Yes/No
7. Has any measure for motivating the workers towards family planning been undertaken — Yes/No

   If yes, give details ..

   What educational progress are being organised

APPENDIX I—(*cont.*)

8. Is there any maternity benefits to female employees — Yes/No/Does not arise
   If yes, give details ..
9. The amount spent on maternity benefits during last 3 years (leave salary, other than payments from E.S.I. etc.)
10. Is there any restriction in granting maternity benefit — Yes/No/Does not arise
    (on No. of times, interval, etc.)
    If yes, give details ..
11. Do you think that restriction on maternity benefits is necessary — Yes/No
    If yes what are the restrictions you suggest

SCHEDULE II

Startum No
Sl. No. of establishment
Sl. No. of selected persons

1. District ..
2. Name and address of the establishment
3. Name and address of the person ..
4. Sex ..
5. Age ..
6. Marital status ..
7. Education ..
8. Religion ..
9. Occupation ..
10. Monthly income ..
11. Marriage duration ..
12. No. of children: Born — M F T
    Dead
    Living
    Still birth
    Abortion
13. Do you think it is in your power to decide the number of children you should have — Yes/No

APPENDIX I—(*cont.*)

14.	If yes, what is your opinion regarding the No. of children	M F
15.	Do you know any method of preventing births	Yes/No
16.	If yes, what are the methods you know	Vasectomy P.P.S. I.U.C.D Condom Diaphragm Foam tablets Rhythm Abstinence Others
17.	What is the source of knowledge of the methods	
18.	Do you practise now or have you practised at any time any of the methods	Yes/No
19.	If yes, what are the methods practised	
	Give details of practice (Method, duration, reason for giving up if abandoned)	
20.	Reason for preference of the method	
21.	If no, the reasons for not practising	
22.	If you do not know any method, do you wish to learn about family planning methods	Yes/No
	If yes, what is the source you prefer	
	If no, the reason for reluctance	..
23.	Is there a F.P. clinic in your estate/factory	Yes/No
24.	The distance to the nearest family planning clinic	
25.	Do you prefer permanent or temporary on stoppage of births	
26.	Reasons for preference	..

APPENDIX I—(*cont.*)

27.	If you prefer permanent stoppage are you willing to undergo sterilisation	Yes/No/Already sterilised
	If no, reasons ..	
28.	You consider the present rate of incentives, sufficient compensation for loss of wages	Yes/No
29.	If no, what is the rate you propose	
30.	What is your opinion regarding age at marriage of sons/daughters spacing between children	

SURVEY IN ESTATES AND FACTORIES

Instructions for filling up the Schedules.—The survey is intended to throw light on the knowledge, attitude and practice of family planning methods among workers in the organised sector viz., estates and factories. The necessary data are proposed to be collected in two schedules. The 1st schedule is to be filled up for all the estates/factories selected. This schedule contains information about the estates/factories in general. The second schedule is to be filled up in the case of each selected worker.

Schedule 1.—The identification particulars may be copied from the sample list.

Item 3.—May be ascertained from the establishment.

Item 4.—The number as on the date of survey is to be written .

Schedule 2.—The identification particulars may be copied from sample list.

Item 5.—Age in completed years may be given.

Item 6.—The following codes may be given based on the current status.:

Never married	NM
Married	M
Widowed, divorced or separated	WS

Item 7.—The following codes may be written based on the highest examination passed:

Illiterate	IL
Literate but below matric	LP
Matric	M
Graduates and above	G

Item 2.—The following codes may be used:

Hindus	H
Christians	C
Muslims	M
Others	O

Item 9.—The designation of the worker is to be given with a clear description, indicating the nature of work done by him.

Item 10.—The present income of the household is to be written.

Item 11.—Completed years of married life of the person contacted calculated from the 1st marriage is to be written.

Item 12.—No. of children from all marriages of the person contacted is to be written.

Item 16.—Tick mark the item (5) write the name of methods other than those listed 'Others'.

Item 18.—Practice of methods includes sterilisation also. In the case of sterilised persons details of methods practised prior to sterilisation also may be given.

Item 22.—This question is applicable only to those persons who have answered 'no' in Qn. 15.

APPENDIX II

TABLE 1

Percentage distribution of married persons interviewed by age and sex

Age group	Weaving		Transport		Cashew		Rayons		Other factories		Coffee Estates		Tea Estates		Rubber Estates	
	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
15–19	..	..	..	..	..	2·61	..	..	..	..	..	..	..	..	..	4·76
20–24	2·00	7·69	0·90	..	..	14·33	1·06	..	1·12	13·79	..	..	..	8·88	2·41	4·76
25–29	4.00	15·38	6·31	..	11·32	24·60	14·29	..	9·40	17·24	..	22·22	8·91	22·22	3·61	4·76
30–34	15·00	15·38	13·51	..	24·53	21·82	21·69	..	17·53	13·79	26·09	11·11	21·78	26·67	20·48	23·81
35–39	30·00	15·38	22·52	..	26·42	18·89	24·34	80·0	21·74	15·52	43·47	11·11	22·77	13·34	24·10	23·81
40–44	14·00	15·38	27·93	..	16·98	9·12	20·63	20·0	17·67	15·52	8·70	11·11	18·82	17·78	24·10	23·81
45–49	20·00	7·69	16·22	..	16·98	5·37	10·58	..	17·25	10·35	17·39	22·22	9·90	6·67	12·05	14·29
50 and above	15·00	23·10	12·61	..	3·77	3·26	7·41	..	15·29	13·79	4·35	22·23	17·82	4·44	13·25	..
Total	100	100	100	..	100	100	100	100	100	100	100	100	100	100	100	100
Sample Number	100	13	111	..	53	614	189	5	713	58	23	9	101	45	83	21

TABLE 2

Percentage distribution of persons interviewed by age and sex

Age group	Weaving		Transport		Cashew		Rayons		Other Factories		Coffee Estates		Tea Estates		Rubber Estates	
	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
15–19	..	..	..	..	..	2·39	..	..	..	..	..	..	..	..	..	4·55
20–24	1·98	7·14	0·89	..	..	13·75	1·06	..	1·11	11·59	..	..	..	8·88	2·38	4·55
25–29	3·96	14·28	6·20	..	11·32	23·02	14·29	..	9·32	14·49	..	22·22	8·41	22·22	3·57	4·55
30–34	14·85	14·28	13·27	..	24·53	21.67	21·69	..	17·38	11·59	26·09	11·11	21·49	26·67	20·24	22·73
35–39	29·70	21·43	22·12	..	26·42	18·24	24·34	80·00	21·56	15·95	43·47	11·11	22·43	13·34	23·81	27·27
40–44	13·87	14·28	27·43	..	16·98	9·72	20·63	20·00	17·66	18·84	8·70	11·11	19·63	17·78	23·81	22·73
45–49	20·79	7·14	15·93	..	16·98	6·58	10·58	..	17·25	13·05	17·39	22·22	9·35	6·67	11·90	13·62
50 and above	14·85	21.45	14·16	..	3·77	4·63	7·41	..	15·72	14·49	4·35	22·23	18·69	4·44	14·29	..
Total	100	100	100	..	100	100	100	100	100	100	100	100	100	100	100	100
Sample Number	101	14	111	..	53	669	189	5	719	69	23	09	107	45	84	22

TABLE 3

Percentage distribution of persons contacted by education and sex

Category	Illiterate			Literate below primary			Passed primary below matric			Matric and above			Total		
	M	F	T	M	F	T	M	F	T	M	F	T	M	F	T
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Weaving ..	33·66	64·29	37·39	59·41	35·71	56·52	..	..	..	6·93	..	6·09	100	100	100
Transport ..	7·97	..	7·97	70·80	..	70·80	1·75	..	1·75	18·59	..	18·59	100	100	100 (NR 0·89)
Cashew ..	32·08	54·56	52·91	56·60	44·99	45·84	..	0·45	0·42	11·32	..	0·83	100	100	100
Rayons ..	3·70	..	3·61	20·63	40·00	21·13	13·23	40·00	13·92	61·90	20·00	60·80	100	100	100 (NR 0.54)
Other factories ..	11·68	47·83	14·85	66·06	42·02	63·96	9·32	2·90	8·76	12·94	7·25	12·43	100	100	100
Coffee estates ..	52·17	77·78	59·38	47·83	22·22	40·62	..	..	..	1·87	..	..	100	100	100
Tea estates ..	47·66	64·44	52·63	50·47	35·56	46·05	..	..	..	1·87	..	1·32	100	100	100
Rubber estates ..	29·76	36·36	31·13	66·67	59·09	65·09	1·19	4·55	1·89	2·38	..	1·89	100	100	100

TABLE 4

Percentage distribution of persons contacted by religion and sex

Category	Hindus			Christians			Muslims		
	Male	Female	Total	Male	Female	Total	Male	Female	Total
1	2	3	4	5	6	7	8	9	10
Weaving ..	64·34	92·86	67·84	10·91	7·14	10·43	24·75	..	21·73
Transport ..	76·99	..	76·99	16·82	..	16·82	6·19	..	6·19
Cashew ..	69·81	83·71	82·69	28·30	8·37	9·83	1·89	7.92	7·48
Rayons ..	52·38	60·00	52·58	24·34	40·00	24·74	23·28	..	22·68
Other factories ..	62·31	76·81	63·58	27·68	17·39	26·78	10·01	5·80	9·64
Coffee estates ..	69·57	66·67	68·75	13·04	11·11	12·50	17·39	22·22	18·75
Tea estates ..	67·29	82·22	71·70	27·10	17·78	24·35	5·61	..	3·95
Rubber estate ..	57·14	81·12	62·26	28·57	18·18	26·42	14·29	..	11·32

TABLE 5

Percentage distribution of persons contacted by occupation and sex

Category	Professional, technical Executive		Distributive and Financial		Agriculture, Animal husbandary		Minors' quarrymen and related		Transport and communication		Crafts and manufacture		Services occupation		Occupation not elsewhere classified		Not recorded	
	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
Weaving	8·91	..	..	..	..	..	..	..	..	..	91·09	100·00	..	..	..	..	..	..
Transport	46·02	..	..	..	..	..	..	..	17·70	..	21·24	..	..	..	15·40	..	..	..
Cashew	18·87	2·69	..	..	..	..	..	..	..	..	67·92	97·16	..	..	11·32	..	1·89	0·15
Rayons	9·52	..	..	..	..	..	..	..	2·65	..	87·83	100·00	..	..	..	..	..	..
Other factories	14·46	5·80	0·28	..	0·14	2·90	..	..	1·90	..	31·43	1·45	..	..	51·32	86·95	0·97	2·90
Coffee estates	4·35	..	..	..	95·65	100·00	..	..	..	..	..	..	..	..	..	..	..	..
Tea estates	4·67	..	..	..	94·40	100·00	..	..	..	..	0·93	..	..	..	..	..	..	..
Rubber estates	3·57	..	..	..	91·67	100·00	..	..	..	..	2·38	..	..	..	2·38	..	..	..

TABLE 6

Percentage distribution of persons contacted by monthly income and sex

Category	Below Rs. 50			Rs. 50-99			Rs. 100-149			Rs. 150-199		
	Male	Female	Total	Male	Female	Total	Male	Female	Total	Male	Female	Total
1	2	3	4	5	6	7	8	9	10	11	12	13
Weaving	1.98	28·57	5·22	60·40	64·29	60·87	15·84	7.14	14·78	17·82	..	15·65
Transport	..	..	..	0·89	..	0·89	10·62	..	10·62	20·35	..	20·35
Cashew	1·89	11·51	10·80	15·09	55·31	52·35	54·72	26·61	28·67	18·87	5·68	6·95
Rayons	..	..	..	..	..	..	..	..	..	..	..	..
Other factories	0·14	4·35	0·51	18·13	20·30	16·50	29·76	20·30	28·93	21·00	26·09	21·45
Coffee estates	..	..	..	55·52	66·67	59·38	39·13	11·11	31·25	4·35	22·22	9·37
Tea estates	..	4·44	1·32	43·92	86·67	56·58	46·72	6·67	34·87	1·87	2·22	1·97
Rubber estates	2·38	..	1·89	16·67	50·00	23·58	47·62	40·91	46·23	17·86	9.09	16·04

TABLE 6—(*cont.*)

Category	Rs. 200 and above			Not recorded			Total		
	Male	Female	Total	Male	Female	Total	Male	Female	Total
	14	15	16	17	18	19	20	21	22
Weaving	1·97	..	2·61	0·99	..	0·87	..	..	..
Transport	68·14	..	68·14	..	..	..	..	..	..
Cashew	0·48	0·75	1·39	..	0·14	0·14	..	..	..
Rayons	100·00	100·00	100·00	..	..	..	..	..	..
Other factories	3·97	28·96	32·61	..	..	..	..	..	..
Coffee estates	..	..	..	..	..	..	..	..	..
Tea estates	0·49	..	5·26	..	..	..	..	..	..
Rubber estates	1·47	..	12·26	..	..	..	..	..	..

TABLE 7.1

Average number of children born by marriage duration

Category	Below 5 years		5—9 Years		10—14 Years		15—19 Years		20—24 Years		25—29 Years		30 and above		Not recorded		Total	
	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
Weaving ..	1·11	2·00	3·21	3·00	4·94	4·50	6·47	6·00	6·62	3·50	7·12	6·50	8·00	8·33	6·00	..	4·34	5·07
Transport ..	0·50	..	2·71	..	3·78	..	4·48	..	6·32	..	5·00	..	7·00	..	..	..	4·05	..
Cashew ..	1·00	0·99	2·25	2·28	5·40	3·50	5·11	4·72	7·22	5·56	6·00	5·75	6·00	6·00	..	3·50	4·34	3·90
Rayons ..	0·88	..	2·34	..	3·83	5·00	4·92	3·00	6·04	..	7·40	..	7·50	..	..	..	3·52	3·80
Other factories ..	0·87	1·00	2·51	2·58	4·11	4·37	5·26	5·55	6·32	5·07	7·49	4·89	6·07	6·50	7·57	5·00	5·15	4·16
Coffee estates ..	1·00	2·00	2·83	2·00	4·64	6·00	2·00	3·50	..	8·00	8·50	9·00	..	..	..	..	3·61	6·00
Tea estates ..	1·05	0·57	2·89	2·50	4·38	4·08	5·46	4·71	5·43	6·12	5·94	5·00	8·17	4·50	..	..	4·25	3·82
Rubber estates ..	0·80	0·50	2·44	3·67	3·87	3·67	4·70	6·00	6·73	6·29	8·00	7·67	6·14	..	4·00	..	4·43	4·86

TABLE 7.2

Average number of children living by marriage duration

Category	Marriage duration																	
	Below 5 Years		5—9 Years		10—14 Years		15—19 Years		20—24 Years		25—29 Years		30 and above		Not recorded		Total	
	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
Weaving ..	1·08	2·00	2·84	3·00	4·55	3·50	5·68	6·00	5·00	2·50	6·00	6·00	4·50	4·67	6·00	..	3·73	3·93
Transport ..	0·50	..	2·53	..	3·66	..	4·30	..	5·42	..	4·75	..	4·85	..	..	..	3·68	..
Cashew ..	1·00	0·90	2·08	1·99	4·20	3·06	3·88	4·00	5·11	4·55	5·00	4·33	1·50	3·89	..	..	3·42	3·09
Rayons ..	0·88	..	2·32	..	3·64	5·00	4·77	4·33	5·48	..	6·80	..	7·00	..	..	..	3·35	4·60
Other factories ..	0·83	1·00	2·37	2·17	3·58	3·87	4·92	4·14	5·30	4.00	5·86	4·00	4·67	4·75	5·55	4·00	3·54	3·33
Coffee estates ..	1·00	1·00	2·83	4·00	2·54	3·50	2·00	7·00	..	..	8·50	8·00	..	..	..	..	3·35	4·11
Tea estates ..	1·05	0·57	2·78	2·50	4·09	3·67	5·15	3·57	4·71	5·50	5·25	2·00	6·67	4·50	..	..	3·84	3·29
Rubber estates ..	0·80	0·50	2·13	3·00	3·60	3·17	5·15	6·00	5·36	5·14	7·25	6·00	5·29	..	4·00	..	3·90	4·05

TABLE 7.3

Average number of still births by marriage duration

Category	Below 5 years		5—9 years		10—14 years		15—19 years		20—24 years		25—29 years		30 and above		Not Recorded		Total	
	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
Weaving ..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Transport..	..	..	..	..	..	..	–	..	..	..	..	..	..	..	..	..	0·02	..
Cashew ..	0·12	..	..	0.01	0·10	0·01	..	0·04	..	0·03	0·33	0·06	..	0·05	..	..	0·06	0·03
Rayons ..	0·03	..	..	..	0·06	..	..	0·33	..	0·12	..	..	..	..	..	..	0·20	0·20
Other factories..	0·05	..	0·01	..	0·04	..	0·03	..	0·03	0·07	0·03	..	..	0·12	..	..	0·03	0·04
Coffee estates ..	..		..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Tea estates ..	..	0·14	0·05	..	..	0·08	..	..	0·07	0·25	0·12	..	..	..	..	..	0·04	0·09
Rubber estates ..	..	..	0·38		0·07	..	0·20	..	..	..	..	..	..	..	..	..	0·13	..

TABLE 7.4

Average number of abortions by marriage duration

Category	Below 5 years		5–9 years		10–14 years		15–19 years		20–24 years		25–29 years		30 and above		Not Recorded		Total	
	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
Weaving ..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Transport..	0·80	..	0·18	..	0·16	..	0·04	..	..	..	0·25	..	..	..	..	..	0·10	..
Cashew ..	..	0·01	0·08	0·02	..	0·04	..	0·13	..	0·04	..	0·19	..	0·16	..	..	0·02	0·07
Rayons ..	0·03	..	..	..	0·09	..	..	..	..	..	..	..	..	..	..	..	0·05	..
Other factories..	0·02	0·20	0·05	0·08	0·06	0·37	0·05	0·14	0·04	0·14	0·05	..	..	0·37	..	..	0·04	0·17
Coffee estates ..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Tea estates ..	..	0·14	..	0·12	0·05	..	0·08	0·14	0·07	0·37	..	..	..	..	..	..	0·03	0·13
Rubber estates ..	..	..	..	0·33	0·13	0·17	0·10	1·00	0·09	..	0·25	..	0·57	..	1·00	..	0·13	0·14

TABLE 8.1

Percentage of persons contacted in each age group who believe in their power to decide the number of children

Category	15–19		20–24		25–29		30–34		35–39	
	M	F	M	F	M	F	M	F	M	F
1	2	3	4	5	6	7	8	9	10	11
Weaving ..	..	..	50·00	..	50·00	50·00	73·33	50·00	76·67	66·67
Transport ..	..	..	..	..	85·71	..	73·33	..	44·00	..
Cashew ..	..	25·00	..	43·48	66·67	48·05	53·85	48·27	57·14	40·16
Rayons ..	..	..	50·00	..	48·15	..	43·90	..	47·83	100·00
Other factories ..	..	..	87·50	75·00	76·12	50·00	75·20	37·50	66·45	54·54
Coffee estates ..	..	..	..	..	..	50·00	66·67	..	60·00	..
Tea estates ..	..	..	..	..	55·56	10·00	56·52	8·33	50·00	..
Rubber estates ..	..	..	50·00	..	33·33	..	41·67	60·00	55·00	50·00

TABLE 8.1—(*cont.*)

Category	40–44		45–49		50 and above		All	
	M	F	M	F	M	F	M	F
	12	13	14	15	16	17	18	19
Weaving ..	78·57	50·00	90·48	..	73·33	..	77·23	35·71
Transport ..	54·84	..	33·33	..	43·75	..	51·33	..
Cashew ..	55·55	35·38	11·11	27·27	50·00	29·03	49·06	42·00
Rayons ..	53·85	100·00	55·00	..	64·29	..	50·26	100·00
Other factories ..	56·69	46·15	58·87	11·11	41·59	30·00	62·17	43·48
Coffee estates ..	100·00	..	75·00	..	100·00	..	69·56	12·50
Tea estates .	28·57	..	50·00	33·33	50·00	..	41·12	7·14
Rubber estates ..	50·00	20·00	50·00	33·33	50·00	..	46·43	36·36

TABLE 8.2

Percentage of persons contacted in each education status group who believe in their power to decide the number of children

Category	Illiterate		Literate below primary		Passed primary below matric		Matric and above		Not recorded		Total	
	M	F	M	F	M	F	M	F	M	F	M	F
1	2	3	4	5	6	7	8	9	10	11	12	13
Weaving ..	79·41	33·33	76·27	40·00	..	..	75·00	..	..	..	77·23	35·71
Transport ..	22·22	..	52·50	..	100·00	..	52·38	..	100·00	..	51·33	..
Cashew ..	41·18	36·99	46·67	48·17	..	33·33	83·33	..	..	..	49·06	42·00
Rayons ..	100·00	..	58·97	100·00	96·00	100·00	35·04	100·00	..	..	50·26	100·00
Other factories ..	46·43	37·50	58·95	37·93	88·06	100·00	74·19	80·00	..	..	62·17	43·48
Coffee estates ..	66·67	..	72·73	50·00	..	..	..	..	..	..	69·56	12·50
Tea estates ..	37·25	3·57	44·44	12·50	..	..	50·00	..	..	..	41·12	7·14
Rubber estates ..	48·00	37·50	46·43	38·46	..	..	50·00	..	..	..	46·43	36·36

TABLE 9.1

Percentage of persons who know family planning by age group

Category	15–19		20–24		25–29		30–34		35–39	
	M	F	M	F	M	F	M	F	M	F
1	2	3	4	5	6	7	8	9	10	11
Weaving ..	..	..	100·00	..	100·00	100·00	100·00	100·00	96·67	66·67
Transport ..	..	..	100·00	..	100·00	..	100·00	..	100·00	..
Cashew ..	..	37·50	..	68·48	83·33	79·87	84·62	70·34	78·57	59·84
Rayons ..	..	..	100·00	..	96·30	..	97·56	..	97·83	100·00
Other factories ..	..	..	87·50	75·00	91·04	80·00	89·60	87·50	89·03	72·73
Coffee estates ..	..	..	..	..	..	100·00	83·33	100·00	80·00	..
Tea estates ..	..	..	..	25·00	88·89	80·00	95·65	66·67	95·63	83·33
Rubber estates ..	..	100·00	100·00	100·00	100·00	100·00	88·24	80·00	85·00	83·33

	40–44		45–49		50 and above		Not recorded		Total	
	M	F	M	F	M	F	M	F	M	F
	12	13	14	15	16	17	18	19	20	21
Weaving ..	100·00	50·00	95·23	..	86·67	..	..	..	96·04	50·00
Transport ..	9·32	..	100·00	..	100·00	..	..	..	97·35	..
Cashew ..	88·39	47·69	22·22	52·27	50·00	54·84	..	..	71·70	65·47
Rayons ..	97·44	100·00	100·00	..	100·00	..	..	..	97·88	100·00
Other factories ..	91·34	84·62	91·94	55·56	73·45	50·00	..	..	87·76	72·46
Coffee estates ..	100·00	..	100·00	50·00	100·00	..	..	..	86·96	44·44
Tea estates ..	61·91	25·00	70·00	66·67	60·00	..	..	..	79·44	57·78
Rubber estates ..	80·00	80·00	80·00	100·00	58·33	..	..	..	80·95	86·36

TABLE 9·2

Percentage of persons who know family planning by religion

Category	Hindu		Christians		Muslims	
	Male	Female	Male	Female	Male	Female
1	2	3	4	5	6	7
Weaving ..	98·46	53·85	90·91	..	92·00	..
Transport ..	96·55	..	100·00	..	100·00	..
Cashew ..	67·57	66·61	80·00	67·86	100·00	50·94
Rayons ..	98·99	100·00	95·65	100·00	97·73	..
Other factories ..	87·28	77·36	90·95	75·00	81·94	..
Coffee Estates ..	87·50	33·33	100·00	100·00	75·00	50·00
Tea Estates ..	80·56	48·65	79·31	100·00	66·67	..
Rubber Estates ..	79·17	83·33	79·17	100·00	91·67	..

TABLE 9·3

Percentage of persons who know family planning by monthly income

Category	Below Rs. 50		Rs. 50–99		Rs. 100–149		Rs. 150–199		Rs. 200 and above		Not recorded		Total	
	M	F	M	F	M	F	M	F	M	F	M	F	M	F
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Weaving ..	100·00	25·00	96·72	55·56	100·00	100·00	88·89	..	100·00	..	100·00	..	96·04	50·00
Transport ..	..	..	100·00	..	100·00	..	95·65	..	97·40	..	..	..	97·35	..
Cashew ..	..	59·74	37·50	67·30	79·31	65·73	80·00	57·89	80·00	60·00	..	100·00	71·70	65·47
Rayons ..	..	..	..	..	..	..	..	..	97·88	100·00	..	..	97·88	100·00
Other factories ..	100·00	83·33	76·72	78·57	90·19	100·00	91·39	77·78	88·61	50·00	..	..	87·76	72·46
Coffee Estates ..	..	..	92·31	16·67	77·78	100·00	100·00	100·00	..	..	..	..	86·96	44·44
Tea Estates ..	..	..	74·47	56·41	80·00	100·00	100·00	100·00	100·00	..	..	..	79·44	57·78
Rubber Estates ..	100·00	..	71·43	72·73	87·50	100·00	100·00	100·00	46·15	..	..	..	80·95	86·36

TABLE 9·4

Percentage of persons who know family planning by education

Category	Illiterate		Literate below primary		Passed primary below matric		Matric and above		Not recorded	
	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female
Weaving ..	97·06	44·44	95·00	60·00	..	..	100·00	..	..	..
Transport ..	100·00	..	96·25	..	100·00	..	100·00	..	100·00	..
Cashew ..	64·71	55·62	70·00	77·08	..	100·00	100·00	..	..	..
Rayons ..	100·00	..	94·87	100·00	96·00	100·00	99·15	100·00	100·00	..
Other factories ..	76·19	63·64	87·37	82·76	94·03	50·00	95·70	60·00	..	..
Coffee estates ..	75·00	28·57	100·00	100·00	..	..	..	..	..	..
Tea estates ..	62·75	48·28	94·44	75·00	..	..	100·00	..	..	..
Rubber estates ..	68·00	62·50	85·71	100·00	100·00	100·00	100·00	..	..	..

TABLE 10·1

Percentage of persons who know specific methods of family planning

(Illiterate)

Category	P.P.S.		Vasectomy		I.U.C.D.		Condom		Diaphram		Foam tablets		Abstinence	
	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female
Weaving ..	93·94	100·00	93·94	100·00	93·94	100·00	87·88	25·00	90·91	50·00	39·39	100·00	96·97	75·00
Transport ..	88·89	..	77·78	..	100·00	..	66·67	..	33·33	..	33·33	..	44·44	..
Cashew ..	54·55	99·51	81·82	95·07	45·45	62·07	9·09	16·26	9·09	2·46	9·09	4·43	18·18	4·93
Rayons ..	100·00	..	100·00	..	100·00	..	71·43	..	..	..	..	..	14·29	..
Other factories ..	81·25	100·00	82·81	100·00	89·06	90·48	32·81	19·05	34·38	19·05	25·00	14·29	37·50	19·05
Coffee estates ..	100·00	100·00	100·00	100·00	100·00	100·00	77·78	..	77·78	..	11·11	..	66·67	..
Tea estates ..	78·13	14·29	100·00	28·56	87·50	92·86	100·00	35·71	21·88	7·14	3·13	..	71·88	28·56
Rubber estates ..	70·59	60·00	94·12	40·00	76·47	100·00	64·71	..	35·29	20·00	35·29	..	41·18	60·00

TABLE 10·2

Percentage of persons who know specific methods of family planning

(Literate below primary)

Category	P.P.S.		Vasectomy		I.U.C.D.		Condom		Diaphram		Form tablets		Abstinence	
	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female
Weaving ..	100·00	100·00	100·00	100·00	100·00	100·00	73·68	33·33	78·95	100·00	71·92	33·33	84·21	100·00
Transport ..	80·52	..	81·82	..	50·91	..	70·13	..	29·87	..	24·68	..	64·94	..
Cashew ..	95·24	99·57	100·00	96·12	52·38	64·22	14·29	5·60	4·76	2·16	9·52	3·45	19·04	3·88
Rayons ..	97·30	100·00	86·49	100·00	94·59	100·00	89·19	100·00	40·54	..	37·84	..	45·95	..
Other factories ..	91·35	100·00	95·42	91·67	89·40	100·00	43·61	8·33	27·95	29·17	36·14	33·33	32·29	20·83
Coffee estates ..	100·00	100·00	100·00	50·00	100·00	100·00	..	..	..	..	..	..	..	..
Tea estates ..	49·02	16·67	90·19	33·33	74·51	100·00	88·23	33·33	19·61	8·33	15·69	..	62·74	25·00
Rubber estates ..	81·25	53·85	93·75	61·54	83·33	100·00	50·00	15·38	58·33	30·77	41·67	23·08	58·33	15·38

TABLE 10·3

Percentage of persons who know specific methods of family planning

(Passed Primary below Matric)

Category	P.P.S.		Vasectomy		I.U.C.D.		Condom		Diaphram		Foam tablets		Abstinence	
	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female
Weaving ..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Transport ..	100·00	..	100·00	..	100·00	..	50·00	..	100·00	..	100·00	..	100·00	..
Cashew ..	..	100·00	..	100·00	..	100·00	..	100·00	..	66·67	..	66·67	..	66·67
Rayons ..	100·00	100·00	100·00	100·00	100·00	100·00	95·83	100·00	25·00	..	29·17	..	20·81	..
Other factories ..	88·89	100·00	92·06	100·00	95·24	100·00	49·21	100·00	46·02	..	30.16	..	30·16	..
Coffee estates ..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Tea estates ..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Rubber estates ..	100·00	100·00	100·00	100·00	100·00	100·00	100·00	100·00	100·00	..	10.·00	..	100·00	..

TABLE 10·4

Percentage of persons who kow specific methods of family planning

(Matric and above)

Category	P. P. S.		Vasectomy		I.U.C.D.		Condam		Diaphram		Form tablets		Abstinence		Withdrawal	
	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
Weaving ..	100	..	100	..	100	..	100	..	100	..	100	..	100	..	14·28	..
Transport ..	100	..	90·48	..	100	..	71·43	..	61·90	..	66·67	..	76·19	..	..	..
Cashew ..	83·33	..	100	..	100	..	33·33	..	50·00	..	50·00	..	50·00	..	..	..
Rayons ..	100	100	100	100	100	100	97·41	100·00	85·34	..	87·07	..	91·38	..	..	..
Other factories..	94·38	100	96·63	50	95·50	75	75·28	25·00	64·04	..	69·66	..	67·42	..	..	..
Coffee estates ..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Tea estates ..	50·00	..	100	..	100	..	100	..	50·00	..	..	..	100	..	..	..
Rubber estates ..	100	..	50·00	..	100	..	50·00	..	100	..	100	..	50·00	..	..	..

TABLE 11.1

Percentage of distribution of persons by source of knowledge

(Illiterate)

Category	Family planning clinic, hospital, doctor		Cinema		News paper		Family Planning field staff, Radio		Friends, radio		Family planning staff		Radio, contact other publications	
	M	F	M	F	M	F	M	F	M	F	M	F	M	F
1	2	3	4	5	6	7	8	9	10	11	12	13	14	4
Weaving ..	6·06	..	..	..	27·28	..	12·12	100·00	54·54	..	..	..	..	..
Transport ..	22·22	..	..	..	11·11	..	33·33	..	33·34	..	..	..	..	..
Cashew ..	63·64	57·64	..	..	9·09	..	..	9·85	..	..	..	..	27·27	32·51
Rayons ..	14·29	..	..	..	..	..	57·14	..	28·57	..	..	..	..	..
Other factories..	21·88	14·29	6·25	..	12·50	..	..	..	6·25	9·58	9·37	4·76	43·75	71·43
Coffee estates ..	..	..	..	..	..	..	..	..	55·56	..	11·11	..	33·33	100·00
Tea estates ..	..	7·14	..	..	..	..	..	..		..	28·13	64·29	71·87	28·57
Rubber estates..	5·88	20·00	..	..	..	..	..	..	11·76	..	35·29	40·00	35·31+ 11·76	40·00

TABLE 11.2

Percentage of distribution of persons by source of knowledge

(Literate below primary)

Category	Family planning clinic, hospital		Cinema		News paper		Family planning field staff, Radio		Friends, Radio		Family planning staff		Radio, contact publications other		Others	
	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
Weaving ..	1·75	..	..	..	17·50	33·33	52·75	33·33	28·00	33·33	..	..	..	..	..	..
Transport ..	14·29	..	1·30	..	19·48	..	11·69	..	..	..	33·76	..	..	..	19·48	..
Cashew ..	52·38	55·95	..	..	..	0·43	23·81	8·19	..	..	..	..	..	25·43	23·81	..
Rayons ..	..	..	..	..	2·70	..	..	..	..	50·00	24·32	50·00	18·92	..	54·06	..
Other factories ..	20·00	16·67	6·51	4·17	10·36	4·17	..	..	..	..	12·53	16·67	..	..	50·60	58·32
Coffee estates ..	..	..	..	..	36·37	..	18·18	..	..	..	9·09	50·00	..	..	36·36	50·00
Tea estates ..	..	8·33	..	..	..	..	..	..	..	..	49·02	75·00	50·98	16·67	..	..
Rubber estates ..	12·50	30·77	..	..	4·16	..	..	..	2·08	..	37·50	46·16	43·76	..	..	23·07

TABLE 11·3

Percentage of distribution of persons by source of kowledge

(Passed primary below matric)

Category	Family planning clinic hospital		Cinema		News paper		Family planning field staff, Radio		Friends, Radio		Family planning staff		Radio, contact, other publications		Others	
	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
Weaving ..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Transport ..	..	..	..	..	100·00	..	..	..	..	..	..	..	..	..	..	..
Cashew ..	..	..	..	..	..	..	..	..	..	..	..	..	..	100·00	..	..
Rayons ..	..	..	..	..	..	..	..	..	8·33	..	25·00	100·00	..	..	66·67	..
Other factories ..	7·94	..	1·59	..	6·35	..	..	..	..	..	42·86	..	..	..	41·26	..
Coffee estates ..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Tea estates ..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Rubber estates ..	..	..	..	..	..	..	..	..	100·00	..	..	..	..	100·00	..	..

TABLE 11·4

Percentage distribution of persons by source of knowledge

(Matric and above)

Category	Family Planning Clinic/Hospital		Cinema		Newspapers		Family Planning field staff/Radio		Friends/Radio		Family planning staff		Radio, contact, other publications		Others	
	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
Weaving ..	..	..	..	..	14·28	..	85·72	..	..	..	..	..	..	..	..	..
Transport ..	19·05	..	4·76	..	14·29	..	9·52	..	4·76	..	..	..	47·62	..	..	..
Cashew ..	33·33	..	..	..	16·67	..	..	..	..	..	..	..	50·00	..	..	..
Rayons ..	..	..	..	..	1·72	..	..	..	..	..	2·59	60·00	..	..	95·69	40·00
Other factories ..	3·37	25·00	..	..	33·71	..	..	..	..	..	7·87	50·00	..	..	55·05	25·00
Coffee estates ..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Tea estates ..	..	..	..	..	..	..	..	..	..	..	..	..	100·00	..	..	..
Rubber estates .	50·00	..	..	..	..	..	..	..	50·00	..	..	..	..	..	..	..

TABLE 12·1

Percentage distribution of persons by willingness to learn family planning and source preferred

Category	Source preferrred						Percentage of those willing to learn family planning	
	Hospital, clinic		Family planning workers		Social workers			
	M	F	M	F	M	F	M	F
1	2	3	4	5	6	7	8	9
Weaving ..	..	..	..	..	..	..	..	..
Transport ..	..	..	..	..	..	..	..	..
Cashew ..	..	..	..	..	..	..	..	..
Rayons ..	100·00	..	..	..	..	..	25·00	..
Other factories ..	28·57	..	71·43	..	..	..	7·95	..
Coffee estates ..	..	..	..	..	..	..	..	..
Tea estates ..	100·00	100·00	..	..	..	..	4·54	47·37
Rubber estates ..	..	..	..	..	..	..	..	..

TABLE 12·2

Percentage distribution of persons not willing to learn family planning by reason

Category	Reason for reluctance															
	Health reason		Not necessary		No reason		Religious objection		Target not attained		No opinion		Old age		Widow	
	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
Weaving ..	..	..	..	14·28	25·00	..	..	14·28	25·00	14·28	..	..	50·00	57·18	..	..
Transport ..	33·33	..	..	..	..	..	..	..	..	..	66·67	..	..	..	..	..
Cashew ..	23·08	7·05	53·85	43·18	..	25·11	15·38	1·32	..	3·96	7·69	..	..	19·38	..	..
Rayons ..	33·33	..	..	..	..	..	66·67	..	..	..	..	..	..	..	..	..
Other factories ..	4.94	10·53	24·69	31·58	4·94	31·58	9·88	5·26	13·58	21·05	7·41	..	33·33	..	1·23	..
Coffee estates ..	..	20·00	33·33	..	..	..	66·67	80·00	..	..	..	..	..	..	..	..
Tea estates ..	..	..	61·91	80·00	..	..	..	..	..	..	4·76	..	28·57	20·00	4·76	..
Rubber estates ..	..	..	68·75	..	6·25	..	12·50	..	6·25	..	..	66·67	6·25	..	..	33·33

TABLE 13

Percentage of persons preferring temporary and permanent methods

Category	Temporary		Permanent	
	Male	Female	Male	Female
1	2	3	4	5
Weaving ..	46·15	100·00	53·85	..
Transport ..	36·21	..	63·79	..
Cashew ..	11·54	1·00	88·46	99·00
Rayons ..	50·00	..	50·00	100·00
Other factories ..	40·48	21·43	59·52	78·57
Coffee estates ..	66·67	100·00	33·33	..
Tea estates ..	45·45	33·33	54·55	66·67
Rubber estates ..	61·54	50·00	38·46	50·00

TABLE 13·1

Percentage distribution of those preferring temporary methods by reason for preference

Category	Reasons for preference									
	Can be abandoned when desired		Not willing to undergo operation		Not harmfuls to health		Fear on after effects of operation		Fear about health of children	
	M	F	M	F	M	F	M	F	M	F
1	2	3	4	5	6	7	8	9	10	11
Weaving ..	..	..	36·11	..	..	..	16·68	..	..	..
Transport ..	9·52	..	..	..	19·05	..	..	..	..	..
Cashew ..	..	..	..	..	33·33	100·00	..	..	..	..
Rayons ..	9·68	..	..	..	35·48	..	..	..	..	..
Other factories ..	9·24	..	5·04	..	5·88	..	15·97	..	12·61	66·67
Coffee estates ..	11·11	..	11·11	..	66·67	100·00	11·11	..	..	..
Tea estates ..	35·00	..	10·00	..	40·00		10·00	..	..	..
Rubber estates ..	..	..	..	75·00	45·83	75·00	4·17	..	..	..

Category	Reasons for preference									
	Financial difficulties		Simple		Easy		No reason		To have one more child	
	M	F	M	F	M	F	M	F	M	F
	12	13	14	15	16	17	18	19	20	21
Weaving ..	..	..	..	..	30·55	66·67	11·10	33·33	5·56	..
Transport .	..	..	14·76	..	14·29	..	14·28	..	38·10	..
Cashew ..	..	..	..	..	..	..	33·34	..	33·33	..
Rayons ..	..	..	25·81	..	3·23	..	16·12	..	..	..
Other factories ..	8·40	..	1·68	..	12·61	..	28·57	33·33	..	..
Coffee estates ..	..	..	..	..	..	..	..	..	..	..
Tea estates ..	..	..	..	..	5·00	..	..	..	..	..
Rubber estates ..	..	..	..	..	16·67	..	25·00	25·00 (NR.)	8·83	..

TABLE 13·2

Percentage distribution of those preferring permanent methods by reason for preference

Category	Reason for preference													
	Wants no more child		Financial difficulties		Convenient and cheap		Permanent control		Health reasons		More safe		No reason	
	M	F	M	F	M	F	M	F	M	F	M	F	M	F
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Weaving ..	8·70	..	..	..	34·80	..	21·70	..	21·75	..	..	..	13·05	..
Transport ..	72·97	..	5·41	..	..	..	..	..	2·70	..	2·70	..	16·22	..
Cashew ..	7·69	..	1·00	9·00	..	..	23·08	1·00	..	..	..	..	69·23	89·00
Rayons ..	..	..	..	..	..	..	12·90	..	..	..	77·42	50·00	9·68	50·00
Other factories ..	20·00	36·37	18·28	27·25	0·57	..	2·29	..	6·86	9·09	21·72	18·18	30·28	9·09
Coffee estates ..	..	..	..	..	66·67	..	33·33	..	..	..	..	..	..	..
Tea estates ..	33·34	..	50·00	..	..	..	8·33	..	8·33	..	..	..	..	..
Rubber estates ..	13·34	..	..	..	..	..	26·67	25·00	..	..	..	..	20·00 6·67 does not interfere with enjoyment	75·00

TABLE 14

Percentage distribution of those preferring permanent methods by willingness to undergo operation and those not willing by reason

Category	Willing to undergo operation		Reasons for not willing to undergo operation															
			Fear of after effect		Lack of facilities		Not necessary		Old age		Not good for health		Wants one more child		Not recorded		Already sterilised	
	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F
Weaving ..	62·50	..	6·25	..	..	..	6·25	..		..	12·50	..	6·25	..	..	..	6·25	..
Transport ..	37·14	..	11·43	..	..	..	17·15	..	..	..	5·71	..	11·43	..	8·57	..	8·57	..
Cashew ..	15·38	16·33	..	..	..	..	..	..	..	..	..	7·14	..	..	..	..	84·62	76·53
Rayons ..	25·81	..	..	..	..	..	..	..	..	..	..	..	..	..	3·22	..	90·97	100·00
Other factories ..	37·14	54·55	5·72	..	0·57	..	4·57	..	4·00	..	1·72	..	0·57	..	4·57	..	41·14	45·45
Coffee estates ..	66·67	..	..	..	..	..		..	..	..	..	..	..	..	..	..	33·33	..
Tea estates ..	45·80	..	16·68	..	..	..	16·68	..	..	..	8·34	..	..	..	..	..	12·50	100·00
Rubber estates ..	30·00	100·00	..		..	..	10·00	..	..	..	20·00	..	..	..	20·00	..	20·00	..

TABLE 14·1

Percentage distribution of persons by rate of incentive suggested

Category	Present rate sufficient		Rate of incentive suggested											
			Rs. 25—45		Rs. 50—99		Rs. 100—149		Rs. 150—199		Rs. 200 and above		Not recorded	
	M	F	M	F	M	F	M	F	M	F	M	F	M	F
Weaving ..	..	..		..	..	..	..	..	..	..	..	..	100·00	..
Transport ..	38·46	..	15·38	..	30·78	..	..	..	..	..	..	..	15·38	..
Cashew ..	50·00	25·00	..	..		6·25	..	25·00	..	43·75	..	..	50·00	..
Rayons ..	25·00	..		..	25·00		37·50	..	..	..	..	..	12·50	..
Other factories ..	56·92	33·33	6·15	..	20·00	33·33	4·63	..	6·15	..	6·15	16·67	..	16·67
Coffee estates .	100·00	..		..		..	..	..	..	..	..	..	..	..
Tea estates ..	90·91	..	..	..	9·09	..	..	..	..	..	..	..	..	..
Rubber estates ..		..	..	100·00	33·34	..	33·33	..	..	..	..	..	33·33	..

TABLE 15.1

Percentage of persons who have knowledge of family planning by methods practised

(Age group—20–24)

Category	Percentage practising each method															
	P.P.S.		Vasectomy		I.U.C.D.		Condom		Diaphragm		Foam tablets		Abstinence		Condom abstinence	
	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F
Weaving ..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Transport ..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Cashew ..	..	3.17	..	4·76	..	..	..	..	..	..	..	..	..	..	..	..
Rayons ..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Other factories ..	..	..	..	..	..	..	14·29	..	14·29	..	..	..	..	..	..	..
Coffee estates ..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Tea estates ..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Rubber estates ..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..

TABLE 15.2

Percentage of persons who have knowledge of family planning by methods practised

(Age group—25–29)

Category	Percentage practising each method															
	P.P.S.		Vasectomy		I.U.C.D.		Condom		Diaphragm		Foam tablets		Abstinence		Condom abstinence	
	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F
Weaving ..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Transport ..	..	..	..	..	..	..	14·29	..	..	..	..	..	..	..	..	..
Cashew ..	..	13·01	20·00	14·63	..	1·63	..	..	..	..	..	..	..	..	..	..
Rayons ..	3·86	..	..	..	3·86	..	30·85	..	..	..	..	..	7·71	..	..	..
Other factories ..	3·28	..	3·28	..	..	..	8·20	..	1·64	..	..	..	3·28	12·50	..	..
Coffee estates ..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Tea estates ..	..	..	..	100·00	..	..	25·00	..	..	..	..	..	..	..	..	..
Rubber estates ..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..

TABLE 15·3

Percentage of persons who have knowledge of family planning by methods practised

(Age group—30-34)

Category	Percentage practising each method															
	P.P.S.		Vasectomy		I.U.C.D.		Condom		Diaphragm		Foam tablets		Abstinence		Condom abstinence	
	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F
Weaving ..	..	..	13·33	..	..	..	..	..	..	..	..	..	..	50·00	..	..
Transport ..	6·67	..	..	..	..	..	6·67	..	13·33	..	..	..	20·00	..	..	..
Cashew ..	..	16·67	27·27	28·49	..	0·98	..	..	..	..	..	..	..	0·98	..	..
Rayons ..	..	..	2·50	..	2·50	..	17·50	..	..	..	2·50	..	17·50	..	2·50	..
Other factories ..	5·36	..	6·25	..	..	..	6·25	10·00	1·79	..	..	..	4·46	..	..	..
Coffee estates ..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Tea estates ..	..	..	4·55	..	..	..	13·64	..	..	..	..	..	4·55	..	..	..
Rubber estates ..	..	..	13·33	..	..	..	20·00	..	..	..	..	..	6·67	..	6·67 (DXabs.)	..

TABLE 15·4

Percentage of persons who have knowledge of family planning by methods practised

(Age group—35-39)

Category	Percentage practising each method															
	P.P.S.		Vasectomy		I.U.C.D.		Condom		Diaphragm		Foam tablets		Abstinence		Condom abstinence	
	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F
Weaving ..	..	..	3·45	..	..	..	3·45	..	3·45	..	..	..	..	..	..	..
Transport ..	4·00	..	..	..	..	..	8·00	..	..	..	..	..	12·00	..	..	..
Cashew ..	18·18	21·92	18·18	12·33	..	2·74	..	..	9·09	..	..	..	0·09	1·37	..	..
Rayons ..	6·67	25·00	22·22	25·00	4·44	..	13·33	..	..	..	4·44	..	6·67	..	..	..
Other factories ..	4·35	12·50	5·80	..	2·90	12·50	6·52	..	0·72	..	..	..	3·42	..	..	..
Coffee estates ..	..	..	12·50	..	..	..	..	..	..	..	..	..	..	..	..	..
Tea estates ..	..	..	8·70	..	..	..	21·74	..	4·35	..	..	..	8·70	..	..	..
Rubber estates ..	..	..	11·76	..	..	..	..	..	20·00 (D×IUCD)	..	..	..	11·76	..	5·88 (D×abs.)	..

TABLE 15·5

Percentage of persons who have knowledge of family planning by methods practised

(Age group—40–44)

Category	Percentage practising each method															
	P.P.S.		Vasectomy		I.U.C.D.		Condom		Diaphragm		Foam tablets		Abstinence		Condom abstinence	
	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F
Weaving ..	7·14	..	7·14	..	..	..	..	..	7·14	..	7·14	..	14·28	..	..	..
Transport ..	7·14		3·57	..	..	..	14·29	..	3·57	..	3·57	..	25·00	..	7·14	..
Cashew ..	12·50	16·13	25·00	9·68	..	..	..	..	..	..	..	..	25·00	..	..	..
Rayons ..	15·79	..	31·58		7·89	..	15·79	..	..	..	..	..	15·79	..	2·63	..
Other factories ..	4·31	..	14·66	18·18	2·59	9·09	4·31	..	2·59	..	..	..	5·17	..	..	..
Coffee estates ..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Tea estates ..	7·69	..	7·69	..	..	..	30·77	..	..	..	..	..	15·38	..	..	..
Rubber estates ..	..	..	18·75	..	12·50	..	..	..	..	..	..	..	6·25	..	..	25·00 (DXabs.)

TABLE 15·6

Percentage of persons who have knowledge of family planning by methods practised

(Age group—45–49)

Category	Percentage practising each method															
	P.P.S.		Vasectomy		I.U.C.D.		Condom		Diaphragm		Foam tablets		Abstinence		Condom abstinence	
	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F
Weaving ..	..		5·00	..	..	..	5·00	..	..	..	..	..	15·00	..	..	..
Transport ..	5·56	..	5·56	..	5·56	..	11·11	..	..	..	..	..	27·78	..	..	..
Cashew ..	..	..	50·00	8·70	..	..	..	..	..	..	..	..	50·00	..	..	..
Rayons ..	5·00	4·35	10·00	..	5·00	..	10·00	..	..	..	5·00	..	5·00	..	5·00	..
Other factories ..	7·89	..	9·65	..	2·63	..	3·51	..	0·88	..	..	..	6·14	..	..	..
Coffee estates ..	..	..	..	..	..	..	..	..	25·00	..	..	..	..	..	25·00 (D x abst.)	..
Tea estates ..	..	..	..	50·00	..	..	14·29	..	..	..	..	..	42·85	..	14·29	..
Rubber estates ..	..	..	..	..	12·50	..	..	..	..	..	..	..	..	..	..	..

TABLE 15·7

Percentage of persons who have knowledge of family planning by methods practised

(Age group—50 years and above)

Category	Percentage practising each method													
	Vasectomy		P.P.S.		I.U.C.D.		Condom		Diaphragm		Foam tablets		Abstinence	
	M	F	M	F	M	F	M	F	M	F	M	F	M	F
Weaving ..	..	..	..	..	..	..	..	..	..	..	..	..	7·69	..
Transport ..	12·50	..	6·25	..	6·25	..	12·50	..	..	..	..	..	18·75	..
Cashew ..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Rayons ..	21·43	..	..	..	..	..	..	..	..	..	..	..	21·43	..
Other factories ..	7·23	..	3·61	..	..	..	1·20	..	..	..	..	..	7·23	..
Coffee estates ..	5·00	..	..	..	..	..	..	..	..	..	..	..	..	..
Tea estates ..	..	..	8·33	..	..	..	8·33	..	..	..	..	..	66·67	..
Rubber estates ..	..	..	14·29	..	14·29	..	14·29	..	..	..	..	..	14·29	..

TABLE 15·8

Percentage of persons who have knowledge of family planning by methods practised

(All age groups)

Category	Percentage practising each method															
	Vasectomy		P.P.S.		I.U.C.D.		Condom		Diaphragm		Foam tablets		Abstinence		Condom abstinence	
	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F
Weaving ..	5·15	..	1·03	..	..	..	1·03	..	2·06	..	1·03	..	6·18	14·28	..	..
Transport ..	2·73	..	6·36	..	1·82	..	10·91	..	2·73	..	0·91	..	19·09	..	1·82	..
Cashew ..	23·68	13·93	7·89	13·00	..	1·14	..	..	2·63	..	..	..	10·58	0·46	..	..
Rayons ..	15·14	20·00	5·95	20·00	4·32	..	15·68	..	..	..	2·16	..	11·89	..	1·62	..
Other factories ..	8·08	4·00	4·91	2·00	1·58	4·00	5·08	..	1·43	..	..	..	4·92	2·00	..	..
Coffee estates ..	5·00	..	..	..	..	..	..	..	5·00	..	..	..	..	..	5·00 (D × abst.)	..
Tea estates ..	14·71	7·69	2·36	..	..	..	18·82	..	1·18	..	..	..	18·82	..	1·18	..
Rubber estates ..	10·29	..	1·47	..	5·88	5·26 (D × IUCD)	5·88	..	..	..	..	..	7·35	..	2·94 (D × abst.)	5·26 (D × abst.)

TABLE 16·1

Percentage of persons practising family planning methods among those who know family planning

(Hindus)

Category	Vasectomy		P.P.S.		I.U.C.D.		Condom		Diaphragm		Foam tablets		Abstinence		Condom abstinence	
	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F
Weaving ..	3·12	..	1·56	..	..	..	1·56	..	1·56	..	..	..	7·80	14·28	..	..
Transport ..	3·56	..	8·33	..	2·38	..	10·72	..	2·38	..	1·19	..	21·42	..	1·16	..
Cashew ..	24·00	14·48	8·00	13·94	..	1·34	..	..	..	..	..	..	12·00	0·54	..	..
Rayons ..	19·39	33·33	5·10	33·33	4·08	..	15·21	..	..	..	3·06	10·27	13·27	..	3·06	..
Other factories ..	7·16	4·88	5·88	2·44	1·53	4·88	5·37	..	1·53	..	..	..	4·36	2·44	..	..
Coffee estates ..	..	..	..	..	..	..	..	..	7·14	..	..	..	..	..	7·14 (D× abst.)	..
Tea estates ..	3·45	..	3·15	..	..	..	20·69	..	1·72	..	..	..	15·52	..	1·72	..
Rubber estates ..	13·16	..	2·63	..	7·89	..	7·89	..	..	..	..	..	2·63	..	..	6·67 (D× abst.)

TABLE 16·2

Percentage of persons practising family planning methods among those who know family planning

(Christians)

Category	Vasectomy		P.P.S.		I.U.C.D.		Condom		Diaphragm		Foam tablets		Abstinence		Condom abstinence	
	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F
Weaving ..	20·00	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Transport ..	..	..	..	..	..	..	10·53	..	5·26	..	..	..	10·53	..	5·26	..
Cashew ..	25·00	13·16	8·33	10·53	..	..	..	..	..	..	..	..	8·33	..	..	..
Rayons ..	13·04	..	11·36	..	2·27	..	20·45	..	..	..	2·27	..	13·64	..	..	..
Other factories ..	10·49	..	4·42	..	2·21	..	4·42	11·11	0·55	..	..	..	6·07	..	..	..
Coffee estates ..	33·33	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Tea estates ..	4·35	25·00	..	..	..	..	17·39	..	..	..	..	..	26·09	..	..	..
Rubber estates ..	..	..	..	..	5·26	25·00	.. (D×IUCD)	..	..	..	..	..	15·79	..	10·53 (D×abst.)	..

TABLE 16.3

Percentage of persons practising family planning methods among those who know family planning

(Muslims)

Category	Vasectomy		P.P.S.		I.U.C.D.		Condom		Diaphragm		Foam tablets		Abstinence		Condom abstinence	
	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
Weaving ..	4·35	..	..	..	..	..	..	..	4·35	..	..	..	4·35	..	..	..
Transport ..	..	..	..	..	..	..	14·29	..	..	..	..	..	14·29	..	..	..
Cashew ..	..	7·41	..	3·71	..	..	..	..	10·00	..	..	..	..	..	..	..
Rayons ..	6·98	..	2·33	..	6·98	..	11·63	..	..	..	..	..	6·98	..	..	..
Other factories ..	6·78	..	..	..	..	..	5·08	..	3·39	..	..	..	3·39	..	..	..
Coffee estates ..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Tea estates ..	25·00	..	..	..	..	..	..	..	..	..	..	..	25·00	..	..	..
Rubber estates ..	18·18	..	..	..	..	..	9·09	..	..	..	..	..	9·09	..	..	..

TABLE 17.1

Percentage of persons who practised family planning methods among those who know family planning

(Illiterate)

Category	Vasectomy		P.P.S.		I.U.C.D.		Condom		Diaphragm		Foam tablets		Abstinence		Condom abstinence	
	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
Weaving ..	3·03	..	..	..	..	..	..	..	..	..	..	..	9·09	25·00	..	..
Transport ..	..	..	..	..	..	..	14·29	..	..	..	..	..	28·57	..	..	..
Cashew ..	27·27	6·90	..	18·23	..	0·99	..	..	..	..	..	..	9·09	0·49	..	..
Rayons ..	28·57	..	28·57	..	28·57	..	..	..	..	..	..	..	14·29	..	..	..
Other factories ..	3·13	4·76	4·69	4·76	..	..	..	..	1·56	..	..	..	9·38	..	..	..
Coffee estates ..	..	..	..	..	..	..	..	..	9·09	..	..	..	..	..	..	..
Tea estates ..	3·13	7·14	6·25	..	..	..	12·50	..	..	..	..	..	28·13	..	3·13	..
Rubber estates ..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..

TABLE 17·2

Percentage of persons who practised family planning methods among those who know family planning

(Literate below primary)

Category	Vasectomy		P. P.S.		I.U.C.D.		Condom	
	M	F	M	F	M	F	M	F
1	2	3	4	5	6	7	8	9
Weaving ..	7·00	..	1·75	..	..	..	1·75	..
Transport ..	2·60	..	6·49	..	2·60	..	12·99	..
Cashew ..	28·57	19·83	14·29	8·62	..	1·29	..	..
Rayons ..	10·81	..	10·81	..	10·81	..	8·11	..
Other factories ..	9·40	4·17	4·10	..	1·93	..	4·10	..
Coffee estates ..	11·11	..	..	..	..	..	..	..
Tea estates ..	5·83	8·33	..	..	..	..	21·57	..
Rubber estates ..	..	..	..	..	..	..	..	..

Category	Diaphragm		Foam tablets		Abstinence		Condom	
	M	F	M	F	M	F	M	F
	10	11	12	13	14	15	16	17
Weaving ..	1·75	..	1·75	..	5·25	..	..	..
Transport ..	1·30	..	1·30	..	22·08	..	1·30	..
Cashew ..	..	..	..	..	9·52	0·43	..	..
Rayons ..	..	..	2·70	..	2·70	..	..	..
Other factories ..	0·48	..	..	..	3·86	4·17	..	..
Coffee estates ..	..	..	..	..	..	..	11·11	..
Tea estates ..	..	..	..	..	13·73	..	..	..
Rubber estates ..	..	..	..	..	..	..	..	..

TABLE 17·3

Percentage of persons who practised family planning methods among those who know family planning

(Passed primary below matric)

Category	Vasectomy		P.P.S.		I.U.C.D.		Condom	
	M	F	M	F	M	F	M	F
1	2	3	4	5	6	7	8	9
Weaving	..	..	..	..	..	..	..	..
Transport	..	..	..	..	..	..	..	..
Cashew	..	33·32	..	..	..	..	12·50	..
Rayons	8·30	5·00	4·17	5·00	..	..	4·76	..
Other factories	9·52	..	11·11	..	1·59	..	..	..
Coffee estates	..	..	..	..	..	..	21·37	..
Tea estates	5·28	..	..	..	..	..	..	..
Rubber estates	..	..	..	..	..	..	..	..

Category	Diaphragm		Foam tablets		Abstinence		Condom abstinence	
	M	F	M	F	M	F	M	F
	10	11	12	13	14	15	16	17
Weaving	..	..	..	..	..	..	..	..
Transport	..	..	..	..	50·00	..	..	..
Cashew	..	..	..	..	..	..	..	..
Rayons	..	..	..	..	20·83	..	4·17	..
Other factories	3·17	..	..	..	4·76	..	..	..
Coffee estates	..	..	..	..	..	..	..	..
Tea estates	..	..	..	..	..	..	..	..
Rubber estates	..	..	..	..	..	..	..	..

TABLE 17·4

Percentage of persons who practised family planning methods among those who know family planning

(Matric and above)

Category	Vasectomy		P.P.S.		I.U.C.D.		Condom	
	M	F	M	F	M	F	M	F
1	2	3	4	5	6	7	8	9
Weaving ..	..	..	..	..	..	..	28·56	..
Transport ..	4·76	..	9·52	..	..	..	4·76	..
Cashew ..	..	..	..	..	..	..	..	..
Rayons ..	17·24	..	3·45	..	1·72	..	19·83	..
Other factories ..	4·49	..	4·49	..	1·12	25·00	13·48	..
Coffee estates ..	..	..	..	..	..	..	..	..
Tea estates ..	..	..	..	..	..	..	50·00	..
Rubber estates ..	..	..	..	..	..	..	..	..

Category	Diaphragm		Foam tablets		Abstinence		Condom abstinence	
	M	F	M	F	M	F	M	F
	10	11	12	13	14	15	16	17
Weaving ..	14·23	..	..	..	..	..	..	..
Transport ..	9·52	..	..	..	..	..	4·76	..
Cashew ..	16·67	..	..	..	16·67	..	..	..
Rayons ..	..	..	2·59	..	12·93	..	1·72	..
Other factories ..	4·49	..	..	..	5·62	..	..	..
Coffee estates ..	..	..	..	..	..	..	..	..
Rubber estates ..	..	..	..	..	..	..	..	..

TABLE 18·1

Distribution of those who practising family planning by reason for preference

(Vasectomy)

Category	Reason for preference											
	Easy		Convenient cheap		Spacing		Cheap		Permanent		Not harmful to health	
	M	F	M	F	M	F	M	F	M	F	M	F
Weaving ..	..	..	20·00	..	..	..	20·00	..	20·00	..	40·00	..
Transport ..	..	..	..	..	..	..	..	..	33·33	..	66.67	..
Cashew ..	..	..	..	..	..	..	..	..	22·22	9·84	77·78	90·16
Rayons ..	..	..	..	..	..	..	..	..	100·00	100·00	NR	NR
Other factories ..	1·89	..	..	..	..	..	1·89	..	96·22	100 00	..	..
Coffee estates ..	100·00	..	..	..	..	..	..	..	..	..	..	..
Tea estates ..	..	..	..	..	..	..	..	..	100 00	100·00	..	..
Rubber estates ..	..	..	14·29	..	..	..	..	..	71·42	..	14·21	..

TABLE 18·2

Distribution of those who practising family planning by reason for preference

(P.P.S.)

Category	Reason for preference											
	Easy		Convenient cheap		Spacing		Cheap		Permanent		Not harmful to health	
	M	F	M	F	M	F	M	F	M	F	M	F
Weaving ..	..	..	..	..	..	..	..	..	100·00	..	..	..
Transport ..	..	..	..	..	..	..	..	..	71·43	..	28·57 (others)	..
Cashew ..	..	..	.	..	..	..	..	..	66·67	1·75	33·33	98·25
Rayons ..	..	..	..	..	..	..	..	..	100·00	100·00	N.R.	N.R.
Other factories ..	2·94	..	2·94		..	..	..	..	94·12	100·00	..	..
Coffee estates ..	..	..	..	..	..	..	..	..	..	..	..	..
Tea estates ..	..	..	..	..	..	..	..	..	100·00	..	..	..
Rubber estates ..	..	..		..	..	..	..	..	100·00	..	..	..

TABLE 18·3

Distribution of those practising by reason for preference of each method

(I.U.C.D.)

Category	Reason for preference											
	Easy		Convenient cheap		Spacing		Cheap		Permanent		Not harmful to health	
	M	F	M	F	M	F	M	F	M	F	M	F
Weaving ..	..	..	..	..	..	..	..	..	..	..	..	..
Transport ..	..	..	..	..	..	..	..	..	..	..	100·00 (Others)	..
Cashew ..	..	20·00	..	..	..	..	..	..	..	..	..	N.R.
Rayons ..	..	..	50·00	..	.	..	..	..	..	..	50·00	..
Other factories ..	66·67	66·67	8·83	..	..	..	..	..	..	..	25·00	33·33
Coffee estates ..	..	..	..	..	..	..	..	..	..	..	..	..
Tea estates ..	..	..	..	..	..	..	..	..	..	..	..	..
Rubber estates ..	25·00	..	75·00	..	..	..	..	..	..	..	..	..

TABLE 18·4

Distribution of those practising by reason for preference of each method

(Condom)

Category	Reason for preference											
	Easy		Convenient cheap		Spacing		Cheap		Permanent		Not harmful to health	
	M	F	M	F	M	F	M	F	M	F	M	F
Weaving ..	..	..	33·33	..	..	..	..	..	..	..	66·67	..
Transport ..	66·67	..	16·67	..	..	..	..	..	..	..	16·66 (Others)	..
Cashew ..	..	..	..	..	..	..	..	..	..	..	..	..
Rayons ..	8·82	..	67·64	..	2·95	..	..	..	2·95*	..	11·76	..
Other factories ..	39·47	..	1·08	..	23·68	..	..	..	2·62*	..	13·15	100·00
Coffee estates ..	..	..	..	..	..	..	..	..	..	..	..	..
Tea estates ..	47·05	..	5·88	..	..	..	23·53	..	23·53	..	..	..
Rubber estates ..	50·00	..	25·00	..	25·00	..	..	..	..	..	..	..

*Not interferes with enjoyment,

TABLE 18·5

Distribution of those practising by reason for preference of each method

(Diaphragm)

Category	Reason for preference											
	Easy		Convenient cheap		Spacing		Cheap		Permanent		Not harmful to health	
	M	F	M	F	M	F	M	F	M	F	M	F
1	2	3	4	5	6	7	8	9	10	11	12	13
Weaving ..	20·00	..	60·00	..	..	..	..	..	..	..	20·00	..
Transport ..	40·00	..	..	..	..	..	..	..	..	..	60·00 (Others)	..
Cashew ..	100·00	..	..	..	..	..	..	..		..	..	..
Rayons ..	..	..	..	..	..	..	..	..	..	..	..	..
Other factories ..	52·63	..	10·53	..	10·53	..	5·26	..	..	..	21·05	..
Coffee estates ..	..	..	100·00	..	..	..	..	..	..	..	NR	..
Tea estates ..	..	..	..	..	100·00	..	..	..	..	..	..	..
Rubber estates ..	..	..	..	100·00	..	..	..	..	..	..	..	..

TABLE 18·6

Distribution of those practising by reason for preference of each method

(Foam tablets)

Category	Reason for preference											
	Easy		Convenient cheap		Spacing		Cheap		Permanent		Not harmful to health	
	M	F	M	F	M	F	M	F	M	F	M	F
1	2	3	4	5	6	7	8	9	10	11	12	13
Weaving ..	..	..	100·0	..	..	..	..	..	..	..	..	..
Transport .	100·00	..	..	..	..	..	..	..	..	..	..	..
Cashew ..	..	..	..	..	..	..	..	..	..	..	..	..
Rayons ..	25·00	..	25·00	..	..	..	25·00	..	..	..	25·00	..
Other factories ..	100·00	..	..	..	.	..	..	..	..	..	..	..
Coffee estates ..	..	..	..	..	..	..	..	..	..	..	..	..
Tea estates ..	..	..	..	..	..	..	..	..	..	..	..	..
Rubber estates ..	..	..	..	..	..	..	..	..	..	..	..	..

TABLE 19·1

Percentage distribution of persons by reasons for not practising family planning and education

(Illiterate)

Category	Reasons for not practising											
	No detailed knowledge		Recently married		Wanted more child		Not necessary		Religious objections		Others	
	M	F	M	F	M	F	M	F	M	F	M	F
1	2	3	4	5	6	7	8	9	10	11	12	13
Weaving ..	..	..	..	..	10·34	..	41·40	33·33	..	..	48·26	66·67
Transport ..	..	..	..	..	16·67	..	33·33	..	16·67	..	33·33	..
Cashew ..	..	..	..	..	71·43	9·40	14·28	32·21	..	0·67	14·29	57·72
Rayons ..	..	..	..	..	..	..	..	..	..	..	..	..
Other factories ..	7·69	5·26	..	..	26·93	..	13·46	15·79	7·69 (HCM) 112	15·79(H)	41·23	63·16
Coffee estates ..	12·50	..	25·00	..	..	..	62·50	..	..	..	..	..
Tea estates ..	..	..	..	..	46·67	54·36	..	..	..	..	53·37	45·64
Rubber estates ..	..	..	..	..	..	..	42·86	20·00	7·14 (M)	..	50·00	80·00

TABLE 19·2

Percentage distribution of persons by reasons for not practising family planning and education

(Literate below primary)

Category	Reasons for not practising											
	Not detailed knowledge		Recently married		Wanted one more child		Not necessary		Religious objection		Others	
	M	F	M	F	M	F	M	F	M	F	M	F
1	2	3	4	5	6	7	8	9	10	11	12	13
Weaving ..	..	..	..	..	8·88	..	53·28	33·33	..	..	37·84	66·67
Transport ..	..	..	..	..	23·69	..	26·32	..	2·63	..	47·37	..
Cashew ..	..	..	..	..	20·00	18·52	70·00	60·47	..	..	10·00	21·01
Rayons ..	..	..	..	..	11·70	..	29·45	50·00	17·64 (1–2)CM	50·00(C)	41·18	..
Other factories ..	..	..	..	..	23·60	23·81	29·45	38·10	8·16 (HCM)	23·81	38·76	14·28
Coffee estates ..	..	..	33·33	..	11·10	..	44·45	..	11·11 (M)	..	..	..
Tea estates ..	..	..	..	..	44·80	27·27	31·03	54·55	..	..	24·14	18·18
Rubber estates ..	..	..	..	..	3·20	18·18	32·26	..	..	..	64·52	81·82

TABLE 19·3

Percentage distribution of persons by reason for not practising family planning and education

(Above primary below matric)

Category	Reasons for not practising											
	M	F	M	F	M	F	M	F	M	F	M	F
1	2	3	4	5	6	7	8	9	10	11	12	13
Weaving ..	..	..	..	..	..	..	..	..	..	..	..	..
Transport ..	..	..	..	..	..	..	100·00	..	..	..	..	..
Cashew ..	..	..	..	..	..	..	..	50·00	..	..	..	50·00
Rayons ..	..	..	..	..	18·18	..	27·27	..	9·09 (H)	..	45·46	..
Other factories..	..	..	..	..	2·78	..	88·88	..	2·78 (C)	..	5·56	..
Coffee estates ..	..	..	..	..	..	..	..	..	..	..	..	..
Tea estates ..	..	..	..	..	..	..	..	..	..	..	..	..
Rubber estates ..	..	..	..	..	..	..	..	..	..	..	..	100·00 (M—Interested)

TABLE 19·4

Percentage distribution of persons by reason for not practising family planning and education

(Matric and above)

Category	Reasons for not practising											
	M	F	M	F	M	F	M	F	M	F	M	F
1	2	3	4	5	6	7	8	9	10	11	12	13
Weaving ..	..	..	..	..	25·00	..	25·00	..	..	..	50·00	..
Transport ..	..	..	..	..	57·14	..	42·26	..	..	..	..	..
Cashew ..	..	..	..	..	25·00	..	50·00	..	..	..	25·00	..
Rayons ..	..	..	..	..	32·50	100·00	37·20	..	2·33 (M)	..	27·97	..
Other factories..	..	..	..	..	38·46	66·67	46·15	..	3·85 (M)	..	11·54	33·33 (N.R.)
Coffee estates ..	..	..	..	..	100·00	..		..	..	..	..	..
Tea estates ..	..	..	..	..	100·00	..	..	..	..	..	..	..
Rubber estates ..	..	..	..	..	..	..	..	..	..	..	..	..

TABLE 20·1

Percentage distribution of persons by opinion on age at marriage of sons

Category	20		21		22		23	
	M	F	M	F	M	F	M	F
1	2	3	4	5	6	7	8	9
Weaving ..	..	..	..	..	2·97	..	..	..
Transport ..	0·89	..	..	..	1·77	..	0·89	..
Cashew ..	..	0·30	..	..	1·89	3·44	3·77	2·39
Rayons ..	4·24	20·00	0·53	..	4·23	..	0·53	..
Other factories ..	2·64	4·35	0·83	2·50	4·31	1·31	1·25	2·90
Coffee estates ..	..	..	4·34	..	..	11·11	4·34	..
Tea estates ..	1·87	..	5·61	11·11	8·41	2·22	0·93	4·44
Rubber estates ..	2·38	4·55	4·76	9.09	10·71	9·09	1·19	4·55

Category	24		25		26		27	
	M	F	M	F	M	F	M	F
	10	11	12	13	14	15	16	17
Weaving ..	..	..	23·76	35·71	71·29	64·29	..	..
Transport ..	..	..	31·86	..	55·75	..	5·30	..
Cashew ..	..	9·27	30·19	21·82	50·91	52·32	5·66	10·46
Rayons ..	..	..	38·62	40·00	82·85	40·00	1·59	..
Other factories ..	..	4·35	42·56	49·27	41·87	34·78	1·81	..
Coffee estates ..	..	..	21·75	22·22	69·57	66·67	..	..
Tea estates ..	..	46·68	19·63	13·33	43·92	22·22	..	..
Rubber estates ..	..	18·18	38·10	31·32	29·76	22·72	3·58	..

TABLE 20·2

Percentage distribution of persons by opinion on age at marriage of daughters

Category	Opinion on age at marriage of daughters							
	Below 15		15		16		17	
	M	F	M	F	M	F	M	F
1	2	3	4	5	6	7	8	9
Weaving ..	3·96	7·14	11·88	35·71	17·82	28·57	8·91	14·29
Transport ..	..	..	..	..	2·66	..	6·19	..
Cashew ..	..	0·30	..	..	..	3·44	1·89	8·37
Rayons ..	..	..	2·12	..	6·35	..	6·88	20·00
Other factories ..	0·14	1·45	2·08	1·45	7·79	8·69	4·03	13·04
Coffee estates ..	4·35	..	4·35	22·22	13·04	11·11	13·04	..
Tea estates ..	0·93	..	2·81	..	6·54	2·22	8·11	..
Rubber estates ..	..	..	3·58	..	2·38	4·55	7·14	9·09

Category	Opinion on age at marriage of daughters							
	18		19		20		Above 20	
	M	F	M	F	M	F	M	F
	10	11	12	13	14	15	16	17
Weaving ..	27·73	7·14	1·98	..	21·78	7·15	5·94	..
Transport ..	28·32	..	7·97	..	30·09	..	19·47	..
Cashew ..	37·73	34·38	1·89	0·00	47·17	35·33	9·43 1·89 NR	7·62 10·16 NR
Rayons ..	28·04	20·00	5·82	..	35·97	60·00	13·23 1·59 NR	
Other factories ..	24·23	20·00	2·36	1·45	39·37	24·63	18·36 2·64 NR	20·30 8·69 NR
Coffee estates	30·44	22·22	4·35	..	21·74	22·23	8·69	22·22
Tea estates	21·50	20·00	11·21	15·55	17·76	17·78	30·84	44·45
Rubber estates	20·24	31·82	13·10	18·18	22·62	9·09	27·87 3·57 NR	27·27

TABLE 21

Percentage distribution of persons by spacing between terminations preferred

Category	Spacing preferred												
	1 year		2 years		3 years		4 years		5 years		Above 5 years		
	M	F	M	F	M	F	M	F	M	F	M	F	
1	2	3	4	5	6	7	8	9	10	11	12	13	14
Weaving ..	29.7	..	4.95	..	61.38	35.71	16.83	21.43	1.98	..	11.89 3.54	7.14 35.72 NR	3-4 years NR
Transport ..	..	..	18.58	..	50.44	..	14.16	..	11.51	..	1.77 NR	..	
Cashew ..	1.89	2.25	28.30	34.23	47.17	47.08	11.32	6.28	5.66	0.30	1.89 3.77 NR	0.60 9.26 NR	
Rayons ..	..	..	7.94	40.00	41.80	60.00	30.16	..	16.93	..	2.12 1.50 NR	..	
Other factories ..	0.70	..	17.52	18.84	47.30	53.62	20.86	15.94	10.15	10.15	0.97 2.50 NR	1.45	
Coffee estates ..	..	..	8.70	22.22	69.56	66.67	17.39	11.11	4.35	..	..	..	
Tea estates ..	..	..	26.17	22.22	43.92	64.45	24.30	1.11	5.61	2.22	..	..	
Rubber estates ..	..	..	13.10	27.27	44.05	31.82	30·95	31.37	7.14	4.54	NR 4.76	NR 2.30	

TABLE 22.1

Percentage distribution of persons by age and number of children desired

(Weaving)

Age group	M/F	Number of children desired															
		1		2			3				4					Above 4	Total
		Males		Male children			Male children				Male children						
		0	1	0	1	2	0	1	2	3	0	1	2	3	4		
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
15–19	M	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
	F	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
20–24	M	..	..	..	..	..	..	..	..	..	..	..	100·00	100·00	..	..	100·00
	F	..	..	..	..	..	..	..	..	..	..	..	..	..	..	.	..
25–29	M	..	..	..	..	..	..	..	100·00	100·00	..	..	..	..	..	..	100·00
	F	..	..	..	..	..	..	..	100·00	100·00	..	..	..	..	..	..	100·00
30–34	M	..	..	..	9·09	9·09	..	..	54·55	..	..	..	27·27	..	..	..	100·00
	F	..	..	..	..	..	..	..	..	..	..	..	100·00	..	..	..	100·00
35–39	M	..	..	..	4·55	..	..	4·55	40·88	..	..	9·10	31·82	..	..	9·10	100·00
	F	..	50·00	..	..	..	..	..	..	..	..	..	..	..	..	50·00	100·00
40–44	M	..	..	..	..	..	..	10·00	..	..	..	..	20·00	..	..	70·00	100·00
	F	.	..	..	..	..	..	..	..	..	..	..	..	..	..	100·00	100·00
45–49	M	5·26	..	..	5·26	..	..	..	15·31	..	..	..	36·82	..	..	36·82	100·00
	F	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
50 and above	M	..	..	..	..	..	8·33	..	24·99	..	..	..	16·66	..	..	50·02	100·00
	F		..	..	..	..	..	..		..	..	..	..	..	..	.	..
Total	M	1·30	..	..	3·89	1·30	1·30	2·60	29·87	..	..	2·60	..	..	..	57·14	100·00
	F	..	20·00	..	..	..	..	..	20·50	..	..	..	20·00	..	..	40·00	100·00

TABLE 22·2

Percentage distribution of persons by age and number of children desired

(Transport)

Age	M/F	1		2			3				4					Above 4	Total
		Male children		Male children			Male children				Male children						
		0	1	0	1	2	0	1	2	3	0	1	2	3	4		
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
15–19	M	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
20–24	M	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
25–29	M	..	..	..	..	..	..	..	83·33	..	..	..	16·67	..	..	..	100·00
30–34	M	..	..	..	9·09	..	..	..	36·36	..	..	..	54·55	..	..	..	100·00
35–39	M	..	..	..	9·09	9·09	..	..	45·46	..	..	..	18·18	18·18	..	..	100·00
40–44	M	..	..	..	11·76	..	..	..	47·06	..	..	..	35·29	..	..	5·89	100·00
45–49	M	..	..	..	16·67	..	..	16·67	33·33	..	..	..	33·33	..	..	..	100·00
50 and above	M	..	..	..	28·57	..	..	..	14·28	..	..	..	14·28	14·29	..	14·29 NR 14·29	100·00
Total	M	..	..	..	12·07	1·72	..	1·72	43·10	..	..	..	31·04	5·18	..	3·45 NR 1·72	100·00

TABLE 22.3

Percentage distribution of persons by age and number of children desired

(Cashew)

Age group		1		2			3				4					Above 4	Total
		0	1	0	1	2	0	1	2	3	0	1	2	3	4		
1		2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
15–19	M	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
	F	..	..	..	..	..	..	..	25·00	25·00	..	..	50·00	..	..	..	100·00
20–25	M	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
	F	2·50	2·50	..	7·50	7·50	..	7·50	25·00	2·50	..	..	45·00	..	..	..	100·00
25–29	M	..	..	..	..	..	..	..	50·00	..	..	..	25·00	25·00	..	..	100·00
	F	..	4·05	2·70	9·46	..	1·35	8·11	18·92	4·05	1·35	5·41	41·90	1·38	..	1·35	100·00
30–34	M	..	..	..	14·28	..	..	14·29	42·86	..	..	..	14·28	14·29	..	..	100·00
	F	..	..	2·86	12·86	..	1·43	11·43	8·57	2·86	..	4·29	35·69	4·29	2·86	12·86	100·00
35–39	M	..	..	..	12·50	..	..	..	37·50	..	..	..	37·50	12·50	..	..	100·00
	F	4·08	4·08	..	8·16	..	..	2·04	6·12	2·04	..	4·08	34·69	6·12	..	28·59	100·00
40–44	M	..	..	..	20·00	..	..	..	20·00	..	..	..	40·00	20·00	..	..	100·00
	F	..	4·35	4·35	4·35	..	4·35	..	4·35	8·70	..	..	34·78	8·70	4·35	21·72	100·00
45–49	M	..	..	..	..	..	..	..	..	..	..	..	..	..	..	100·00	100·00
	F	..	..	..	..	..	..	8·33	..	..	..	8·34	33·33	..	..	50·00	100·00
50 and above	M	..	..	..	..	..	..	..	100·00	..	..	..	..	..	..	..	100·00
	F	11·11	11·11	..	11·11	..	11·11	..	..	..	..	..	..	..	..	55·56	100·00
Total	M	..	..	..	11·54	..	..	3·85	38·46	..	..	..	26·92	15·38	..	3·85	100·00
	F	1·42	2·85	1·78	8·90	1·07	1·42	6·76	12·45	3·56	0·36	3·56	37·37	3·20	1·07	14·23	100·00

TABLE 22.4

Percentage distribution of persons by age and number of children desired

(Rayons)

Age group		1		2			3				4					Above 4	Not recorded	Total
		0	1	0	1	2	0	1	2	3	0	1	2	3	4			
1		2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
15–19	M	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
	F	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
20–24	M	..	..	..	..	..	..	..	100·00	..	..	..	..	..	..	..	..	100·00
	F	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
25–29	M	..	..	..	15·40	..	..	7·69	46·15	..	..	..	7·69	7·69	..	7·69	7·69	100·00
	F	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
30–34	M	..	..	5·56	22·22	..	..	5·56	44·44	..	..	..	11·11	..	..	5·56	5·55	100·00
	F	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
35–39	M	..	..	..	13·63	..	4·55	..	54·54	..	..	..	18·18	4·55	..	4·55	..	100·00
	F	..	..	..	..	..	..	..	25·00	..	..	25·00	..	..	..	50·00	..	100·00
40–44	M	..	..	..	4·76	4·76	..	4·76	33·33	..	..	..	28·57	..	..	23·82	..	100·00
	F	..	..	..	..	..	..	100·00	..	..	..	..	..	..	..	..	..	100·00
45–49	M	..	..	..	..	..	..	..	27·27	9·09	..	..	36·37	..	..	27·27	..	100·00
	F	..	..	..	..	..	..	..	..	..	..	..	..	..		..	..	..
50 and above	M	12·23	..	..	..	..	..	..	12·22	..	..	..	48·89	12·22	..	24·44	..	100·00
	F	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Total	M	1·05	..	1·05	10·53	1·05	1·05	3·16	40·00	1·05	..	..	22·11	3·16	..	13·68	2·11	100·00
	F	..	..	..	..	..	..	20·00	20·00	..	..	20·00	..	..	..	40·00	..	100·00

TABLE 22.5

Percentage distribution of persons by age and number of children desired

(Other factories)

Age group		1		2			3				4					Above 4	Total
		0	1	0	1	2	0	1	2	3	0	1	2	3	4		
1		2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
20–24	M	..	..	..	28·57	..	..	..	42·86	..	..	..	14·28	..	..	14·29	100·00
	F	..	..	..	33·33	..	..	16·67	50·00	..	..	..	..	..	..	..	100·00
25–29	M	..	..	..	37·24	1·96	..	1·96	41·18	..	..	..	9·80	3·93	..	3·93	100·00
	F	..	..	..	20·00	..	..	..	..	..	..	20·00	20·00	20·00	..	20·00	100·00
30–34	M	1·06	1·06	..	27·66	2·13	..	6·38	45·75	..	..	2·13	7·45	1·06	1·06	4·26	100·00
	F	..	..	..	33·33	..	..	..	33·33	..	..	..	..	..	..	33·34	100·00
35–39	M	..	1·94	2·91	22·33	..	..	13·59	25·24	0·97	..	0·97	17·48	4·85	..	9·72	100·00
	F	..	..	..	16·67	..	..	..	33·33	..	..	16·67	16·67	..	..	16·66	100·00
40–44	M	..	..	1·39	13·89	1·39	1·39	8·33	30·56	..	..	..	19·44	1·39	..	22·22	100·00
	F	..	16·67	..	..	..	..	..	..	..	..	..	16·67	..	..	66·67	100·00
45–49	M	..	..	..	12·33	..	1·37	2·74	27·40	1·37	..	2·74	21·92	4·11	..	26·02	100·00
	F	..	..	..	100·00	..	..	..	..	..	..	..	..	..	..	..	100·00
50 and above	M	..	2·13	4·26	6·38	..	..	2·18	25·53	2·13	..	..	17·02	2·13	..	38·29	100·00
	F	..	..	..	..	33·33	..	..	..	..	..	..	..	33·34	..	33·34	100·00
Total	M	0·22	0·90	1·34	20·58	0·90	0·45	6·71	32·88	0·67	..	1·12	15·44	2·91	0·22	15·66	100·00
	F	..	3·33	..	20·00	3·33	..	3·33	20·00	..	..	6·67	10·00	6·67	..	26·67	100·00

TABLE 22.6

Percentage distribution of persons by age and number of children desired

(Coffee estates)

Age group	M F	1			2			3			4					Above 4	Total
		0	1	0	1	2	0	1	2	3	0	1	2	3	4		
15–19	M	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
	F	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
20–24	M	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
	F	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
25–29	M	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
	F	..	..	..	100·00	..	..	..	..	..	..	..	..	..	..	..	100·00
30–34	M	..	..	..	..	..	..	..	75·00	..	..	..	25·00	..	..	..	100·00
	F	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
35–39	M	..	..	..	..	..	..	16·67	33·33	..	..	..	50·00	..	..	..	100·00
	F	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
40–44	M	..	..	..	..	..	..	..	50·00	..	..	..	..	50·00	..	..	100·00
	F	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
45–49	M	..	..	..	..	..	..	..	..	..	..	..	66·67	..	..	33·33	100·00
	F	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
50 and above	M	..	..	..	..	..	..	..	..	..	..	..	..	..	..	100·00	100·00
	F	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Total	M	..	..	..	..	..	..	6·25	37·50	..	..	..	37·50	6·25	12·50	..	100·00
	F	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..

TABLE 22·7

Percentage distribution of persons by age and number of children desired

(Tea estates)

Age group	M F	1			2			3			4					Above 4	Total
		0	1	0	1	2	0	1	2	3	0	1	2	3	4		
15–19	M	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
	F	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
20–24	M	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
	F	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
25–29	M	..	..	..	20·00	..	..	..	60·00	..	..	..	20·00	..	..	..	100·00
	F	..	..	..	100·00	..	..	..	..	..	..	..	..	..	..	..	100·00
30–34	M	..	..	..	7·69	..	..	..	46·16	..	..	..	38·46	..	..	7·69	100·00
	F	..	..	..	..	..	..	..	100·00	..	..	..	..	..	..	..	100·00
35–39	M	..	..	..	..	..	..	8·33	41·67	..	..	..	25·00	8·33	..	16·67	100·00
	F	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
40–44	M	..	..	..	..	..	..	..	33·33	..	..	..	50·00	16·67	..	..	100·00
	F	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
45–49	M	..	..	..	20·00	..	..	..	20·00	..	..	..	..	..	..	..	100·00
	F	..	..	..	100·00	..	..	..	..	..	..	..	..	..	..	..	100·00
50 and above	M	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	100·00
	F	..	..	..	..	..	..	..	..	..	..	..	66·67	..	..	33·33	100·00
Total	M	..	..	..	6·82	..	..	2·27	33·64	..	..	..	38·64	4·54	..	9·09	100·00
	F	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..

TABLE 22·8

Percentage distribution of persons by age and number of children desired

(Rubber estates)

Age group	M F	1			2			3			4					Above 4	Total
		0	1	0	1	2	0	1	2	3	0	1	2	3	4		
15-19	M	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
	F	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
20-24	M	..	..	..	..	..	..	..	..	..	..	..	..	100·00	..	..	100·00
	F	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
25-29	M	..	..	..	..	..	..	..	100·00	..	..	..	..	..	..	..	100·00
	F	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
30-34	M	..	..	..	..	..	..	..	80·00	..	..	..	20·00	..	..	..	100·00
	F	..	..	..	..	..	..	..	66·67	..	..	..	33·33	..	..	..	100·00
35-39	M	..	..	..	..	..	..	..	36·36	..	..	9·09	45·46	..	..	9·09	100·00
	F	..	..	..	..	..	..	..	..	..	..	..	33·33	..	..	66·67	100·00
40-44	M	..	..	..	..	..	..	..	50·00	..	..	..	30·00	..	..	20·00	100·00
	F	..	..	..	..	..	..	..	..	..	..	..	100·00	..	..	..	100·00
45-49	M	..	..	..	..	..	..	..	20·00	..	..	..	40·00	..	..	40·00	100·00
	F	..	..	..	33·33	..	..	..	..	..	..	..	33·33	..	..	33·34	100·00
50 and above	M	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
	F	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Total	M	..	..	..	5·13	..	..	..	38·46	..	..	2·56	33·33	2·56	..	17·96	100·00
	F	..	..	..	..	..	..	..	25·00	..	..	..	50·00	..	..	25·00	100·00

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45	16·3	Do	Muslims
46	17·1	Do.	Illiterate
47	17·2	Do.	Literate below primary
48	17·3	Do.	Passed primary below matric
49	17·4	Do.	Matric and above
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65	22·3	Do.	Cashew
66	22·4	Do.	Rayons
67	22·5	Do.	Other Factories
68	22·6	Do.	Coffee Estates
69	22·7	Do.	Tea Estates
70	22·8	Do.	Rubber Estates

TABLE I

Distribution of Factories/Estates in each category

Category	No. of units covered	No. of workers in selected units			No. of workers interviewed		
		Male	Female	Total	Male	Female	Total
1	2	3	4	5	6	7	8
Weaving ..	39	2275	281	2556	101	14	115
Transport ..	28	2030	7	2037	113	..	113
Cashew ..	31	1009	14645	15654	53	669	722
Rayons ..	2	2240	1726	3966	189	5	194
Other Factories ..	358	12774	2113	14887	719	69	788
Coffee Estates ..	5	477	198	675	23	9	32
Tea Estates ..	11	2131	1696	3827	107	45	152
Rubber Estates ..	33	1481	700	2181	84	22	106
Total ..	507	24417	21366	45783	1389	833	2222

TABLE II

Distribution of Factories/Estates according to number of workers employed

Category	Total units covered	Number of worker employed						
		Less than 10	10–19	20–39	40–59	60–79	80–99	100 and above
1	2	3	4	5	6	7	8	9
Weaving ..	39	2	14	14	2	..	..	7
Transport ..	28	13	4	4	1	1	1	4
Cashew ..	31	1	..	1	..	..	2	27
Rayons ..	2	..	..	..	..	..	..	2
Other Factories ..	358	123	82	863	44	12	5	29
Coffee Estates ..	5	..	..	..	1	..	1	3
Tea Estates ..	11	..	..	..	1	1	2	7
Rubber Estates ..	33	1	7	7	7	5	1	5

TABLE III

Distribution of Factories/Estates according to family planning activities

Category	Number of units where there are			
	Family planning clinic	Giving incentive	Giving maternity benefits	Restriction on maternity benefits
1	2	3	4	5
Weaving ..	..	..	8	5
Transport ..	..	..	..	..
Cashew ..	1	1	3	..
Rayons ..	1	..	..	..
Other Factories ..	4	20	40	8
Coffee Estates ..	..	..	1	..
Tea Estates ..	1	4	6	..
Rubber Estates ..	2	3	13	..

ON THE EFFECT OF THE FAMILY PLANNING PROGRAMME ON THE BIRTH RATE IN KERALA

By

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September 1973.

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THE EFFECT OF THE FAMILY PLANNING PROGRAMME ON THE BIRTH RATE IN KERALA

Introduction.—The Family Planning Programme was started in Kerala State in 1955 in selected urban Clinics. Later in 1965 the programme was made time-bound and target oriented. Three methods viz., Sterilisation, I.U.C.D. and Conventional Constraceptives of which Nirodh forms a major part have been popularised since then. A Cafetaria approach has been followed whereby the couples can choose one among the three methods. Facilities have been provided free in all hospitals and health centres. A small compensation for out of pocket expenses and loss of wages has also been provided under the programme for low income couples who accept sterilisation or I.U.C.D.

This note attempts to examine the achievements of the programme of family planning in Kerala in the matter of protecting the couples as well as reducing the birth rate.

Percentage of couples protected.—The number of couples in the reproductive ages (15–44 years for wife) as been estimated to have increased from 25·01 lakhs in mid-1961 to 31·52 lakhs in mid-1971. This work out to a net addition of 65200 couples in one year on an average. The annual achievements of family planning can be compared with this number to see whether at least an equivalent number of couples are protected so that the situation is not worse off than the current one. The following table shows the number of couples protected each year by the various methods. In calculating this number, the attrition due to mortality and aging has been considered for sterilised persons; for I.U.C.D. besides these, the percentage of expulsion and removal has also been taken into account; for conventional contraceptive users there is no carry-over effect as protection is achieved only when the device is used but in view of the fact that on an average there is only 60 per cent effectiveness (1) for the conventional contraceptives, only 60 per cent of the estimated number of users has been considered as protected. It may be noted here that the percentage of effectiveness considered here is a very conservative estimate.

TABLE I

Number and percentage of couples protected method-wise

Year	No. of couples at Mid Year (Lakhs)	Number of couples protected by				Percentage of couples currently protected by			
		Sterilisation	I.U.C.D.	C.C. users	Total	Sterilisation	I.U.C.D.	C. C. Users	Total
1	2	3	4	5	6	7	8	9	10
1957	22·81	671	..	..	671	0·03	..	..	0·03
1958	23·31	3757	..	..	3757	0·16	..	..	0·16
1959	23·82	9959	..	..	9959	0·42	..	..	0·42
1960	24·34	14692	..	..	14692	0·60	..	..	0·60
1961	25·01	20777	..	..	20777	0·83	..	..	0·83
1962	25·59	27291	..	..	27291	1·07	..	..	1·07
1963	26·18	39702	..	..	39702	1·52	..	..	1·52
1964	26·78	60391	..	..	60391	2·26	..	..	2·26
1965	27·40	101054	17836	..	118890	3·69	0·65	..	4·34
1966	28·03	137562	46412	667	184641	4·91	1·66	0·02	6·59
1967	28·67	193535	62197	6066	261798	6·75	2·17	0·21	9·13
1968	29·33	266101	76591	5925	348617	9·07	2·61	0·20	11·88
1969	30·00	318511	84820	7184	410345	10·62	2·83	0·24	13·69
1970	30·69	379517	87894	9670	47[illegible]031	12·37	2·86	0·31	15·54
1971	31·52	470855	79561	7824	558[illegible]0	14·93	2·52	0·25	17·70
1972	32·24	564139	73530	6522	644191	17·50	2·28	0·20	19·98

It is seen from the above table that nearly 20 per cent of the couples are currently protected by the three methods of family planning. Sterilisation has protected 17·5 per cent while I.U.C.D. has protected 2·28 per cent.

If the protection of couples were in proportion to the number of couples in each of the reproductive age groups the birth rate would have been reduced by 20 per cent and might have come down from 38·9 per 1000 to 31·12 per 1000 in 1972. But as the couples protected are predominantly from the older age groups, the reduction in birth rate will be less than this. This is examined in the following section.

Births averted and birth rate reduction.—The number of births averted by the couples who had adopted various methods of family planning is worked out normally by considering their fertility and the likely number of births that might have taken place but for their adoption of family planning methods. A simple assumption which is often

(1) S. P. Jain—Estimation of Population Growth under Family Planning Programme.

made is to treat adopters and non-adopters as of equal fertility. Though some studies have shown differential in fertility among these groups, considering the motivation of high fertility couples to adopt family planning, in countries like India where extension education and motivational endeavours are made irrespective of fertility status, equality of adopters and non-adopters can be justified. The following tables shows the number of births averted by those who have adopted various methods of family planning.

TABLE II

Births averted by various methods

Year	Births averted					
	Due to sterilisation	Due to I.U.C.D.	Due to use of conventional contraceptive	Total	By other methods 1/8 of 5	Grand total
1	2	3	4	5	6	7
Upto 1966	81402	8108	44	89554	11194	100748
1967	38841	13682	537	53060	6633	59693
1968	53908	17791	1608	73307	9163	82470
1969	69328	21301	1664	92293	11537	103830
1970	82568	23024	2080	107672	13459	121131
1971	97666	22774	2452	122892	15362	138254
1972	118288	20483	2000	140771	17596	158367
Total	542001	127163	10385	679549	84944	764493

It is seen that a total of 6·8 lakhs of birth has been averted by the three types of family planning methods till the end of 1972 of which 5·4 lakhs by IUCD and ·1 lakh by use of conventional constraceptives. Here it is worth noting that through the three types methods in the cafetaria of the programme of family planning are sterilisation, IUCD and conventional contraceptives, the extention education approach may prompt couples to adopt other methods like abstinence, rhythm, withdrawal, etc. A rough estimate of the percentage of adopters of these natural methods has been put at 12½ by various surveys like that conducted in 1969–70 by the programme Evaluation Organisation of the Planning Commission (2) and the survey by the

(2) Family Planning in India—An Evaluation by programme Evaluation Organisation, Planning Commission, Government of India 1970.

Operational Research Group, Baroda in 1970-71 (3). If this part is also considered the births averted comes to 7·6 lakhs by the end of 1972.

Estimates of birth rates and population after accounting for births averted and assuming a linear decline in death rate from 16·1 in 1951-60 to 10·1 in 1971 as estimated by the sample registration scheme, have been worked out. The birth rate of 9·7 per 1000. This birth rate is higher than the birth rate of 31 (4) per 1000 estimated by the sample registration scheme in 1971 and 30 for 1972 (unpublished). The difference may be due to the procedure of estimation followed in the two schemes of calculation and also due to the changes in marriage rate and age at marriage, apart from sampling errors and errors of reporting. It has been shown by Mukherji and Venkatacharya (5) by the simulation model, that by increasing the age at marriage from 16·8 in 1961 to 20·5 in 1967 there will be a reduction of 4 points in the birth rates in India by 1971. In any case it is clear that the goal of family planning programme stipulated already namely 32 per 1000 by the end of the 4th Five Year Plan i.e. 1973-74 has been achieved as far as Kerala State is concerned.

It may be remarked here that as the data on age at marriage and proportion married in Kerala State are not yet available from 1971 census, it has not been possible to estimate the extent of reduction in birth rate due to change in marriage pattern. Also this is not the specific objective of this paper.

The reduction in birth rate achieved till 1972 is of the order of 7 points from that of 38·9 per 1000 in 1951-60. The rate of natural increase thus stands at 22·1 per 1000 as against 22·8 during 1951-60. As the death rate decline becomes lower than the birth rates decline, the rate of growth of population will also decline. If the birth rate of 30 given by sample registration scheme is assumed to hold, the rate of growth of population is of the order of 2 per cent per annum.

Conclusion.—This note presents the reduction in birth rate that has occurred due to the programme of family planning in the State of Kerala from 38·9 in 1951-60 to 31·8 in 1972. The birth rate might have come to 30 as given by sample registration scheme, if the effect due to increase in age at marriage is also considered. While a reduction of 7 points has occurred in the birth rate in Kerala due to family planning alone, the estimated reduction in the birth rate in India as

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(3) Operational Research Group, Baroda—Report on the survey on Family Planning Practices in India—1972. New Delhi—1973.

(4) S. R. bulletin for July—December 1972 Registrar General of India Rural and Urban rates have been combined in proportion to population.

(5) Mukherjee and Venkitacharya—Effects of increasing age at marriage on birth rate—A simulation model—DTRC. 68/S/M/3.

a whole based on the sample registration scheme and by calculation of births averted by family planning has been 5 points only the birth rate of 41·7 in 1951–60 has come down to 37·4 in 1971 according to sample registration and 36·5 in 1972-73 (6) based on calculation of births averted by family planning. It is also noteworthy here that Kerala State is achieving the goal of reduction of birth rate to 32 per 1000 by the end of the 4th plan. A paper setting out the details of the calculation of births averted is being issued.

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(6) Department of Family Planning—Monthly statement—New Delhi—July 1973.

SOCIAL AND CULTURAL ASPECTS OF FERTILITY OF WOMEN IN KERALA

CONTENTS

SECTION II

Fertility

SOCIAL AND CULTURAL ASPECTS OF FERTILITY OF WOMEN IN KERALA

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Introduction.—We live in a caste ridden society and so our social environment is caste influenced. The nexus between family and social environment arises from the fact that every individual is simultaneously a member of both the institutions. He is born in the family and is brought up in the cast ridden social environment whether he wills it or not. The family is the procreative and primary training institution where as "the caste" functions as a ranking device of his social environment. The importance of family is evident from the universal declaration of human rights of the United Nations that "the family is the natural and fundamental group unit of society and is entitled to protection by the society and the State" (1) The cultural pattern of the society is handed down from one generation to another through the institution of family. Thus the family serves as a suitable medium for conveying to its individual members, the traditions, the sentiments and the modes of behaviour of the society. In fact the cultural pattern of the members are given expression through their customs and practices. So to study the social and cultural aspects of a people, we have to study the traditional family types.

2. *Objects of the present study.*—In this study an attempt is made to analyse the social and cultural aspects of the families which influence the fertility of women in Kerala. The family types and the kind of social structure with which they are generally associated more over tend together to encourage different levels of fertility (2). Fertility of women is affected by the family structure because the socially valued goals are realised through family. The differential fertility between family types can be attributed to the operation of integrated cultural traits like customs attitudes and practices which are in fact the resultant elements of social interaction and projective manifestation of existing socialization in the cultural process.

2.2. Since Indian culture is built round the joint or extended family system, the present study leans heavily on the traditional families. In other words the present study projects itself on the customs and practices of the various communities under their respective types of traditional family organization. The empirical

observations are also given wherever possible also census reports of Travancore-Cochin and Madras from 1901 to 1941 are made use of for this study.

3. *Development of Joint Family or extended family system in the past.*—Joint or extended family system has developed as a social necessity. Joint or extended family has proved beneficial when combined efforts are called for. There exists a greater propensity on the part of the number of couples who are related by blood or by marriage, having comparatively low income, to live together and thereby manage to minimise the overhead family expenditure. In an economy where the level of consumption is low and the productivity of an individual is also low, the economic condition of the people compel the members to stand united in the framework of a joint family system and pool their resources together both in consumption as well as in production Incidence of high adult mortality and particularly maternal death directly support the extended family system. The family takes care of the widow, the widower, the children in the case of the death of the mothers and the aged. These contingents are not infrequent in a high mortality group. Further, during political unrest and general disorder, when might becomes the right, the members of the family, by blood or by marriage, have to stand united in the framework of a joint or extended family to safeguard their common interest and to become a formidable force against any kind of external aggression. The tarwad type of family organization has developed under similar circumstances in the past *(1000 to 1325 A.D.)

"From cradle to the grave we breath the atmosphere of organised groups and incessant impact of action and reaction shapes our body, mind, personality and conduct (3). So to bring out the social and cultural aspects of fertility of women it becomes necessary to elaborate upon the hidden content of the various types of joint families which affect the fertility pattern.

4. *The traditional family type.*

4.1. The traditional type of families are built round extended or joint family system. The simplest form of a joint family is one generational in character which consists of two or more simple families of the same generation. But this type becomes more complex when it becomes multi-generational which includes two or more families of different generation.

4.2. The characteristic features of extended families are common ancestry, common line of authority and undivided inheritance. They are bound together with bends of kinship, sentiments, rituals and moral obligations. They also share common cultural values.

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* Refer page 284 of Gazetteer of India, Kerala, Trivandrum.

4.3. The main functions of the family are to perpetuate its population and to maintain the cultural continuity from one generation to the next generation and to determine the place of each new born infant. As a matter of fact there are as many family patterns as there are castes. There are the different types of families that we find today have developed at different periods to perform the normal functions of the family in the most effective manner in accordance with the occupation of the family and social set up of the time. Each family under a particular family type retains its traditional characteristics irrespective of the size of the family.

5. *Three major types of joint families.*—The present study is confined to the following three common types of joint or extended families of antiquity in Kerala.—

1. The Brahmin type
2. The Tarwad type
3. The Artisan type

5.1. Attention is focussed to the following factors to bring out the social and cultural aspects influencing the fertility of these family types. (1) The marital practices, (2) the absolute relative ages of spouces at marriage, (3) the degree at which celebacy is encouraged or condemned, (4) the prevalence of polygamy and polyandry, (5) the customs and practices regarding the divorce and remarriage of widowed or divorced, (6) the practice of dowry system, (7) the institutional frame work for mating, (casual visits *vs.* prolonged cohabiting), (8) the prevalence of contraceptive or other devices for birth control, (9) the economic arrangement of the fimily, (10) the belief concerning relative values of male as opposed to famale off spring, (11) the socially ideal number of children if any, (12) spacing of children, etc.

6. *Brahmin type family.*—A Brahmin family consists of a father, mother, sons and unmarried daughters. Namboodiri Brahmins except those of Payyannoor Gramom (4) and the non-malayali Brahmins are governed by the makkathayam law. They are patriarchal families. The authority of the father in the family is supreme.

6.1. Brahmins commanded high social status and they enjoyed many social previleges and economic advantages. They were in fact, the patricians of Kerala. They belonged to priestly class, highly honoured by the society. Malayali Brahmins, landed aristocrats of the time long past enjoyed their own customs and practices but they differed in many respects, with their counter parts in other parts of India.

6.2. *The age at marriage.*—The age at marriage of a community is conditioned by the factors like beliefs, values, motivations and social practices of that community. It is in tune with the norms and values of the time. The average age at marriage of a female in a Brahmin type family is around 16·5* years. Nearly 45·5 per cent* of the married women were married between the ages 13–14. The age at marriage of females in Brahmin type family was the lowest (Table I).

6.3. *Marriage customs.*—Early marriage of females was the socially accepted practice among Brahmins. The custom of prepuberty marriage was most prevalent among them. Later this was accepted by other castes also. Every girl was to be married before she attained her puberty. This custom was strong enough to compel the parents to give their daughter in marriage to one person of their caste before she attained puberty, no matter how old the bridegroom was. In their anxiety to avoid the social stigma attached to post-puberty marriage the girls were married at very early ages and often to very old people. This practice eventually paved way to early widowhood.

6.4. *Desire for male children.*—Among Brahmins there is a strong belief that the lack of a son to perform the obsequies of father would give no salvation to the departed soul. There was no heaven for a sonless man. This belief prompted them to marry and get a male child before they died.

6.5. *Widow remarriage.*—Remarriage of divorced/separated women was prohibited by custom. So the abstinence of women after widowhood, divorce or separation cut short the reproduction span of such women permanently. Widowhood including divorce and separation has hit hard more on the females of this community as may be seen from the figures given in Table II appended. It is seen that the percentage of widowed, divorced, separated females between ages 15 to 40* from 1901 to 1921 in the former Travancore-area, Cochin and Malabar, ranged between 9·5 to 13·46* for Malayali Brahmins and 10·51 to 15·76* for other Brahmins (Table II). The percentage of widowed in other Brahmins was greater than the Malayali Brahmins. So also the percentage of early marriage was also higher in other Brahmins than in Malayali Brahmins. Early widowhood of females among Brahmins might perhaps be attributed to their custom of prepuberty marriage leading to marriages of women to much older spouses.

6.6. *Practice of Polygamy and polyandry.*—Polygamy was tabooed by public opinion and polyandry was prohibited. It was not viewed seriously if a Brahmin had wives in lower caste without any obligation of maintenance. But normally only one caste-wife was allowed.

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* 1931 census—Travancore.

** Census of Travancore, Cochin and Madras from 1901 to 1921. Reference 6.1 to 6.3, 7.1 to 7.3 and 8.1 to 8.3.

6.7. *Dowry system.*—Dowry system was prevalent among Brahmins. Malayali Brahmins were generally very wealthy. So the dowry was not a hardship to them and this did not act as a bar for early marriage. It was only nominal in many cases. The status of the family was the criterion. But among other Brahmins the dowry system for the marriage was a great strain on the family resources. The girl would become the member of her husband's household on marriage.

6.8. *Marital restrictions.*—Laws of Namboodiri Brahmins strictly ordained that only the eldest male member should enter into lawful wedlock with women of their own caste. With the result the younger members who were condemned to life long bachelorhood had to seek asylam in marumakkathayam families for their spouses which settled around them. Marriage relation with a Namboodiri was highly esteemed in those days. The marumakkathayam system of inheritance provided ample scope for the continuance of their custom. The passing of the marumakkathayam laws @ which insisted on the maintenance of wife and children by the husband stood as an impediment for the junior members of the Namboodiri family to get spouses from marumakkathayam families without being subject to the obligation of providing for their subsistence. The legal responsibility of maintaining the wife and children, later imposed by law, made these exogamous marriages less attractive to the higher castes. Namboodiri law, allowed only the eldest male member to marry from his same caste. The situation caused the junior members of the Namboodiri family agitate against their custom and demand their right to marry from within the community. As a result of this agitation, Malayali Brahmin Act was passed permitting marriages within the same community. As for Tamil Brahmins marriage between near blood relations was probibited. In a Brahmin type family, social restrictions on marriage with in the same community had imposed forced bachelorhood to many members.

6.9. *Unmarried females.*—The percentage of unmarried females between ages 15 to 40 from 1901 to 1931 in Travancore Cochin and Malabar areas ranged from 0 to 21** for Malayali Brahmins and 0·5 to 5** for other Brahmins. Percentage of unmarried females was greater in Malayala Brahmin than in other Brahmins. The lowest rate of unmarried females in the age-group 15–40 was recorded in the community categorised as other Brahmins (Table II).

6.10. *Prospects of family formation.*—The prospects of family building was also an important aspect which demands our attention.

@ Nair Act of 1925 in Travancore, 1938 in Cochin. Ezhava Act of 1925 Kshetriya Act etc. Nanjanad Vellala Act of 1926. Madras Marumakkathayam Act of 1932.

** Census of Travancore, Cochin and Madras.

The sex ratio ($\frac{F}{M} \times 1000$) was lowest among Brahmins. Lower sex ratio indicated that chances of family making were bleak. As no polyandry was permitted by the community the lower sex ratio indicates that the possible number of future households also would be proportionately low. As a matter of fact a family begins with marriage. For instance if the sex ratio is 1000 (there are 1000 females for every 1000 males) the chances of 1000 families can be anticipated; but if the sex ratio is 600 the chances of 600 future families alone can be expected. The sex ratio* of Malayala Brahmins ranged from 768 to 867 for the period 1901 to 1931 in Travancore areas while for other Brahmins it ranged from 898 to 988. In the Cochin area sex ratio of Malayala Brahmin ranged from 859 to 906 @@ and for other Brahmins it ranged from 832 to 1006 @@. In Malabar also sex ratio for Malayala Brahmins ranged from 831 to 860£ and that for other Brahmins it ranged from 982 to 1036£ (Table III).

6.11. *Economic arrangements of family.*—The economic arrangement of the Brahmin type of family is worth mentioning. Among Malayala Brahmin as the eldest son alone was allowed to marry from his own caste the father's property would be inherited by the eldest son only. The junior members had only the maintenance right. The arrangement ensured that the property of the family would be in tact without being sub divided. The practice of the junior male members marrying other caste spouses from Marumakkathayam communities, served as safety valve to protect the interest of Namboothiri family. The eldest son would become the head of the family after the death of the father, while the remaining sons would get only their maintenance. The children born to the junior members would have no right on the property.

6.12. *Fertility.*—There are a few factors which promote the fertility of woman and a few others which retard fertility. The results of these two inter-act and give the fertility performance of woman. Child woman ratio* is an index of fertility which is calculated as the proportion children less than 5 years to 1000 married females in the 15 to 40 age group. C.W.R. of Malayalam Brahmins ranged between 665 to 1079**. In Travancore and 721 to 988 in Cochin, and 776 to 1089 in Malabar during 1901 to 1931 period (Table IV). Further the average

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* Census reports of Travancore 1901 to 1931.

@@ Census reports of Cochin 1901 to 1931.

£ Census report of Madras 1901 to 1931.

*It refers to child married woman ratio.

**Census reports of Travancore-Cochin and Malabar from 1901 to 1931 Reference 6·1 to 6·4, 7·1 to 7·4 and 8·1 to 8·4.

number of children born to woman of completed fertility (i.e., in which woman passed 45 years of age and above) was only 5·89. Here also Brahmin type shows a lower fertility level (Table V). We have explained Brahmin type family and its fertility performance and in what fallows the social and cultural aspects of fertility (which promote and retard fertility) are discussed.

6.13. *Factors which promoted fertility in a Brahmin type family.*—Early marriage of females in Brahmin type of family offered a higher reproductive span for woman. The desire for a male child was backed by the belief that there was no heaven for a sonless man. So every male had a burning desire to get a male child before he died to perform the obsequies after his death. This served as an incentive for early marriage and early parenthood so as to assure salvation after death. Cultural traits like early universal marriage, earning for leaving a surviving sons etc., sustained fertility at a high level. Children were no burden to Malayala Brahmins because there were well placed in the society both socially and economically. Economic security of the family was assured in the case of Malayala Brahmin because of the custom for marriage, inheritance and property right.

Polygamy was practice but only one caste wife was allowed. The customs on marriage and califs and property rights promoted fertility. The desire for limiting the number of children was rather absent and fertility was rather encouraged.

6.14. *Factors which retarded fertility.*—Brahmin type had a very low sex ratio during 1901–1931. This indicated that the prospects of family formation was also bleak. Low sex ratio indicated the tendency for a fall in future fertility. Widows were greater in Brahmin type family. Widowhood cut short the productivity of widowed women permantly of widows was not permitted. Girls married at very early age to old people would eventually pave way to early widowhood. Disapproval of widow remarriage kept down fertility. The practice of polygamy by the males affected indirectly the frequency of coitus with their caste wives which adversely affected the chance of bearing children. A male member was satisfied if he was blessed with a male child in his caste wife. The purpose of marriage was thus served by the birth of a male child.

7. *Tarwad type.*—Tarwad was a matrileneal multigenerational joint family. It was agriculture oriented. The feudal structure of the Tarwad continued till the enactment of the marumakkathayam laws during 1925 to 1931 Nairs, Izhavas, Kshatriyas, Ambalavasi, Kuravan, Nanjanad Vellalas etc. were following the marumakkathayam system for a long time. Tarwad form of family organisation was powerful and useful for hundreds of years in the past. By the dawn of 20th century it went declining and by the passing of various marumakkathayam acts the marumakkathayis adopted makkathayam in lieu of marumakkathayam.

A Tarwad generally consisted of an uncle or Karnava, his sisters, brothers and his sister's children. Nalukethu with different apartments for male and female members of the family and the separate place of honour for Karnava was significant feature of a typical tarwad. A man's property would be inherited by his sister's children who belonged to the same caste or sub caste or family as their mother and not to that of their father. The family relationship and the economic arrangements of the family were all the more important in understanding the complicated socio-cultural behaviour patterns prevalent in the Tarwad type families.

Women of the Tarwad had all the rights with regard to the Tarwad property but they had practically little voice in the general administration. The managerial power was vested with the 'Karnava' the senior most male member. Marriage of the members were contracted by the Karnava and were conducted in an elaborate scale in accordance with the traditional norms and practices of the family. Caste and social status were the decisive factors in marriage. Under this system daughters did not leave their ancestral Tarwad when they were married, but their husbands either stayed with them in the Tarwad or visited them in their Tarwads. Couples of more than one generation lived under one roof as a social, religious and economic unit. The Tarwad property constituted the main source of income and this served as a common fund, out of which the needs of all the members were not. Karanava was the virtual head of the Tarwad to whom all others owed absolute obedience. Larger the size of the family the greater the realm and the more he was honoured by others. The Karanava would assign work to each members of the Tarwad. He could alienate the Tarwad property only to uphold the prestige of the family and for the general well being of the members i.e. to celebrate the marriages and festivals associated with the traditions of the family.

7.1. *Age at marriage.*—Average age at marriage of females in Tarwads was arround 19* years. But nearly 23 per cent of married females at all ages were married at ages 13 on 14** (Table I). Instances of very late marriages were also very common in Tarwad type families.

7.2. *Unmarried females.*—Percentage of the unmarried females between ages 15 to 40 in Travancore area from 1901 to 1921 ranged from 7 to 31 and it ranged from 14 to 21 in Cochin and 16 to 19 in Malabar area. On the whole the percentage of unmarried females from 1901 to 1921 ranged from 7 to 31 for the Tarwad type of families (Table II).

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*The census report of Travancore and Cochin 1931.

**Travancore Census report 1931 (ref. 6·4.)

7.3. *Marriage customs.*—Economic security of the bridegroom was not a pre-requisite to marriage and marriages were arranged by the Karnava and would be solomnised only if the Karnava favoured the union. Maintenance of children born to the women of the family was vested with the Tarwad. Children were no burden either to the father or to be mother. So Namboodiri's found a favourable atmosphere for their sambandam in Tarwads. Caste and social status were locked into when marriages were contracted. Generally a girl would not be given in marriage to a person of a lower caste or rank. But hypergamous marriages were regarded as a leverage for higher social status. There were two types of ceremony associated with the marriage of a girl. The talikettu, the first ceremony was to be conducted before the girl attained her puberty. The second one was the sambandam which prescribed no age limit. Sambandam was to be regarded as the real marriage. Since no age limit was prescribed for sambandam it was conducted conveniently at a later age which in many cases ended in never marriages. Though marriage was considered universal, census tables showed the existence of a small number of never married males and females in Tarwads.

7.4. *Desire for male children.*—Desire for male children in Tarwad family was not as strong as seen in Brahmins. In the Tarwad type families, the inheritance was traced through females. So the son's place was adorned by the nephews. They did not believe in the saying that there was no heaven for a sonless man. What was required was an "anandiravan" (nephew) for performing the "Pinda Karma" of the uncle. In a big family like Tarwad there existed no difficulty for a person for conducting the Pinda Karma. Male children were regarded as a strength for the family especially because most of the male members were absorbed in the military and police forces of the former States of Travancore-Cochin.

7.5. *Widow Re-marriage.*—Widow re-marriage was allowed by custom. Divorce, separation, desertion were not infrequent in those days. As a matter of point the Tarwad system was least helpful for a steady and continuous marital life, 8 to 18 per cent of the females in the age group 15–40 were widowed, divorced, separated or deserted according to censuses of Travancore, Cochin and Malabar for the periods 1901 to 1921 (Table II).

7.6. *Practice of polygamy and polyandry.*—The practice of polygamy and polyandry was very common in Tarwad type families. Associated with it. It was also found that forced celibacy of a good number of males and females in the Tarwads (Table II).

7·7. *Dowry and Bride price.*—There was no practice of dowry or bride price at the time of marriage in Tarwads. Females did not leave their Tarwads on marriage and they were not dependent on their husbands for maintenance.

7.8. *Prospects of family formation.*—Tarwad type families indicated a very high sex ratio. More females than males was the feature noticed prominently in the Tarwad type. In Travancore area sex-ratio* ranged from 1002 females to 1014 females per 1000 males in census years 1901 to 1931 except in 1921. So also in Cochin it ranged from 1016 to 1154 females for 1000 males in census years 1901 to 1931**. Same trend was seen in Malabar also where it ranged from 1024 @ to 1085 females per 1000 males during the period. This high sex ratio indicated a favourable position for future fertility (Table III).

7.9. *Fertility.*—Child-women ratio (number of children below 5 years to 1000 married females in the age group 15 to 40£ is considered for the years 1901 to 1931) in Tarwad type family ranged from 827 to 1337 in Travancore area and 868 to 1258 for Cochin area and 897 to 1118 for Malabar area.

Similarly the average number of children born to married women above 45 years in Tarwad type families in 1931 ranged between 6·3 to 6·7 and in 1941 it was around 6·3 children it may be noted that there were many non-economic factors that influenced the number of births in Tarwad type families. The cultural factors were as important as any others in shaping the size and pattern of the family (Table V).

7.10. *Factors which promoted fertility of women in Tarwad type families.*—Children were no burden either to the father or to the motner. They would be protected by the Tarwad. So there was no need for a conscious planning of birth. As a matter of fact, the larger the number of children the greater would be the numerical strength in the Tarwad and the increase in the number of children would not at all affect her status and burden. The mother was free from all troubles.

Widow re-marriage was followed by custom in Tarwads. So the loss to fertility by widowhood was thus minimised. Widowhood did not act as a functional substitute for birth control. The chances of re-marriage of widowed, divorced and separated etc., were fairly very high in Tarwad type families.

Dowry system was absent in Tarwads and Economic security of bridegroom was not a criterion for marriage (status of Tarwad was the major consideration in marriage alliances). So the marriages were solemnised in many cases at very early ages. Instances of marriages at the ages 13–14 were not rare. Favourable attitude of the Karnava was an essential factor in such cases. Late marriages were the net

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* Census reports of Travancore.

** Census reports of Cochin.

@ Census reports of Malabar.

£ Census reports of Travancore-Cochin and Malabar from 1901 to 1921 and 1931.

effect of the indifferent attitude of the Karnava. The administrative mechanism of the Tarwad was favourable for both early marriage as well as for late marriage. It depended on the individual and his good relation with the Karnava of the Tarwad. Since no prescription of age was fixed for the consumation of marriage as in the case of Talikettu, the marriages were very often a question of convenience of the elders of the Tarwad.

Both polygamy and polyandry were prevalent and were not banned by taboos. Hypergamous marriages were allowed by custom and was considered as a beverage for higher social status. All these customs and practices provided facilities for marital union in one form or other promoting the fertility of women.

7.11. *Factors which retarded fertility.*—The administrative mechanism of the Tarwad did not allow undue sex freedom to the couples. Its rigid rules of behaviour before the elders did not allow freedom of choice of their mates. The selection of bridegroom was a matter to be decided by the Karnava or by the senior members of the family. The individual was subordinate to the authority of the family and had no separate existence. The whims and fancies of the Karnava acted as a bar for the smooth marital life of the members. If the Karnava was not pleased with any member or her mate it would lead to a divorce or separation. No outsider could enter the Tarwad against the wishes of the Karnava. In fact, the strained relation of the Karnava with the couples would result in divorce or separation. The instability in marital life which affects fertility adversely, is a phenomenon noticed in Tarwads.

The institutional structure of Tarwad was not strong enough to give "father" a compelling interest either legally or emotionably to his off springs. So the stability of the marital alliance depended on the temperament of couples also. This also affected fertility adversely.

Very often after separation or divorce a new alliance might not materialise. Further the average age at marriage of females in Tarwad was fairly high (around 19 years) and so the reproductive span of the women was shortened to that extent. Due to caste restriction, uneven social status and indifferent attitude of the Karnava, a good number of marriages were postponed to future dates which in many cases ended in celibacy of the partners of the proposed alliance.

Since the marriage was an expensive ceremony which often drained the Tarwad treasury the tendency of the Karnava was to postpone it under some pretext. In a Tarwad there might be a good number of girls of marriageable age at all times. So the attention was limited to the Talikettu ceremony for which custom demanded that it should be solemnised before the girls attained the puberty. To raise

money, for marriage was no easy a task. So the Karnava took interest only to his favourable inmates and ignored the interest of other inmates.

Celibacy was preferred in the place of marital union with a person of lower caste or sub-caste. Caste rigidity also acted as in impediment for early marriage. The practice of polygamy and polyandry created uneven distribution of conjugal unions. It was also found that forced celibacy of a good number of females and males in Tarwads was a result of these practices. Now we have seen the interplay of personal and social factors delaying or even blocking the chances of marriage.

As indicated above, Tarwad type of families was not conductive to high fertility level, because of the age of entry into sexual union was very high, and the proportion of women never entering the sexual union (permanent celibacy) was very high and the formation and desolution of unions cut short the reproductive span of women. Interrupted family life brought down the fertility level. The barren reproductive period in between unions was rather too large. Further the administrative mechanism was not strong enough to provide enough attention to all members equally.

In Tarwads, being a multigenerated Joint family there would always be some sort of religious and family functions. So sexual union during these periods was socially tabooed.

To sum up it can be said that in Tarwad type family, the whole range of reproduction period of a women was not made available for child bearing because of late marriage, celebacy or interrupted marital unions (consequent on widowhood, desertion, separation and divorce) religious taboos and the practice of polygamy and polyandry and lastly the social obstacles (9) that are inherent of the marumakkathayam system.

8. *Artisan type*—The Viswakammala is an important community in all the taluks in Kerala. They are divided into five (5) occupational classes according to the material on which they ply their art. They are *Asari* (worker in wood), *Thattan* (goldsmith), *Kallan* or *Kallasary* (works in stone) *Moosari* (coppersmith) and *Kollan* (blacksmith). The families of all these five castes come under the artisan type. They were the engineering community of the past.

An artisan family is a patriarchal family and it is a miniature community in itself which meets all the physical and cultural needs of the members and within it provides social security. Social security may be understood as the degree of security which an individual person enjoys in contemporary society. The organizational pattern of this community is quite different from that of other joint families. But they have many practices in common.

8.1. *Artisan family.*—A typical artisan family consists of a father, mother, sons with their wives and children and unmarried daughters. The property of the father is inherited by his male children. The daughter's share of the property is given to her in the form of cash dowry or property at the time of her marriage. Thereafter she preserves no legal right on the family property. After marriage she becomes the member of her husband's household. The eldest son, his wife and children may stay in the stem family till he is capable of maintaining a family or till a new residence is built for him. They are co-operative in nature. They are bound together by the bonds of kinship and mutual obligations. All the members of the household will help him to build a new residence for his purpose. Other sons also would sever from the stem family in the like manner. But the youngest son usually stays with his parents in the ancestral home. Normally the ancestral home is given to the youngest son by common consent and the father and mother would spend their old age with him. What is stated above is only general pattern and many variations are also possible.

8.2. *Characteristic features of the artisans family.*—Artisan type family is not agriculture oriented. They bank on their traditional occupation and skill. Their place in the society depends on their skill and workmanship. So land is no attraction to these people. They are optimistic. What they get as their wages and presents will be spent out right without any savings.

8.3. *Family organisation and economic arrangement.*—Before analysing the fertility component it becomes necessary to explain the family organization and economic arrangement of the family to understand the complicated social matrix of these people. The economic arrangement of the family is the crue of the family organization of the artisans. The head of the household who is the leader of a group of artisans, generally commands employment oppertunities for his work group which consists of relations by blood or by marriage. The social relation of the members depends on the possibility of getting employment. This is potential factor in the social life of this community. Another characteristic feature noticed in the artisan type families is that they do not bother to save anything for the future and are confident of their skill.

The head of the family becomes the technical expert of the group when a work is assigned to him. He is assisted by a large number of his fellowmen. Thus his household serves as a training ground for the youngsters and an earning centre for the adults. He commands obedience from his followers. When a technical expert is called upon for service, he selects his fellowmen for that work. He would maticulously decide the wages of each of them and maintain an arrangement among themselves and collected the wages from the person for whome the work is designed for and executed. He is responsible

for the neat execution of work. He would distribute the wages as he thinks proper. If all the members stay with him a portion of the wages would be ear-marked for the main household expenditure and the balance if any would be given to them when they leave the household or when they are in need of it. As the members are related and inter-related in the matrix of their social life, they do not question the decision and authority of the head of the family. Usually, sons, sons-in-law, brothers-in-law form a compact work group. When they come for the job, they come with their wives and children. On reaching the stem family each individual family would loose its individual entity and would become a part and parcel of the stem family. Collective responsibility in the maintenance of the stem family stems from the social living which shapes the economic arrangement within the family circle. The stem family thus furnishes a function and a home to all members and a subordinate status to the member families. Each person is thus dependent of the stem family for the service now rendered by the present employment agencies, banks, schools, trade unions and so on.

8.4. *Proportion of unmarried women.*—A good number of women were seen unmarried in artisan type families. In the Travancore area the percentage of unmarried females among the females between the ages 15 to 40 ranged from 13 to 22* for the period 1901 to 1921. In Cochin area also the percentage of unmarried females ranged from 18 to 23** for the period 1901 to 1921. In Malabar area it ranged from 9 to 18*** for the same period (Table II). In the case of males also a good percentage of males were seen unmarried. It ranged from 513 to 586@ males for 1,000 males for the period 1901 to 1931 in Travancore-Cochin and Malabar area (Table II-a).

The presence of unmarried males and females in the artisan type families could be attributed to the following socio-cultural practices. Economic security of the bridegroom was a criterion for marriage. A girl would be given in marriage to a person only if he was capable of maintaining a family. His status in the Community as a good worker, his behaviours towards elders, his family status and relation were considered when marriages are contracted.

8.5. *Dowry.*—Dowry system practiced by these people acted as an impediment for early marriage. Marriage of a girl was often delayed because of this. Further the choice of bride or bridegroom vested with the elders of the family. Collective responsibility of the members

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* Census 1901–1921—Travancore.

** Cochin Census 1901–1921.

*** Madras Census 1901–1921.

@ Calculated from the census of Travancore-Cochin and Malabar from 1901–1921.

was also called for in such the domestic functions. Therefore considerable delay could be expected, for, the elders had their own ways of selecting a bridegroom or a bride.

8.6. *Role of father and uncle.*—The 'father' of the family had an important role to play in all the affairs of the family. But the maternal uncle too had an honoured place in various stages of all important functions of the family.

8.7. *Widow remarriage.*—Widow remarriage was allowed by custom. Celibacy was not encouraged under any circumstances. Divorce, separation and desertion were not in-frequent. 8 to 10 per cent of the females between ages 15-40 were widowed or divorced or separated in Travancore area during the period 1901 to 1921@. In Cochin area nearly 10 per cent was widowed during the period 1901-1921@. 10 to 12 per cent were widowed during the period 1901-1921@ in Malabar area (Table II). The custom of tying tali, a practice seen among the marumakkathayam was widely prevalent among these people.

8.8. *Polygamy and Polyandry.*—Both polygamy and polyandry were prevalent among these people.

8.9. *Prospects of future family formation.*—Sex ratio of artisans ranged from 977 to 993 females for 1,000 males in Travancore area* for the period 1911 to 1931. But in Cochin area** it ranged between 1,022 to 1,049 females for every 1,000 males during the period 1901 to 1921. There was a fall in sex ratio in 1931. In Malabar area*** also the sex ratio was 1,028 to 1,071 in 1901 and 1911 respectively. There was a fall in sex ratio in 1921 in Malabar area. On the whole the sex ratio swung from 977 to 1,071 indicating that prospects of future fertility is bright among artisans.

8.10. *Fertility.*—The fertility performance of artisans was the highest i.e., an average of 7.12† children were born to married women and above 45 years (Table V).

The child-married women ratio ranged between 830 to 1,284 for the period 1901 to 1931 in Travancore-Cochin and Malabar area.

8.11. *Factors which affected fertility adversely in the artisan type families.*—We have seen in the preceding pages that late marriages of

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@ Census Reports of Travancore, Cochin and Madras from 1901 to 1921.

* Travancore Census from 1901 to 1921.

** Cochin Census from 1901 to 1921.

*** Madras Census from 1901 to 1921.

† 1941 Census Travancore.

women, prevalence of dowry system, frequent divorces, separation or desertion, the practice of polygamy and polyandry among the artisans and the influence of caste status in marriage alliance, tended to retard fertility of women.

8.12. *Factors which promoted fertility.*—Remarriage of widowed, divorced, separated or deserted was allowed by custom. No stigma was attached to this practice. An important point to be noted here is that women in the artisan type family can hardly live without the support of a male member if she is widowed, divorced separated or deserted. Her rights in the parental family terminates with the consumation of her marriage and she reserves no legal right. On widowhood or separation or divorce, she naturally deserves sympathy from her fellowmen for the maintenance of her family. This eventually led to consensual unions which easily got social sanction and legal consolidation. Practice of polygamy indirectly promoted such unions. Such consensual unions were inevitable in case of widowhood, or divorce or separation, for there must be somebody to look after the women and children. This practice minimised the non-productive period of women by widowhood, etc. When once a girl was married she got more or less a continuous effective reproduction period. This of course promoted fertility.

The desire of male children was all the more powerful in artisans, because they regarded male children as assets. So the incentive to produce more children was always present. Further it is the birth of the child that tightened the legitimacy of her union.

Organizational pattern of artisan type of family was such that women when married, got more or less a continuous marital life. The practice of polyandry by these people had promoted fertility of women to a very great extent.

Higher sex ratio also indicated a favourable chance for future fertility.

9. *Conclusion*—

9.1. The main purpose of this study is to help focus attention on the social and cultural aspects which affected the fertility of women in Kerala. Since socially valued goals are realised through family, the analysis has been made on the basis of the traditional families of Kerala. Three types of families are considered in this paper. They are the Brahmin type, The tarward type and the Artisan type.

9.2. The net effect of the social restrictions on marriage, on the selection of bride or bridegroom on the remarriage of widowed, divorced, separated, etc. the prevalence of polygamy, the administrative mechanism of the family, property management, the practice of selecting brides to the junior members of the family, etc., was to

provide a very short reproductive period for women in the Brahmin type families. This brought down the fertility performance of women in Brahmin type families.

9.3. In the Tarward type of family the administrative mechanism of the Tarwads was not conducive to high fertility. The whole reproductive period was not available for women in the Tarwads because of late marriages, never marriages, the prevalence of polygamy and polyandry and the frequent divorce, separation, desertion and widowhood and the intrinsic presence of social obstacles on marriage in the tarward system.

9.4. In the artisan type family, the women, once married had more or less a continuous reproductive period. The cultural configuration of the artisan group was controlled by the economic factors. The socio-cultural patterns upon child bearing, in artisan type family was helpful to a high fertility level.

9.5. The Brahmin type indicates a lower level of fertility than the Tarward type and the Artisan type. The child married woman ratio ranges from 635 to 1,079 for Brahmin type and 827 to 1,355 for Tarwad type and 830 to 1,284 for artisan type. An average of 5.89 children in Brahmin type and 6·3 children in Tarwad type families and 7.12 children in Artisan type families are born to married females of completed fertility, i.e., aged 45 years and above.

TABLE I

Average age at marriage for different castes in 1931 (completed marriage)

Travancore 1931 Census

Family types	*Castes/ Communities*	*Average age at marriage*	*Percentage of females married at 13–14 ages to the total married at all ages*
(1)	(2)	(3)	(4)
Brahmin type	Brahmins	16·4	45·4
Tarward type	Naits	18·9	22·7
	Ezhavas	18·8	20·9
Artisan type	Kammalas*	18·1	28·2

* The figure related to the depressed Hindus on a whole the Kammalas come under this category. The same figure is taken to denote the Kammalas also.

In T.C. area in 1941, the average age at marriage of depress Hindus was around 19·5 years.

TABLE II

The percentage distribution of females between ages 15–40 according to the civil conditions from 1901 to 1921

Census years			1901			1911			1921		
States	Family types	Castes/ Communities	Unmarried	Married	Widowed	Unmarried	Married	Widowed	Unmarried	Married	Widowed
1	2	3	4	5	6	7	8	9	10	11	12
Travancore	Brahmin type	Malayala Brahmin	12·31	76·28	11·41	10·15	77·02	12·83	9·62	80·80	9·58
		Other Brahmins	..	86·77	13·23	4·97	81·76	13·27	5·09	84·32	10·59
	Tarward type	Nairs	17·34	70·66	12·00	17·39	70·56	12·05	7·45	80·46	12·09
		Ezhavas	18·24	71·93	9·83	18·32	69·99	11·69	31·14	61·19	7·67
	Artisan type	Kammalas	15·24	75·48	9·28	12·90	77·60	9·50	21·65	70·39	7·96
Cochin	Brahmin type	Malayala Brahmin	18·40	71·09	10·51	20·90	69·68	9·42	21·66	67·80	10·54
		Other Brahmins	0·49	85·25	14·26	0·74	86·66	12·60	1·75	85·44	12·81
	Tarward type	Nairs	21·31	64·85	13·84	14·32	67·99	17·69	13·68	70·94	15·38
		Ezhavas	18·68	71·51	9·81	16·05	73·48	10·47	19·35	71·94	8·71
	Artisan type	Kammalas	22·63	67·86	9·51	18·33	72·14	9·53	20·90	69·44	9·66
Madras (Malabar District)	Brahmin type	Malayala Brahmin	9·74	76·97	13·29	13·05	74·69	12·26	16·76	69·78	13·46
		Other Brahmins	0·54	83·70	15·76	2·38	82·93	14·69	2·16	83·98	13·86
	Tarward type	Nairs	..	..	..	..	..	..	..	..	..
		Ezhavas	19·33	86·10	12·50	16·21	68·87	14·92	18·13	66·26	15·61
	Artisan type	Kammalas	9·13	79·05	11·82	10·94	78·52	10·54	18·39	71·18	10·43

Source: Census reports of Former Travancore and Cochin and Madras State from 1901 to 1921. Widowed included divorced separated and desorted.

TABLE III

Number of unmarried males per 1000 males in the years 1901 to 1931

State	Communities		1901	1911	1921	1931
1	2		3	4	5	6
Travancore	A	Malayala Brahmins ..	439	491	489	469
		Other Brahmins ..	413	534	361	507
	B	Nairs ..	557	569	632	611
		Ezhavas ..	535	571	605	602
	C	Kammalas ..	540	540	577	583
Cochin	A	Malayala Brahmins ..	555	516	519	525
		Other Brahmins ..	488	499	535	566
	B	Nairs ..	665	630	630	647
		Ezhavas ..	579	560	589	590
	C	Kammalas ..	586	566	582	513
Madras (Malabar District)	A	Malayala Brahmins ..	458	432	400	491
		Other Brahmins ..	439	437	451	473
	B	Nairs ..	..	..	..	605
		Ezhavas/Thiyas ..	592	572	553	..
	C	Kammalas ..	562	555	524	..

A= Brahmin type
B= Tarwad type
C= Artisan type

TABLE IV

Sex ratio according to family types from 1901 to 1931 (females per 1000 males)

Census years			1901	1911	1921	1931
States	Family type	Castes/Communities				
1	2	3	4	5	6	7
Travancore	Brahmin type	Malayala Brahmin ..	851	768	867	858
		Other Brahmins ..	926	898	989	988
	Tarwad type	Nairs ..	1,002	1,004	966	1,014
		Ezhavas ..	1,012	1,011	996	1,009
	Artisan type	Kammalas .	992	979	977	992
Cochin	Brahmin type	Malayala Brahmin ..	912	936	859	956
		Other Brahmins ..	881	1,206	832	1,001
	Tarwad type	Nairs ..	1,078	1,064	1,081	1,154
		Ezhavas ..	1,016	1,027	1,089	1,082
	Artisan type	Kammalas ..	1,038	1,022	1,049	825
Madras Malabar area	Brahmin type	Malayala Brahmin ..	831	845	850	860
		Other Brahmins ..	1,032	982	1,009	1,036
	Tarwad type	Nairs ..	1,077	..	..	1,085
		Ezhavas ..	1,025	1,028	1,055	..
	Artisan type	Kammalas ..	1,028	1,071	993	..

Source:—Census reports of Travancore, Cochin and Madras from 1901 to 1931.

TABLE V

Child-women-ratio by family types

States	Family types		A: Children less than 5 years per 1000 women 15—40 years (child-women-ratio) — Census years 1901	1911	1921	1931	B: Children less than 5 years per 1000 married women 15—40 — Census years 1901	1911	1921	1931
1	2	3	4	5	6	7	8	9	10	11
Travancore ..	Brahmin type family	a	505	497	524	808	662	645	648	1072
		b	568	883	507	854	655	1079	602	1001
Cochin ..		a	556	502	495	631	781	721	731	933
		b	663	687	888	933	777	793	1039	1086
Madras ..		a	621	580	579	705	807	776	830	1039
		b	578	561	512	722	690	672	610	876
Travancore ..	Tarward type family	e	595	577	505	951	827	824	826	1355
		n	588	665	824	932	832	942	1024	1337
Cochin ..		e	674	683	610	810	943	930	849	1228
		n	612	624	615	743	943	917	868	1258
Madras ..		e	617	614	607	NA	905	897	915	NA
		n	NA	NA	NA	1776	NA	NA	NA	1118
Travancore ..	Artisan type family	k	645	659	641	947	855	847	910	1284
Cochin ..		k	634	679	619	823	934	940	892	1212
Madras ..		k	700	652	618	..	886	830	868	NA

Computed from the census reports of Travancore, Cochin and Madras. A. Indicaters general fertility. The Tarwad type and Artisan type of families that permit a great amount of widowed marriage have a higher general fertilit than the Brahmins type which do not permit remarriage of widows. B. Indicates marital fertility.

a. Malayala Brahmin b. Other Brahmin e. Ezhavas n. Nairs k. Kammala

TABLE VI

Number of children born to women to completed marriage (i.e., married women passed 45 years)

Type of family	*Communities*	*Average number of children born to married women 45 years and above*		
		Census year	*1931***	*1941****
Brahmin type	Malayala Brahmins	..	5·3	5·89
	Other Brahmins	..	..	..
Tarwad type	Nairs	..	6·3	6·3
	Ezhavas	..	6·7	6·62
Artisan type	Kammala	..	6·0*	7·12

*The figures relates to depressed hindus as a whole the Kammalas come under this category.

**Census reports of Travancore, 1931.

***Census reports of Travancore, 1941.

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A NOTE ON THE TREND IN LIFE EXPECTANCY IN KERALA OVER THE YEARS

CONTENTS

A NOTE ON THE TREND IN LIFE EXPECTANCY IN KERALA OVER THE YEARS

By Dr. R. S. Kurup,

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Introduction.—The State of Kerala has been experiencing a rapid decline in mortality during this century. The estimated death rate which stood at nearly 39 per 1000 population during 1911–20 decreased to 16 during 1951–60. In later years the rural death rate has been estimated to have come down to 9 in 1971. While estimation of death rate was resorted to by using census figures by age up to the decade ending 1961, recently the sample registration scheme has been providing us with reliable estimate of birth and death rates. This paper attempts to present the trends in life expectancy by considering the life tables constructed for the decades from 1911–20 onwards upto 1951–60 and the life table constructed from the age specific death rates estimated from the sample registration scheme for rural area in Kerala in 1971. As the rural and urban rates in Kerala do not show much difference and as the proportion of urban population is only about 16 per cent in the population in 1971, the rural rates are by and large representative of the total mortality situation in the State.

2. *Life table using the 1971 mortality rates.*—Using the estimates of age-specific mortality rates from the sample registration scheme for the rural areas of Kerala in 1971, an abridged life table has been constructed for the total population, males and females separately. This is given as appendix to this paper. The central death rates for each quinquennial age group from age 5 onwards were converted into life table death rates using the following approximation.

$$q_x = \frac{2nm_x}{2+nm_x}$$ where q_x denotes the life table death rate for the age group x (say 1—4, 5–9.....) m_x the central death rate for the same age group and n denotes the number of ages in the group. q_x, the life table infant mortality rate was calculated by using the

Formula: $$q_o \left\{ \frac{f D_2}{B_1} + \frac{(1-f)D_2}{B_2} \right\} 1000$$

where f, the separation factor equals $\frac{D_2''}{D_2'' + D_2'}$,

D_1 : D_2 denoting deaths in year 1 and year 2

B_1 : B_2 denoting births in year 1 and year 2

D_2' : denoting infant deaths out of births of the year 2 and

D_2'' : denoting infant deaths out of births of previous year in year 2. For the last age group of 70 years and above, the mortality rate is 1000 itself

In order to arrive at the Lx column i.e., the number of years lived by persons living at the starting age while in the age group, the survivors (lx) at two consecutive starting ages have been averaged and multiplied by the number of ages in the age group. For the last age group Lx was approximated as the number of persons dying divided by the central age specific death rate for that group. The total number of years lived (Tx) is obtained by adding the Lx column from below and the expectation of life Ex is obtained by dividing total number of years lived (Tx) by the survivors at each age (lx).

It is seen that with the mortality levels in 1971, the expectation of life at birth works out to 60·85 years (60·57 years for males and 61·16 years for females).

3. *The trend in life expectancy.*—The trend in life expectancy is shown in the graphs in the appendix for males and females separately. It is seen from the graphs that the curves showing the expectation at various ages (0, 5, 15, 25, 35, 45, 55 and 60 years) for the various periods are almost parallel with a slight tapering towards the end. At age 5, the expectation of life is the maximum, ranging from 34 years in 1911–20 to 62 years in 1971 for males and 35 years in 1911–20 to 64 years in 1971. At age 60, the range of expectation of life is from 7 years to 16 years for males and from 8 years to 16 years for females. The figures are shown in Tables IV and V in the appendix.

The following table * shows the annual increase in the expectation of life at birth for males and females at birth, at age 5 and at the end age of 60 years for the various periods.

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* Ramalingom: 'Recent trends in Mortality in Kerala' in population growth in Kerala —Its implications—Kurup and George, Trivandrum 1966.

Period	Age and Sex					
	0		5		60	
	Males	Females	Males	Females	Males	Females
1	2	3	4	5	6	7
Between 1911-20 and 1921-30 ..	0·41	0·53	0·46	0·56	0·17	0·06
Between 1921-30 and 1931-40 ..	0·37	0·23	0·22	0·07	0·02	0·04
Between 1931-40 and 1941-50 ..	0·67	0·73	0·68	0·86	0·21	0·17
Between 1941-50 and 1951-60 ..	0·63	0·77	0·33	0·54	0·01	0·32
Between 1951-60 and 1971 ..	0·96	0·74	0·77	0·57	0·32	0·09

While there is not much sanctity in the annual increases seen in the above table, as these are widely fluctuating, the trends are interesting. In the earliest period covered here, the increases are higher for females except at age 60 years while in the next period the reverse is the case. In the next two periods also the increases for females are higher except in one case for the age 60 years. In the last period covered namely from 1951-60 to 1971, the average increase for males at birth is nearly one year decreasing to a third of the year towards the end. Also the increases for males are higher than for females by about one-fifth of an year. It may be pointed out here that in the 1971 life table, males and females tend to have only smaller differences at the various ages compared to the earlier life tables and this is the reason for higher annual average increases for males as compared to females.

In conclusion, it is worth nothing that in the life tables constructed from census age distribution for the period upto 1951-60 the formula used for smoothing of age distributions play a large part, and hence the absolute figures may not be taken as true estimates. It is, however clear that the population of Kerala is reaching the final stages of demographic transition and with the decreasing birth rate can reach the modern stage without much lapse of time.

APPENDIX

TABLE I

Life Table —Kerala—(Total population)—1971

Age x to x + n	Central age specific death rate	Prob. of a person aged x dying before age x + n	No. surviving to exact age x out of 100000 born alive	No. dying before ages x and x+n	Years of life lived: Before ages x and x+n	Years of life lived: At age x and over	Complete expectation of life in years	Beginning ages
	$_nm_x$	$_nq_x$	l_x	$_nd_x$	$_nl_x$	T_x	l_x	x
1	2	3	4	5	6	7	8	9
< 1	0·07040	0·06033	100000	6033	95777	6086264	60·86	0
1 — 4	0·01508	0·05099	93967	4791	366286	5990487	63·75	1
5 — 9	0·00239	0·01188	89176	1059	443233	5624201	63·07	5
10 — 14	0·00113	0·00563	88117	496	439345	5180968	58·80	10
15 — 19	0·00162	0·00807	87621	707	436338	4741623	54·12	15
20 — 24	0·00205	0·01020	86914	887	432353	4305285	49·54	20
25 — 29	0·00182	0·00906	86027	779	428188	3872932	45·02	25
30 — 34	0·00375	0·01858	85248	1584	422280	3444744	40·41	30
35 — 39	0·00401	0·01985	83664	1661	414168	3022464	36·13	35
40 — 44	0·00510	0·02518	82003	2065	404853	2608296	31·81	40
45 — 49	0·00718	0·03527	79938	2819	392648	2203443	27·56	45
50 — 54	0·00848	0·04152	77119	3202	377590	1810800	23·48	50
55 — 59	0·01549	0·07456	73917	5511	355808	1433210	19·39	55
60 — 64	0·02312	0·10928	68406	7475	323345	1077402	15·75	60
65 — 69	0·04358	0·19649	60931	1192	274725	754057	12·38	65
70 +	0·10214	1·00000	48959	48959	479332	479332	9·79	70

APPENDIX

TABLE II

Life Table—Kerala—1971—Males

Age x to x + n	Central age specific death rates	Prob. of a person aged x dying before age x + n	No. surviving to exact age x out of 100000 born alive	No. dying before age x and x + n	Years of life lived		Complete expectation of life in years	Beginning ages
					Before ages x and x+n	At age x and over		
	$_nm_x$	$_nq_x$	l_x	$_nd_x$	$_nl_x$	T_x	l_x	x
1	2	3	4	5	6	7	8	9
< 1	0·07597	0·05968	100000	5962	95822	6056751	60·57	0
1 — 4	0·01167	0·04562	94032	4290	367548	5961929	63·39	1
5 — 9	0·00231	0·01148	89742	1030	446135	5593381	62·33	5
10 — 14	0·00131	0·00653	88712	579	442113	5147246	58·02	10
15 — 19	0·00179	0·00891	88133	785	438703	4705133	53·39	15
20 — 24	0·00162	0·00807	87348	705	434978	4266430	48·84	20
25 — 29	0·00219	0·01089	86643	944	430855	3831452	44·22	25
30 — 34	0·00472	0·02332	85699	1999	423498	3400597	39·68	30
35 — 39	0·00406	0·02010	83700	1682	414295	2977099	35·57	35
40 — 44	0·00567	0·02795	82018	2292	404360	2562804	31·25	40
45 — 49	0·00699	0·03435	79726	2739	391783	2158444	27·07	45
50 — 54	0·01091	0·05310	76987	4088	374715	1766661	22·95	50
55 — 59	0·01929	0·09201	72899	6707	347728	1391946	19·09	55
60 — 64	0·02383	0·11245	66192	7443	312353	1044218	15·78	60
65 — 69	0·04058	0·18421	58749	10822	267690	731865	12·46	65
70 +	0·10303	1·00000	47927	47927	465175	465175	9·71	70

APPENDIX

TABLE III

Life Tables—Kerala—1971—Females

Age x to x + n	Central age specific death rate	Prob. of a person aged x dying before age x+n	No. surviving to exact age x out of 100000 born alive	No. dying between ages x and x + n	Years of life lived		Complete expectation of life in years	Beginning ages
					Between ages x and x+n	At age x and over		
	$m_{n\ x}$	$q_{n\ x}$	lx	$d_{n\ x}$	$l_{n\ x}$	Tx	lx	x
1	2	3	4	5	6	7	8	9
<1	0·06485	0·06109	100000	6109	95724	6115706	61·16	0
1—4	6·01453	0·05648	93891	5303	364978	6019982	64·12	1
5—9	0·00247	0·01227	88588	1087	440223	5655024	63·84	5
10—14	0·00096	0·00479	87501	419	436458	5214801	59·60	10
15—19	0·00146	0·00727	87082	633	433828	4778343	54·87	15
20—24	0·00243	0·01208	86449	1044	429635	4344515	50·26	20
25—29	0·00148	0·00737	85405	629	425453	3914880	45·84	25
30—34	0·00286	0·01420	84776	1204	420870	3489427	41·16	30
35—39	0·00397	0·01965	83572	1642	413755	3068557	36·72	35
40—44	0·00456	0·02254	81930	1847	405033	2654802	32·40	40
45—49	0·00739	0·03628	80083	2905	393153	2249769	28·09	45
50—54	0·00599	0·02951	77178	2278	380195	1856616	24·06	50
55—59	0·01149	0·05565	74900	4183	364043	1476421	19·71	55
60—64	0·02243	0·10620	70717	7510	334810	1112378	15·73	60
65—69	0·04631	0·20752	63207	131177	283243	777568	12·30	65
70+	0·10133	1·00000	50090	50090	494325	494325	9·87	70

APPENDIX

TABLE IV

Expectation of life at birth of various ages during the various decades

Males

Age	1911–20	1921–30	1931–40	1941–50	1951–60	1971
1	2	3	4	5	6	7
0	25·49	29·54	33·19	39·89	46·17	60·57
5	33·94	38·58	40·76	47·51	50·80	62·33
15	29·64	33·83	35·84	40·47	43·01	53·39
25	23·71	26·21	28·43	32·32	34·28	44·22
35	17·28	19·67	22·03	25·05	26·22	35·57
45	12·56	14·53	15·82	18·58	19·08	27·07
55	8·51	10·32	10·49	13·15	13·26	19·09
60	6·91	8·59	8·78	10·87	10·95	15·78

APPENDIX

Expectation of life at birth of various ages during the various decades

Females

Age	1911–20	1921–30	1931–40	1941–50	1951–60	1971
1	2	3	4	5	6	7
0	27·41	32·70	35·00	42·34	50·00	61·16
5	35·20	40·76	41·43	49·98	55·33	63·84
15	28·87	33·74	35·50	42·71	47·11	54·87
25	22·97	26·10	29·13	33·99	38·11	45·84
35	18·79	20·49	23·48	26·33	30·08	36·72
45	14·20	15·16	17·39	19·53	22·94	28·06
55	10·05	10·82	11·69	13·55	16·97	19·71
60	8·42	9·03	9·47	11·12	14·34	15·73

SECTION—IIII

Mortality

MORTALITY DIFFERENTIAL AMONG THE NATURAL REGIONS OF KERALA

CONTENTS

MORTALITY DIFFERENTIAL AMONG THE NATURAL REGIONS OF KERALA

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1. *Introduction*—This paper attempts to analyse the nature and extent of mortality differential among the three natural regions of Kerala–namely, Lowland, Midland and Highland—which are quite distinct from one another. These regions vary considerably in climatic factors, like rainfall, temperature, humidity and soil conditions, which in turn lead to marked variations in the nature of crop grown, intensity of cultivation extent of animals reared and the pattern of population distribution. Besides these differences in ecological settings, the provision of infrastructure in the fields of health, education, transport etc. also varies among the regions. Since the level and pattern of mortality experienced by a population are largely determined by the environmental conditions in which life is carried on and their socio-economic status, substantial differences in mortality are to be expected among these natural regions.

Brief mention may be made about some of the distinctive features of these regions. The lowland or sea board consists of flat land surface with altitude below 25 ft. from the mean sea level. The midland consists of plains and plands of uneven surface with gentle ascents and valleys, with altitude ranging from 25 to 250 ft. The highland is characterised by hills and mountainous slopes of "extensive ravines, dense forests and tangled jungles" [1] with altitude above 250 ft.

Though the lowland consists of only 10.2 per cent of the total area, 25.8 per cent of the State's population is accommodated in this region. With 41.8 per cent of the area, the midland is habitated by 59.1 per cent of the population. This unevenness in population distribution is also reflected in the density per sq.km. with the lowland having the highest density of 1385, the midland 778 and the highland only 172, as per 1971 census. The sex ratio (No.of males per 1000 females) is more or less the same for lowland (973.7) and midland (9.6.6). In both these regions there is an excess of females. But the highlands with a sex ratio 1030.9 is having more males. In respect of the proportion of urban population, there is progressive decline from the sea coast to the mountains. While 25.2 per cent of lowland population is urban, only 15.3 per cent of midland and 4.5 per cent of highland population belong to the urban category. This variation in the proportion of urban population could be taken as an indicator of the differing levels of modernisation and pace of social change which the three regions have attained.

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[1] Census of India-1961-Part IA (i)—General Report.

2. *Source and limitations of data.*— The study is based on data available from sample Registration Scheme (SRS), for the years 1971 and 1972. The data cover only the rural areas of the three natural regions. The ommission of urban areas may appear an important limitation, in the consideration of differentials among the three regions. But the effect of this limitation is not likely to be much, because of simularity of towns irrespective of natural regions. Besides, two other important factors also have to borne in mind—namely, in general, the difference between rural and urban areas of Kerala is not very significant and the large majority (84 per cent) of the population live in rural areas.

The S.R.S data used here is subject to normal sampling errors, which have been explained in the annual reports [2] concerned and the usual errors in enumeration and age reporting, some of which are evaluated in a later section(section 4) of this study. Again, the average of the values, of Age Specific Death Rates(ASDRs) for the years 1971 and 1972 for each natural region, have been used to workout abridged Life Tables of the total population of each natural region. The average values of the two years have been used to bring about a cancelling effect of fluctuations, if any, in the rates of some of the age groups between the years(as the number of cases of deaths in some of the age groups all the natural regional level is small).

3. *Methodology*—Abridged Life Tables for the State, of the total population(as well as male and female population) have already been prepared for 1971 and for 1972,unpublished), using the ASDRs for Sample Registration. The same methodology is adopted in constructing abridged Life Tables for the three natural regions. This is the well known method of converting the Central Death Rates ($_nm_x$) of each five year age group into Life Table death rates by using the following formula,

$$_nq_x = \frac{2n.\ _nm_x}{(2+n)\ _nm_x} \qquad (1)$$

and where $_nq_x$ is the probability of dying within x to x+n and $_nm_x$ is the age specific death rate for ages between x and x+n in the given population. The formula used for calculating q_o is

$$q_o = \frac{f\,D2}{B1} + \frac{(1-f)D2}{B2} \times 1000 \qquad (2)$$

where f, the separation factor equals $\frac{D_2''}{D_2''+D_2'}$, D^2 is the total

2—Sample registration Scheme—Annual Report—1971 (issue No. 8) and Annual Report 1972 (Report No. 9) of Bureau of Economics and Statistics, Kerala State.

3—Dr. R. S. Kurup—A note on the trend in life expectancy in Kerala over the years—Paper No 80, Demographic Research Centre.

infant deaths of the reference year, consisting of D_2'' (=infant deaths in the reference year, out of births in the previous year) and $D2^1$ infant deaths in the reference year out of births in the same year), B_1 and B_2 denote births in the previous and reference years respectively.

However, for want of detailed data on infant deaths at the regional level, average of the separation factors for 1971 and 1972 used for constructing the State Life Table, has been used for all the three regions(assuming that, of the total infant deaths in the reference year, the proportion out of births in the previous year and out of births is the reference year, will not vary much among the regions). Besides the total number of live births and infant deaths for each region, for the years 1971, and 1972 have been averaged and the values used in working out co.

The value of Lx is obtained as $^{n}Lx = \frac{n(Lx+Lx+n)}{2}$ (3)

except for Lo and L 70+,both of which requir special treatment Lo is obtained by the formula $Lo = flo + (1-f)l$ (4) and L70+is obtained by the survivors of that age group (which is also the total number of deaths) divided by the corresponding central ASDR.

4. *Evaluation of Basic Data.*—Since Life Tables for the region are based on ASDRs, it is only proper to look for the nature and magnitude of differential errors in enumeration, in the age-sex composition of population and in the statistics of deaths classified by age among the regions. In spite of the dual recording system of events under SRS, common errors in age reporting, omission in population count and of events are not unlikely.

An examination of age distribution of the total sample population of each region shows close similarity. Even the unlikely situation of 5–9 age group being higher than 0–4 in a high birth rate condition, is found in the sample populations of all regions and the State. Further, the age distribution separately considered for males and females, also does not show any sex selective distortions in any of the regions.

A common index for the State and three regions, namely the U.N. Joint Score, which would reflect the general accuracy of age statistics, has been worked out. Though this score is not a precise measurement, it indicates "an order of magnitude" and is good for comparison. This shows that the age recording is better in midland and at State level, where the score is 24·8 and 24·3 respectively. The low and highland, with a higher score namely 34.1 and 34.8 respectively show relatively poor age recording.

Examination of other factors like the midpopulation aged less than one and the number of births and the sex ratio at birth indicates that the accounting of this segment in general is good. Only the figures of sex ratio of infant deaths at the regional levels, is erratic.

Again, the proportion of deaths in various age groups out of the total deaths for the regions and State, show close similarity in pattern—with high proportion of deaths being accounted for by very young and old ages. The only deviation is that the combined proportion of deaths less than 1 year old and 1 4 age group, in the highland is higher than the corresponding proportions in the other two regions.

Thus, on the whole the evaluation of the data shows that the use of this data far comparing the level and pattern of mortality and studying the differential is quite dependable.

5. *Pattern of mortality among the regions.*—An examination of the ASDRs (average value for 1971 and 1972) for the regions and the State show some common features. Of the five year age groups, 10-14 has the lowest rate in all the three regions and the State. The highest rate is for 70+age group. In all the three regions and the State there is sharp fall in ASDRs from less than 1 to the next age group and from there a gradual decline upto 10-14. From there, the rate slowly rises (except for same minor fluctuations). But from the age group 40-44 onwards the rates steadily increase without any break in all the regions and the State.

Among the three regions, the lowland has the lowest ASDR for all age group upto 15 19, for 25-29, for 35-39 and for all age groups above 50. But the midland has the lowest rate for three age groups, 20-24, 30 34 and 40-44. The highland has the lowest rate only in the age group 45-49. Besides, the pattern of the proportion of deaths of various age groups out of the total deaths in each region and State reveal very close similarity with only minor deviations. According to this pattern one-third or more of total deaths is accounted for by childhood mortality and nearly another one-third (except in highland) is accounted for by age groups above 65.

The relative differences in the ASDRs of regions with the State rates as base is shown in Appendix-Table 1. In lowland, except for two age groups namely 30-34 and 40-44, the rates are much lower than that of the State. But in midland, out of the sixteen age groups, for ten age groups, the rates are higher than the base (namely that of State) with maximum difference in the age group 35-39. So far as the highland is concerned, for eleven age groups the rates are higher than that of the State, with the maximum difference in 1 age group, closely followed by 5-9 age group.

6. *Pattern of life expectancy among the regions.*—Abridged Life Tables for the three regions are worked out and given as Appendix-Table Nos. 2, 3 and 4. To enable comparison among the regions easier, the $\overset{o}{e}_x$ values for each region and State are given in Appendix

Table 5 as also the values worked out for the regions with base 100 for State.

Form the Life Tables of the regions, it may be seen, that $\overset{o}{e}_{o}$ is highest (63.66) in the lowland and is lowest (56.62) in the highland. In all the regions, the maximum expectation of life is at age 1. The expectation of life at every age is highest for lowland slightly less for midland and still lesser for highland. Thus it is undeniably seen, that as one moves from lowland to midland and from midland to highland, the level of life expectancy declines for every age, thereby revealing that the level of mortality is highest in the highland, though the pattern is the same as in the other two regions. However, between lowland and highland, the difference in the values of expectation of life narrows down for all ages from 0 to 65. Substantial difference is seen in the younger age groups, especially in the 0 age, where the value for the highland is less by 7.04 years compared to lowland. The State values are closer to those of the midland.

Incidently it may be mentioned that the trend in life expectancy in the State over the decades since 1911-20, shows steady gain for the different ages, with the maximum rise in the expectation of life at birth.

7. *Policy implications.*—The empirical analysis of mortality differential in the above paragraphs shows that the level of mortality among the three natural regions is relatively low in the lowland region and high in the highland region. The midland region stands close to the level of the State, as far as mortality situation is concerned. The factors contributing to these differentials have not been gone into in this study.

Unfortunately, the data on provision of health facilities for each of these regions are not separately available readily. But it is rather intriguing that the highland region with much less density and more healthy climate is having a higher mortality level; while the lowland with much higher density and consequent over crowding and relatively less healthier climate is having the lowest level of mortality. How far this paradoxical situation is due to the relatively poor health facilities of the highland region is not definitely known. Again, the low mortality level of the lowland region may be not only due to the better health facilities but also probably due to the higher consumption of fish among the lowland population. While these are only surmises, the need for a region-wise analysis to probe into the factors responsible for these differences requires no further emphasis. Besides, it is only proper if, in formulating the health plans of the State the goal of balanced regional development is kept in view.

8. *Summary.*—The three natural regions of Kerala vary widely in ecological setting, demographic features, and levels of socio-economic development. Analysis of differentials in the level and pattern of

mortality among the three regions has been attempted with the data from Sample Registration, by constructing abridged Life Tables based on ASDRs. Evaluation of data has been attempted to assess the comparative reliability of basic data relating to each region. This shows that by and large the quality of data, relating to age, sex and accounting of deaths is fairly of a high order and that whatever defects that exist in the data, are in many cases more or less uniform so that the comparative study among the regions is dependable.

The analysis shows that the level of mortality is lowest in lowland and is much lower than that of State. Among the three regions the level is highest for the highland. The midland region is having a mortality level, which is closer to that of the State than the other two regions. But the pattern of mortality is similar for the three regions, and the State with child (0-4) mortality accounting for about one-third of the total deaths and another approximately one-third (except for highland) being accounted for by age groups above 65. The similarity in paggern is also revealed by the common features, of lowest ASDR for 10-14 age group, and a gradual rise in these rates after that age group.

Following the level and pattern of mortality among the regions, the expectation of life at various ages also show that the lowland is in a much better position with regard to expected longevity of all ages, with values higher than those of the State and the other two regions. The position of midland is near to that of the State while that of highland is low.

The scope of the present study does not cover an attempt to find out the causative factors responsible for the differences among the regions. Still the paradoxical situation of the highland region with less congested living are healthier climate having a higher level of mortality and low expectation of life, leads one to surmise the relative lack of facilities in this regions as the cause for such a situation. The need for further study of the relative differences in the provision of health facilities among the regions so as to help a balanced regional development is evident.

9. *Acknowledgement.*—The computational assistance of Sri P. Gopinathan Nair, Research Assistant is gratefully acknowledged.

APPENDIX

TABLE 1

Age specific death rates among the regions and the State (with State value as 100)

Age-guoup	State	Lowland	Midland	Highland
1	2	3	4	5
<1	69·12 (100)	51·02 (73·81)	65·55 (94·84)	112·64 (162·96)
1 — 4	13·07 (,,)	10·27 (78·58)	14·12 (108·03)	13·13 (100·46)
5 — 9	2·61 (,,)	2.05 (78·54)	2·43 (93·10)	4·14 (158·62)
10 — 14	0·87 (,,)	0·68 (78·16)	0·94 (108·05)	0·84 (96·55)
15 — 19	1·48 (,,)	1·26 (88·11)	1·47 (102·80)	1·55 (108·39)
20 — 24	2·04 (,,)	2·03 (99·51)	1·89 (92.65)	2·63 (128·92)
25 — 29	1·82 (,,)	1·35 (74·18)	2·03 (111·54)	1·72 (94·51)
30 — 34	3·76 (,,)	4·66(123·94)	3·08 (81·91)	5·16 (137·23)
35 — 39	4·03 (,,)	2·[illegible]6 (58·56)	4·79 (118·86)	3·68 (91·32)
40 — 44	4·79 (,,)	4·95(10[illegible]·34)	4·41 (92·07)	5·98 (124·84)
45 — 49	7·70 (,,)	7·46 (96·88)	8·00 (103·90)	6·92 (89·87)
50 — 54	8·88 (,,)	7·62 (85·81)	8·87 (99·89)	11·07 (124·66)
55 — 59	14·98 (,,)	12·08 (80·64)	15·41 (102·87)	18·74 (125·10)
60 — 64	23·99 (,,)	21·83 (91·[illegible]0)	24·38 (101·63)	26·18 (109·13)
65 — 69	43·97 (,,)	40·17 (91·36)	45·94 (104·48)	41·97 (95·45)
70 and above	102·66 (,,)	95·35 (92·88)	103·36 (100·68)	115·67 (112·67)

TABLE 2

Abridged Life Table, Lowland (total population), Kerala 1971 and 1972

Age x to x+n	Central age specific death rates	Prob. of a person aged x dying before age x+n	Number serviving to exact age x out of 100000 born alive	Number dying between ages x and x+n	Years of life lived		Complete expectation of life in years
					Between ages x and x+n	At age x and over	
1	$_nm_x$	$_nq_x$	lx	$_nd_x$	$_nL_x$	Tx	e^o_x
1	2	3	4	5	6	7	8
<1 ..	0·05102	0·04729	100000	4729	95947	6366464	63·66
1—4 ..	0 0 027	0·40025	95271	3835	373414	6270517	65·82
5—9 ..	0 00105	0·0 020	91436	933	454848	5897103	64·49
10—14 ..	0·00058	0·00339	90 03	307	451748	5442255	60 13
15—19 ..	0 00126	0·00628	90196	566	449565	4990507	55·33
20—24 ..	0 00203	0·01010	89630	905	445888	4540942	50 66
25—29 ..	0 00135	0 00673	88725	597	442133	4095054	46·15
30—34 ..	0 00466	0 02 03	88128	2030	435565	3652921	41·45
35—39 ..	0 00236	0·01173	86098	1010	427965	3217356	37·37
40—44 ..	0·00495	0 02445	85088	20.0	420240	2789391	32·78
45—49 ..	0 00746	0 03662	83008	3040	407440	2369151	28·54
50—54 ..	0·00762	0 03739	79968	2990	392365	1961711	24·53
55—59 ..	0 01208	0 05863	76978	4513	373003	1569346	20·39
60—64 ..	0 02183	0·10350	72465	7500	343575	1195738	16·50
65—69 ..	0 0:017	0·18252	64965	11857	295183	652163	13 12
70+ ..	0 09536	1·00000	53103	53103	556980	556980	10·49

TABLE 3

Abridged life table, midland (total population), Kerala 1971 and 1972

Age x to x + n	Central age specific death rates	Prob. of person aged x dying before age x + n	Number surviving to exact age x out of 100,000 born-alive	Number dying before age x and x + n	Years of life lived		Complete expectation of life in years
					Between age x and x + n	At age x and over	
	$m_{n\ x}$	$q_{n\ x}$	Lx	$d_{n\ x}$	$L_{n\ x}$	Tx	e^{o}_{x}
1	2	3	4	5	6	7	8
<1	0·06555	0·06106	100000	6105	94767	6040613	60·40
1—4	0·01412	0·05493	93894	5158	365[illegible]0	5945846	63·33
5—9	0·00043	0·01203	88736	1072	441000	5580586	62·89
10—14	0·00094	0·00169	87664	411	437293	5139586	58·63
15—19	0·00147	0·00732	87253	639	434668	4702293	53·89
20—24	0·00189	0·00941	86614	815	431033	4267625	49·27
25—29	0·00203	0·01010	85799	867	426828	3836592	44·72
30—34	0·00308	0·01528	84932	1298	421415	3409764	40·15
35—39	0·00479	0·02367	83634	1980	413220	2988349	35·73
40—44	0·00441	0·02181	81654	1781	40[illegible]818	2575129	31·54
45—49	0·00900	0·03922	79873	3133	391533	2171311	27·18
50—54	0·00887	0·04389	76740	3330	375375	1779778	23·19
55—59	0·01541	0·07419	73410	5446	353435	1404403	19·13
60—64	0·02438	0·11490	67964	7809	3[illegible]0298	1010968	15·46
65—69	0·04594	0·20404	60155	12394	269[illegible]0	7[illegible]0	12·15
70+	0·10363	1·00000	47761	47761	460380	460380	9·65

TABLE 4

Abridged life table, highland (total population), Kerala 1971 and 1972

Age x to x + n	Central age specific death rates	Prob. of a person aged x dying before age x + n	Number surviving at exact age x out of 100000 born-alive	Number dying before age x and x + n	Year of life lived		Complete expectation of life in years
					Between age x and x + n	At age x and over	
	$_nm_x$	$_nq_x$	L_x	$_nd_x$	$_nL_x$	T_x	e_x^o
1	2	3	4	5	6	7	8
<1	0·11264	0·09996	100000	9996	91434	5662015	56·62
1—4	0·01313	0·05188	90004	4605	350204	5570581	61·89
5—9	0·00414	0·02949	85398	1750	422615	5219777	61·12
10—14	0·00034	0·00419	83648	350	417355	4797162	57·35
15—19	0·00155	0·00722	83298	601	414988	4379797	52·58
20—24	0·00263	0·01306	82697	1080	410785	3964809	47·94
25—29	0·00072	0·00856	81617	699	405338	3554024	43·55
30—34	0·00516	0·02547	80918	2061	399438	3147686	38·90
35—39	0·00368	0·01823	78857	1438	389650	2748248	34·85
40—44	0·00598	0·02946	77419	2281	381393	2357558	30·45
45—49	0·00592	0·03101	75138	2555	369303	1976165	26·30
50—54	0·01107	0·05380	72583	3909	353143	1606862	22·14
55—59	0·01874	0·03851	68674	6147	320003	1253719	18·28
60—64	0·02818	0·12886	62527	7682	293430	925716	14·81
65—69	0·01197	0·18992	34845	10416	248185	632286	11·53
70+	0·11367	1·00000	44429	44429	384101	384101	8·65

TABLE 5

Value of expectation of life (in years) for the state and region (with the state value as 100)

Age	State (average for 1971 and 1972)	Lowland	Midland	Highland
1	2	3	4	5
0	60·52 (100)	63·66 (105·19)	60·40 (99·80)	56·62 (93·56)
1	63·64 (100)	65·82 (103·43)	63·33 (99·51)	61·89 (97·25)
5	62·96 (100)	64·49 (102·43)	62·89 (99·89)	61·12 (97·08)
10	58·76 (100)	60·13 (102·33)	58·63 (99·78)	57·35 (97·60)
15	54·01 (100)	55·33 (102·44)	53·89 (99·78)	52·58 (97·35)
20	49·38 (100)	50·66 (102·59)	49·27 (99·78)	47·94 (97·08)
25	44·86 (100)	46·15 (102·88)	44·72 (99·69)	43·55 (97·08)
30	40·26 (100)	41·45 (102·96)	40·15 (99·73)	38·90 (96·62)
35	35·98 (100)	37·37 (103·86)	35·73 (99·31)	34·85 (96·86)
40	31·66 (100)	32·78 (103·54)	31·54 (99·62)	30·45 (96·18)
45	27·37 (100)	28·54 (104·27)	27·18 (99·31)	26·30 (96·09)
50	23·35 (100)	24·53 (105·05)	23·19 (99·31)	22·14 (94·82)
55	19·31 (100)	20·39 (105·59)	19·13 (99·07)	18·26 (94·56)
60	15·63 (100)	16·50 (105·57)	15·46 (98·91)	14·81 (94·75)
65	12·31 (100)	13·12 (106·58)	12·15 (98·70)	11·53 (93·66)
70	9·74 (100)	10·49 (107·70)	9·65 (99·08)	8·65 (88·81)

SECTION IV
Migration

SALIENT FEATURES OF MIGRATION OF KERALA

CONTENTS

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SALIENT FEATURES OF MIGRATION IN KERALA

1. *Introduction.*—Migration is one of the crucial determinants of the size of the population in a State, region or nation demarcated by political and economic consideration. If the immigration or outmigration is selective of people with particular demographic, social or economic characteristics, it will not only affect the size, but also the composition of the population. As the changes in the size, composition and distribution of population have profound repercussions on the socio-economic condition of the people, migration can be regarded as a process of social and economic transformation. Therefore the various aspects of migration such as causes and effect of migration, its effects on the demand for and supply of labour, fertility, etc., are of overwhelming importance in an analysis of demographic problems. An attempt is made in this paper to study the salient features of the migratory movements of Kerala as in 1961. It has not been possible to deal with the subject in all its aspects for want of detailed data, and so only a line of enquiry into the pattern, volume direction and composition of migration is attempted in this paper.

This study is based mainly on the figures obtained from the population census reports of 1961. The census data deal with lifetime migration in the State, as the data on migration have been collected on the basis of place of birth. Relevant data from the surveys [1] and studies conducted by the Demographic Research Centre, Trivandrum, have also been made use of in the present study.

2. *Classification of Migration.*—It is conventional to divide the field of migration study into two parts: (1) Internal migration i.e., migration of persons within a nation and (2) International migration which involves movement of persons between nations.

Internal migration may be classified on the basis of (*i*) origin and destination of movements, (*ii*) duration of residence and (*iii*) motivation of movements. Under the first category, migration can be further classified into (*a*) short distance migration and (*b*) long distance migration based on the geographic location of the origin and destination.

In this study distance between places of origin and destination and duration of residence are considered as more relevant. Voluntary migration is usually the result of personal choice based on economic considerations, involving, search for better rewards for labour and

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1. "Attitude towards Family Planning" Demographic Research Centre-Bureau of Economics and Statistics, Trivandrum, 1958-59, 1959-60 and 1961-62.

better living conditions. Voluntary migration, is thus, linked directly with disparities in the level and tempo of economic development between the outmigrating and inmigrating places.

Internal migration in developing countries may be a movement to settle new land or exploit new resources; or it may be movement in response to industrialisation. The migration may be from rural to urban, urban to rural, rural to rural and urban to urban. In a developing country these migratory movements will generally be from agricultural to the non-agricultural areas.

Rural-urban migration generally takes place during the initial stages of industrialisation but will lose much of its momentum in the higher stages of industrialisation or economic development. Opportunities for better employment and facilities for a higher standard of living will be available in the industrial centres as compared to the rural areas. These opportunities attract people from the rural areas to the developing industrial centres. "The extremely high density of agriculturists on arable land, the excessive and hopeless character of rural indebtedness, the progressive subdivision and fragmentation of holdings, the bankrupting recurrence of draught and crop failure, the inefficient modes of cultivation and stock raising, the uncertainty of foreign and local markets—all conspire to make the peasants life unbearably hard. The glittering life of the city, the faster pace, the greater opportunities, the wider social horizon all have attracted people in the rural areas" 2.

After attaining a higher stage in the process of industrialisation and urbanisation, the rural migratory currents usually take a different turn with reduced momentum. Over crowding, congestion, insanitary condition, etc., in the highly industrialised areas will give rise to a diffusion of people from these areas and subsequently result in rural ward migration.

3. *General causes of internal migration.*—Migration generally occurs as a search for an opportunity to improve one's lot in life. In this case the community or region of destination exerts a "pull" on the migrant. Some of the factors promoting this type of migration are (*i*) opportunity for employment, (*ii*) opportunities to earn large income, (*iii*) opportunity to obtain better education or training, (*iv*) better living conditions and social amenities like climate, housing, schools, etc., and (v) opportunities for new or different cultural, intellectual or recreational activities.

Migration can also occur as a flight from hostile social and economic situations. In this case the community of origin exerts an expulsive 'push' on the migrant. Some of the illustrative factors under the type of migration are, decline in the demand for particular

2. Kingsly Davis—"Population of India and Pakistan" pp. 135-136.

products or services of particular industry; discriminatory treatment to a section of the community on political or religious grounds; retreat from a community due to lack of opportunities for personal development, natural calamities like flood, epidemics, etc.

In practice several variables of both types mentioned above may be operating and interacting in the migrating movements from one region to another.

In countries where much of the land is in large estates and the rural workers are poorly paid, agricultural labourers will move to the industrial occupation for higher wages. Similarly the introduction of advanced techniques in agriculture will result in surplus labour in the agricultural sector. This surplus labour may migrate to the cities in search of employment. That was what happened in Great Britain during the time of the Agrarian Revolution.

4. *Migration in Kerala (1901–1951)*.—It is widely believed that Keralites are a highly migratory community moving out of the State in pursuit of subsistence. Data regarding volume of migratory movements in respect of the State of Kerala as such are not available for the decades from 1901 to 1951 in view of the fact that the State in its present form came into existence only from 1956. Data for the period in question in respect of the Travancore–Cochin part of the State are available from the census volumes pertaining to the erstwhile States of Travancore and Cochin. Table I appended to this report gives the total volume of inmigration to and outmigration from the State during the years from 1901 to 1951 with decennial break-up. The figures show that the State had only net gains of population through migration till 1931. The position was reversed in the decade 1941 of 1951 when the number of outmigrants, exceeded the number to inmigrants to the State. The net gains of population through migration during the period from 1901 to 1931 amounted to 4·8 lakhs. During the succeeding decade of 1941 to 1951 the State had a net loss of about 13,000 persons.

Both the inmigrants to and the outmigrants from the State steadily increased over the years from 1901 to 1951 except for the fact that there was drop in the number of outmigrants during the decade 1931–41.

Most of the outmigrants from the State had clustered in the neighbouring States of Tamil Nadu, Karnataka, Maharashtra and Gujarat. Like wise nearly 95 per cent of the life time inmigrants to the State had also come from the above neighbouring States.

5. *Migration during the decade 1951–61*.—It may be seen from Table II appended that the total lifetime outmigrants from Kerala to other States as recorded in 1961 census was about 6·2 lakhs of persons. As against this about 2·3 lakhs persons born outside Kerala

were enumerated within the State. During the decade, the State suffered a net loss of about 3·9 lakhs persons through migration.

6. *Pattern and direction of migration (1951–61)*.—Table II further shows that more than 82 per cent migrants from Kerala in 1961 were enumerated in the neighbouring States of Tamil Nadu, Karnataka and Maharashtra. Among the States, Tamil Nadu ranks first in importance accounting for about 43 per cent of Kerala's total out-migrants. Andhra Pradesh ranks fourth in importance. Madhya Pradesh, West Bengal and Delhi are other States to which migrants flowed from Kerala in large numbers.

It would appear in Table II that distance between the origin and destination is one of the most important determining factors of the migrants. The fact that 43 per cent of the total outmigrants flowed to Tamil Nadu State alone can be explained by the close proximity besides opportunities for better employment and life and similarity of language. Karnataka State though adjacent to Kerala is not so close in proximity as Madras for the migrants. This may be the reason that in spite of her rapid industrial development and abundance of unutilised land and uninhabited places of Karnataka could not absorb as large a volume of migrants from Kerala as Tamil Nadu could during the same period. That close proximity is not the important single factor determining the destination of migration is proved by the case of Maharashtra which ranks third with respect to the absorption of Kerala's outmigrants. Maharashtra being far off from Kerala and beyond three States became the destination of migrants from Kerala. This is not because of close proximity to the place of destination of migrants but better opportunities for employment and higher wages in the receiving State.

As regards inmigration to Kerala as in 1961, Tamil Nadu ranks first followed by Karnataka and Maharashtra respectively. Tamil Nadu alone contributes nearly 83 per cent of the total inmigration. As much as 192287 migrants born in Tamil Nadu were enumerated in Kerala in 1961 as against 276518 outmigrants from Kerala to Tamil Nadu. The net loss to Kerala as a result of their movements was only 21·54 per cent of the total loss.

Large flow of migrants from Tamil Nadu to Kerala was necessitated by two factors viz., (*i*) the inclusion of the erstwhile Malabar District originally a part of Madras State—In Kerala and (*ii*) close proximity between Kerala and Madras. The close proximity facilitated the inflow of migrants into Kerala. By and large these migrants were labourers mainly to the estates in the north eastern part of the erstwhile Travancore.

Migrants from Karnataka State constituted 9 per cent of the total inmigrants to Kerala. In this case also close promixity between

Kerala and Karnataka was the main reason for a large flow of migrants from Karnataka to Kerala. The volume of outmigration to Karnataka, was much larger with the result the net loss to Kerala was as great as 29·62 per cent of the total loss.

The out migrants from Kerala to Maharashtra in 1961 numbered 98094 as against 5692 inmigrants from Maharashtra to Kerala. This worked out to a net loss of 23·63 per cent of the total loss to Kerala.

The volume of inmigration was insignificant. Pondicherry and Andhra Pradesh were the two regions where from relatively more migrants moved to Kerala than from any other States.

7. *Sex composition of migrants.*—A study of the sex composition of migrants is very important from the point of view of economic gain or loss and labour forces participation. The sex composition of both outmigrants and inmigrants is presented in Table III. It is seen from Table III that among the outmigrants from Kerala 65 per cent males and 35 per cent females, while among the inmigrants. 53 per cent were males and 47 per cent females.

A closer examination of the sex composition of both outmigrants and inmigrants reveals certain peculiar features of demographic significance. The sex ratio of outmigrants and inmigrants is different from that of the general population of Kerala. The sex ratio of the population of Kerala according to the 1961 census was 1022 females per 1000 males. As migration is chiefly motivated by employment opportunities and condition for better living we may naturally expect more males than females among the migrants.

It is also a common belief that the peculiar pattern of the ratio of the general population of Kerala as compared to that of other States and union territories of India is due to large outflow of male migrants from Kerala.

According to the 1961 census, the outmigrants from Kerala formed 3·7 per cent of the total population. The sex ratio of the outmigrants was 541 females per 1000 males. There were 405144 males and 219305 females in the case of outmigrants as on 1961; an excess of 185839 males over females, In the case of inmigrants there was an excess of 12338 males over females. The sex ratio of the inmigrants was 900 females per 1000 males. On comparing the sex ratio of inmigrants to that of outmigrants one will agree with the finding in the Census Report that "the inmigrants from other States and union territories to Kerala have not contributed to increase the proportion of females in Kerala; on the other hand they have only reduced the sex ratio here" [3].

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3 Census of India 1961, Vol. 7, Kerala P. 322.

It can be seen from the classification of both inmigrants and outmigrants by sex that there is a net loss of 173501 males due to migration. In order to find out the impact of migration on the in balance in the sex ratio of the general population of the State, it is necessary to compare the net loss of males due to migration to the excess of females over males in the general population of the State. Excess of females in the general population of the State according to the 1961 census was estimated at 179861.

It may be noted that the net loss of males due to migration is almost equal to the excess number of females over males in the general population. Thus, migration has contributed to the increase the proportion of females in the general population of the State and is one of the important reasons for the unbalanced sex ratio of the population of the State. Difference in the birth rate of males and females due to biological and other reasons, differences in mortality rates etc., may be other reasons for the imbalance in the sex ratio of the State.

The sex ratio of the total outmigrants was 541 females per 1000 males as the States of Tamil Nadu, Karnataka and Maharashtra together account for 82 per cent of the total outmigrants the pattern of sex ratio of outmigrants to these States merits special consideration.

The sex ratio of the total outmigrants from Kerala closely followed the sex ratio of the migrants to Tamil Nadu and Maharashtra. The outmigrants to Tamil Nadu consisted of 68 per cent males, 32 per cent females; those to Maharashtra 65 per cent males and 35 per cent females; and those to Karnataka 50 per cent males and 50 per cent females. Considering the fact that Tamil Nadu and Maharashtra together accounted for 60 per cent of the total outmigrants from Kerala and the sex ratio of the outmigrants to those States were more or less the same, one can reasonably conclude that the pattern of sex ratio of the total outmigrants from Kerala has been influenced largely by the sex ratios of the migrants to those two States.

No explanation can be given for the difference in the sex ratio of the outmigrants to other States and union territories. It appears that the sex ratio (expressed as females per 1000 males) tends to increase with the distance between the origin and estimation.

The sex ratio of inmigrants was 900 females per 1000 males. The sex composition of inmigrants as compared to that of outmigrants shows that females from other parts of India migrated to Kerala. Sex composition of inmigrants from different States also indicated that distance had considerable influence on it. The proportion of females to males among the inmigrants was found to very inversely with the distance between the places of origin and destination. The sex ratio of inmigrants from Tamil Nadu was 903 females per 1000 males. The

corresponding ratio was 1215 for Karnataka 1153 for Pondicherry and 776 for Andhra Pradesh, 683 for Maharashtra 502 for West Bengal.

Sex ratio of life time in and outmigrants of Travancore-Cochin from 1901 to 1951 and of Kerala in 1961 given in Table IV show that sex ratio of outmigrants decreased from 899 females per 1000 males to 541 during the period from 1901 to 1961. In the case of inmigrants the trend of the sex ratio was in the increasing direction from 1901 to 1951. The ratio which was 889 females per 1000 males in 1901 went upto 1193 females per 1000 males in 1951. More female inmigrants to Travancore-Cochin upto 1951 was mainly due to the inflow of females to the plantation areas in Munnar and Peerumade taluks for employment. These female inmigrants were predominantly from the former Madras State. The sex ratio of inmigrants in 1961 was found to be 900 females/1000 males.

8. *Age distribution of migrants.*—The net intercensal migration to Kerala by age and sex in 1951–61 is presented in Table V. This table shows some facts of great demographic and economic significance. During 1951-61, the outmigrants exceeded inmigrants. The excess of outmigrants is usually referred to as the "net loss" to the State. This 'net loss' is relevant only to a State or Country where (1) the problem of over population or population explosion resulting from higher fertility and lower mortality is non-existent and (2) there is possibility of creating economic condition on such a scale as to provide the over crowding population with a tolerably good standard of living. In a State where there is difficulty for making use of the rapidly increasing labour force in productive activities, the 'net loss' through migration may not be a problem.

It is necessary to look into the pattern of migration by age and sex to know roughly how the net migration affected the population structure and general fertility level of the State. It should be examined both from the demographic and economic points of view.

It is seen from Table V that net loss through migration was very high in the age groups of 0–9 and 20–39. It is interesting to note that net migrants in the age group 5–9 were 152000 of which 77000 were males and 75000 were females. The reason for this unreasonably heavy net migration in the age group 5–9 is not known. This is a point for further enquiry. Net outmigration was heaviest in the age group 20–39, the outmigrants in these age group numbered 556000 of which nearly 52 per cent were females. From the economic point of view net outmigration of these persons in the age group 20–39 might have reduced to some extent the intensity of the problem of unemployment and relieved the pressure of job seekers in the State.

The heaviest net outmigration in the age group 20–39 consisted of more than 50 per cent females who were in the crucial period of

reproduction,. The "net loss" of females in the age group 20–39 was estimated at 287000. On the basis of age specific fertility rate estimated by National Sample Survey 14th round for 1959–60, it is likely that we have saved more than 71323 births in the State as a result of migration. In otherwords we could expect the general fertility level of the State to be a little higher than what it is now, but for the migration of such a large number of females from the reproductive age group. This advantage to the State is clear from the further fact that "net gain" through migration has taken place only in the age group 10–19 and 40 and above. Net gain in the age group 10–19 was estimated at 311000 of which 235000 were females. Net gain above 40 years was estimated at 140000 of which 64 per cent were above 50 years old.

Net gain of people in the age group 10–19 and above 50 has increased the burden of dependency which is already heavy in the State. Increased burden of dependency can hamper economic growth by diverting reinvestible resources to consumption expenditure. Net addition of population in the age group 10-19 would not be desirable considering the State's heavy expenditure on the social services sector also.

9. *District-wise distribution of migrants.*—The district-wise distribution of inmigrants by sex given in Table VI reveals that 38·71 per cent of the inmigrants went to Kottayam District, 14·23 per cent to Palghat, 14·12 per cent to Trivandrum and 8 per cent to Cannanore District. Large volume of inmigrants to the District of Kottayam can be accounted for by the large scale employment opportunities in the plantation area.

About 38 per cent of the female inmigrants are enumerated in Kottayam District. This may be due to the employment opportunities available for women workers in the plantation areas in the district.

10. *Rural to urban classification of migrants.*—The number of inmigrants who went to the rural part of the various districts of Kerala is shown in Table VII. It is seen from this table that Kottayam ranks first in the matter of the number of inmigrants in the rural areas of the various district of Kerala. For every 1000 rural population 372 persons are inmigrants in Kottayam District. Cannanore ranks second in importance where for every 1000 rural population 298 persons are migrants, while in Trichur District there are 266 migrants for every 1000 rural population.

An important conclusion drawn from Table VII is that the female inmigrants had a tendency to move to the rural areas rather than the urban centres and concentrate in centres where employment in agriculture and allied activities and plantation were available. The greater

percentage of female migrants in the total rural female population in Kottayam confirms this conclusion.

The number of migrants in the total urban population by sex in all the districts of Kerala is presented in Table VIII. This table show that Kottayam accounted for the greater percentage of urban migrants. There were 331 migrants for every 1000 urban population in Kottayam. Next to Kottayam is Ernakulam which has 314 migrants for every 1000 urban population while Trichur ranks third in the matter of urban migrants.

An examination of the urban migrants by sex reveals that urban migrants in almost all districts excepting Trivandrum consist of more females than males as in the case of rural migrants. In Trivandrum the percentages of male and female urban inmigrants are equal.

11. *Inter district migration—Rural to rural.*—Table IX shows inter-district immigrants per 1000 rural population from rural to rural area within the same State. It is seen from Table IX that Cannanore District had the greatest percentage of rural migrants from other rural parts of the State followed by Kottayam, Kozhikode and Quilon respectively. Trivandrum has the lowest percentage of rural migrants from other rural areas of the State.

A general conclusion that can be drawn from the rural to rural migration shown in Table IX is that the movement of migrants from rural to rural areas of the State was mainly motivated by the availability of land for settlement and facilities for creating self employment. A large number of migrants from the rural parts of the State particularly from the Travancore area went to Cannanore and Kozhikode after the formation of Kerala State for settlement and agricultural activities.

The pattern of sex composition of the rural to rural migrants for the State as a whole as is seen from Table IX shows that every 1000 rural population there are 46 female migrant as against 42 male migrants. The pattern of sex composition of the rural to rural migrants in all the districts excepting Cannanore and Kozhikode followed the same pattern as in the case of the State as a whole.

In the case of Cannanore and Kozhikode where rural to rural migration had taken place on a large scale, male migrants were more than the female ones.

12. *Rural to urban Migration.*—Table X shows the pattern of inter-district migrants per 1000 urban population from the rural areas within the State. For the State as a whole there are 48 urban migrants of rural origin as against 44 rural migrants of rural origin as is seen from Tables IX and X Kottayam accounts for the largest percentage of urban migrants from the rural areas of the State; Ernakulam ranks

second and Quilon third. In Kottayam for every 1000 urban population there are 95 migrants from other rural parts of the State while the corresponding figures for Ernakulam and Quilon are 70 and 57 respectively. The large inflow of migrants from the rural parts of the State to Kottayam District may be due to the concentration of plantations in that district.

The pattern of sex composition of rural to urban migrants to all districts displays a common feature. That is to say, the rural urban migrants excepting to Alleppey, Kottayam and Palghat consists of more males than females. This confirms the conclusion that the tendency to move from rural to urban centres is stronger among males while rural to rural migration is characterised by the predominance of females.

13. *Urban to rural migration.*—The number of migrants to rural areas from urban areas per 1000 rural population is given in Table XI.

In the State as a whole 19 persons per 1000 rural population were migrants from urban areas. Migration from urban to rural areas was insignificant compared to rural-urban migration.

The classification of migrants by sex reveals that there were only 17 urban to rural male migrants per 1000 rural male population while the corresponding figures per 1000 females population is 21.

An examination of the volume and pattern of urban to rural migration stream to the various districts of Kerala reveals that the volume of urban to rural migration was larger to those districts where plantation activities and agricultural operations were more.

The volume of urban to rural migration was greater in Kottayam District compared to all other districts. There are 29 migrants from urban areas per 1000 rural population in Kottayam District. Next to Kottayam comes Trivandrum in the case of urban to rural migration. Kozhikode and Palghat are the two districts which account for the smallest percentages of urban to rural migrants.

The classification of urban to rural migrants by place of origin shows the importance of proximity of the place of origin to the destination of migrants. On an average 12 persons per 1000 population in the rural areas were migrants from the urban areas of the same district for the State as a whole while the corresponding figures for other districts and other states and union territories were 5 and 2 respectively.

The volume of urban to rural migration within the same district is largest in Trivandrum District where there are 21 migrants per 1000 rural population from the urban areas of the same district.

Trichur comes second to Trivandrum from the point of view of the volume of urban to rural migration (same district). In Trichur District per 1000 rural population 18 persons are migrants from the urban areas of the same district. The migrants consist of more females than males.

Kottayam ranks third in the case of urban to rural migration. There are 16 migrants from the urban areas of the same district per 1000 rural population.

In Quilon and Palghat urban to rural migration in the same district is of a very low order as compared to other districts.

14. *Urban to urban migration.*—Table XII shows the migrants to urban areas per 1000 urban population from other urban areas by place of origin. Urban to urban migrants are classified as (1) that from the same district, (2) from other districts of the State and (3) from other States and Union Territories of India.

There are 79 migrants from the urban areas of the State and other States and union territories of India per 1000 urban population of the States as the whole. Female migrants outnumbered the males. There are 38 migrants from the urban areas of the same districts per 1000 urban population while the corresponding figures from the urban areas of other districts of the State and from other States and union territories are 29 and 12 respectively.

Ernakulam ranks first in the case of urban to urban migration There are 109 migrants from all the urban areas of the same State and from other States and union territories per 1000 urban population of Ernakulam. Rapid industrialisation and the consequent expansion of urban areas of other district of the State and other States and Union Territories. Next to Ernakulam is Cannanore where per 1000 urban population there are 98 migrants from other urban areas.

Quilon ranks third. Kozhikode and Trivandrum are two other important districts from the point of view of urban to urban migration.

An examination of urban to urban migration in the same district shows that Cannanore ranks first in the matter. Per 1000 urban population in Cannanore, there are 65 migrants from the urban areas of the same district.

In the case of urban to urban migration in the same district in Ernakulam per 1000 urban population 47 persons are migrants from the urban areas of same district.

In Kozhikode also 47 persons are migrants from other areas of the same districts per 1000 urban population of the district.

The number of urban to urban migrants from other districts was greatest in Ernakulam District. In Ernakulam per 1000 urban population 45 persons are migrants from the urban areas of other districts of the State as against 41 in Quilon and 35 in Kottayam.

The number of urban migrants in any district from the urban areas of other districts may be taken as an index of urbanisation created by industrialisation. The number of migrants to the urban areas from other urban areas of other States and union territories of India was greatest in Palghat. In Palghat per 1000 urban population 19 persods are migrants from the urban areas of other States and union territoris as against 17 in Ernakulam and 16 in Trivandrum. Kottayam and Alleppey were the two Districts where the number of urban to urban migrants from other States and union territories is low.

15. *Migration from other States.*—Migration from other States and union territories of India to Kerala classified by sex expressed as percentage to total rural and urban population is presented in Table XIII.

In 1961 migrants from all State and union territories for India constituted 1·38 per cent of the total population of Kerala. Classification of immigrants by sex reveals that male migrants to Kerala from other States and union territories formed 1·47 per cent of the male population of Kerala while the corresponding figures for female migrants was 1·29 per cent.

Migrants from other States and union territories are classified as (1) that from States adjacent to Kerala and (2) from States and union territories other than the adjacent States. Migrants to Kerala from adjacent States formed 1·26 of the total population of Kerala in 1961. Male migrants formed 1·32 per cent of the population while the corresponding figure for female migrants was 1·20 per cent

Migrants from States and union territories other than the adjacent States to Kerala was only 0·12 per cent of the total population of the State. Of these male migrants formed 0·15 per cent and female migrants 0·09 per cent of the male and female population of the State respectively.

It is seen from a comparison of the percentage of migrants to Kerala from the adjacent States with that from States and union territories other than the adjacent States shows that migration streams to Kerala in1961 was mainly from the adjacent States.

The classification of migrants to Kerala into rural and urban reveals certain features of demographic significance. Migrants to the rural areas of Kerala from other States and union territories formed only 1·20 per cent of the rural population while the corresponding figure for the migrants to the urban areas was 2·40 per cent. This shows that the migration streams from outside Kerala are directed more to the urban areas of Kerala than to the rural areas.

16. *Industrial classification of migrants.*—Industrial classification of workers and non-workers in the general population and of immigrants from other State and union territories of India is given in Table XIV. The distribution of immigrants as workers and non-workers among the three sectors of the economy will show the relative importance of the sectoral absorption of migrants.

Migrants to the primary sector formed 3·21 per cent of the total population of the sector. The corresponding figures for the secondary and tertiary sectors were 1·44 per cent and 1·92 per cent respectively. Migrants to the category of non-workers formed only 0·86 per cent of the total non-workers of the State.

The distribution of migrants into the various sectors of the economy by sex shows that the percentage of female migrants is greater in the primary sector than the male ones; where as the migrants to the secondary sector display a diffierent sex pattern. Migrants to the category of non-workers also consist of greater percentage of females.

17. *Cause of migration in Kerala.*—In the preceding part, volume, direction, sex composition, rural-urban, distribution etc., of the migrants have been dealt with on the basis of facts and figures obtained exclusively from the census report, 1961. As has been stated in the introductory part of this study the reasons for migration have not been dealt with in the census report. The study of migration will be incomplete without an investigation into the causes of migration. It is difficult to make this study for want of data. An attempt is made here to have a look into the main causes of migration in some districts of the State during 1958–62 on the basis of some surveys* conducted by the Demographic Research Centre of the Bureau of Economic and Statistics, Trivandrum. It is to be stated in this connection that the information on the causes of migration in the above survey was collected as an additional item to the survey on attitude to family planning.

In this survey reasons for migration are classified into five categories viz., (1) in search of employment, (2) in search of better employment, (3) other economic reasons, (4) for education and (5) others. Migration as a result of marriage is not included here; but it may fall under 'others,. The number of persons with reasons for migration under these five heads in all the district headquarters of the State and in Attingal town are given in Table XV.

It is seen that migration is motivated by economic reasons in the majority of cases in all the districts. Economic reasons included search of employment, better employment and other economic reasons. The degree of importance of the various reasons varies from district to district. In Quilon, Alleppey, and Cannanore search of employment accounted for 10·36 percent, 10·85 per cent and 10·06 per cent respectively, of the total migrants to those districts. In Trivandrum

* Attitude towards Family Planning—Demographic Research Centre, Bureau of Economics and Statistics, Trivandrum, 1958-59, 1959-60 and 1961—62.

7·30 per cent of the total migrants to that district is in search of employment. The search of employment as a motive for migration is of very little importance in the case of Attingal.

Search for better employment does not seem to be an important motive for migration. Only insignificant proportion of migrants to the respective districts are motivated by search for better employment.

Kozhikode has 73 per cent non-response. Hence we may nor comment on the data.

Other economic reasons accounted for a greater percentage of migrants to almost all districts. In Palghat 47·45 per cent of all migrants are motivated by other economic reasons. Comparatively lower percentages of migrants to Trichur, Quilon and Cannanore are motivated by other economic reasons.

Palghat data seen conspicuous because of heavy non-response in Quilon, Trichur and Kozhikode.

18. *Summary.*—(1) Migration is not of much significance in changing the total population size of the State. Though immigration for exceeded out-migration from 901 to 1931 the trend was reversed in the succeeding three decades. As in 1961, census Kerala suffered a 'net loss' of about 3·9 lakhs.

(2) Net migration to Kerala by age and sex as in 1961 reveals heavy loss due to excess out-migration in the age group 20–39.

(3) Excess immigration has taken place only in age groups 10–19 and 40 years and above.

(4) Of the net inter-censal migration to the State in the age group 10–19 years, 75 per cent of females.

(5) Migrants to Kerala in the primary sector formed 3·21 per cent of the total population of that sector; while the corresponding figures for the secondary and tertiary sectors are 1·44 per cent and 1·92 per cent respectively.

(6) The rural areas seem to have a stronger "pulling effect than urban areas for females and they seem to concentrate in centres where employment in agriculture and allied activities are available.

(7) In the case of life time outmigrants there is an excess of 185,839 males over females. In the case of immigrants there is an excess of 12338 males over females. There is thus a net loss of 173,501 males due to migration.

(8) While males predominate in number in respect of rural to urban migration, females predominate in rural to rural migration.

(9) The classification of migrants to Kerala into rural and urban reveals that migration streams from outside Kerala are directed more to the urban areas than to the rural areas of the State.

(10) A comparison of the percentage of migrants to Kerala from the adjacent states that from other States and union territories of India shows that distance from the place of origin is an important determinant for migration.

(11) An examination of the cause of migration in some districts of the State on the basis of information obtained from a sample survey reveals that the most important motive for the movement of people within the State is economic in nature.

TABLE I (a)

Life time in and outmigration of Travancore-Cochin 1901—1951 (Both Sex)

	1901	1911	1921	1931	1941	1951
Inmigrants ..	81036	82226	86654	161622	170577	194106
Outmigrants ..	16172	21307	20873	41040	2186	206952

TABLE I (b)

Life time inmigration to Travancore-Cochin State 1901—1951 (Both Sex)

(a) Inmigrants

States/Year	1901	1911	1921	1931	1941	1951
Tamil Nadu ..	73704	80008	84665	158965	167932	188516
Karnataka ..	314	391	393	517	463	1349
Maharashtra and Gujarat ..	4968	1276	1038	1539	1208	1918
Others ..	2050	551	558	601	974	2323
Total ..	81036	82226	86654	161622	170577	194106

TABLE I (c)

Outmigration from Travancore-Cochin State
1901—1951 (Both Sexes)

State/Year	1901	1911	1921	1931	1941	1951
Tamil Nadu ..	16044	20089	18417	31576	..	170124
Karnataka ..	126	423	771	1060	2186	11791
Maharashtra and Gujarat ..	..	526	627	3691	..	15272
Others ..	2	269	1058	4713	..	9765
Total ..	16172	21307	20873	41040	2186	206952

Source:—K. C. Zacariah population growth in Kerala. Its implications P. 99, Demographic Research Centre, Bureau of Economics and Statistics, Trivandrum—1966.

TABLE II

Number of outmigrants from Kerala to other States and Union Territories and Inmigrants to Kerala from other State and Union Territories by sex and the percentage of net loss or gain on this account by States and Union Territories in India, 1961

State/Union Territory	Persons			Males			Females		
	Out-migrants from Kerala	In-migrants to Kerala	Percentage of net less	Out-migrants from Kerala	In-migrants to Kerala	Percentage of net less	Out-migrants from Kerala	In-migrants to Kerala	Percentage of net less
Andhra Pradesh ..	24898	1962	5·87	17513	1105	5·81	7385	857	6·00
Assam ..	2182	115	0·53	1807	69	0·61	375	46	0·30
Bihar ..	7135	398	1·72	4170	224	1·40	2965	174	2·57
Gujarat ..	7849	3143	1·20	5812	2367	1·22	2037	776	1·16
Jammu and Kashmir	194	113	0·02	145	78	0·02	49	35	0·01
Madhya Pradesh ..	18248	646	4·50	14386	337	4·98	3862	309	3·27
Madras (Tamil Nadu) ..	276518	192287	21·54	162331	101031	21·72	114187	91256	21·08
Maharashtra ..	98094	5692	23·63	71325	3383	24·07	26769	2309	22·49
Mysore (Karnatak) ..	137220	21386	29·62	90780	9654	28·74	46440	11732	31·91
Orissa ..	4262	160	1·05	3641	105	1·25	621	55	0·52
Punjab ..	5648	1152	1·15	4618	847	1·24	1030	305	0·67
Rajasthan ..	1997	225	0·45	1348	150	0·42	649	75	0·53
Uttar Pradesh ..	5673	1026	1·19	4328	726	1·28	1345	300	0·96
West Bengal ..	12419	884	2·95	9063	580	3·00	3356	304	2·81
Andaman & Nicobar Islands	3735	215	0·90	2574	151	0·86	1161	64	1·01
Dadra & Nagar ..	2	..	..	..	..		2	..	..
Delhi ..	10232	573	2·47	6480	287	2·19	3752	286	3·19
Goa, Daman & Diu ..	113	292	0·05	86	210	0·04	27	82	0·05
Himachal Pradesh ..	121	23	0·02	90	15	0·03	31	8	0·02
L.M. & A Islands ..	383	270	0·03	294	229	0·02	89	41	0·05
Manipur ..	34	3	0·01	30	3	0·01	4	..	..
Nagaland ..	883	..	0·23	873	..	0·31	10	..	0·01
N.E.F.A. ..	691	1	0·18	669	1	0·24	22	..	0·02
Pondicherry ..	5814	2848	0·76	2697	1323	0·49	3117	1525	1·46
Sikkim ..	60	..	0·02	56	..	0·02	4	..	..
Tripura ..	39	2	0·01	28	2	0·01	11		0·01
Total ..	624444	233416	..	405144	122877	..	219300	110539	..

Source : Census of India 1961—Vol. VII—Kerala—Part IA (1)

TABLE III

Number of Emigrants from Kerala to other States and Union Territories and Inmigrants to Kerala from other State and Union Territories by sex and the percentage of net loss or gain on this account by the States and Union Territories in India, 1961

States/Union Territories	Males			Females		
	Emigrants from Kerala	Inmigrants to Kerala	Percentage net less	Emigrants from Kerala	Inmigrants to Kerala	Percentage net less
Andhra Pradesh ..	17513	1105	5·81	7385	857	6·00
Assam ..	1807	69	0·61	375	46	0·30
Bihar .	4170	224	1·40	2965	174	2·57
Gujarat ..	5812	2367	1·22	2037	776	1·16
Jammu and Kashmir ..	145	78	0·02	49	35	0·01
Madhya Pradesh ..	14386	337	4·98	3862	309	3·27
Madras (Tamil Nadu) ..	62331	101031	21·72	114187	91256	21·08
Maharashtra ..	71325	3383	24·07	26769	2309	22·49
Mysore (Karnatak) ..	90780	9654	28·74	46440	11732	31·91
Orisa ..	3641	105	1·25	621	55	0·52
Punjab ..	4618	847	1·34	1030	305	0·67
Rajasthan ..	1348	150	0·42	649	75	0·53
Uttar Pradesh ..	4328	726	1·28	1345	300	0·96
West Bengal ..	9063	580	3·00	3356	304	2·81
Andaman and Nicobar Islands ..	2574	151	0·86	1161	64	1·01
Dadra and Nagar Harali ..	..	..	..	2	..	..
Delhi ..	6480	287	2·19	3757	286	3·19
Goa, Daman and Dieu ..	86	210	0·04	27	82	0·05
Himachal Pradesh ..	90	15	0·03	31	8	0·02
L.M. and A Island ..	294	229	0·02	89	41	0·05
Manipur ..	30	3	0·01	4	..	..
Nagaland ..	873	..	0·31	10	..	0·01
N.E.F.A. ..	669	1	0·24	22	..	0·02
Pondicherry ..	2697	1323	0·49	3117	1525	1·46
Sikkim ..	56	..	0·02	4	..	..
Tripura ..	28	2	0·01	11	..	0·01
Total ..	405144	122877	..	219305	110539	..

Source : Census of India 1961—Kerala—Part I A (1)

TABLE IV

Females per (100 males) of lifetime in and outmigrants Travancore-Cochin 1901-1951 and Kerala 1961

Area and year		*Inmigrants*	*Outmigrants*
(1)		(2)	(3)
Travancore-Cochin	1901	889	899
	1911	976	807
	1921	1039	681
	1931	1027	827
	1941	1082	..
	1951	1193	718
	1961	900	541

Source:—K. C. Zacharia—Population growth in Kerala—Its implication p. 99. Demographic Research Centre, Trivandrum—1966.

TABLE V

Not intercensal migration to Kerala by age and sex 1951—1961 (in thousands)

Age in 1961	*Total*	*Males*	*Females*
(1)	(2)	(3)	(4)
0— 4	— 27	— 14	— 13
5— 9	—152	— 77	— 75
10—14	+149	+ 29	+120
15—19	+162	+ 47	+115
20—24	— 50	— 28	— 22
25—29	—267	—124	—143
30—34	—215	—108	—107
35—39	— 24	— 9	— 15
40—44	+ 31	+ 21	+ 10
45—49	+ 20	+ 14	+ 6
50—54	+ 20	+ 11	+ 9
55—59	+ 16	+ 8	+ 8
60—64	+ 8	+ 6	+ 2
65—69	+ 10	+ 7	+ 3
70 and above	+ 35	+ 18	+ 17
All ages	—284	—199	— 85

Source:—K. C. Zachariah—"Migration" and population growth in Kerala—Page 101. Population Growth in Kerala—Editors—R. S. Kurup and K. A. George, Demographic Research Centre, Bureau of Economics and Statistics Trivandrum—1966.

TABLE VI

Percentage distribution of male and female of migrants to district in Kerala from other States and Union Territories of India

State/District	*Percentage distribution of migrants to the State among districts*		
	Percentage	*Male*	*Female*
Kerala State	100·00	100·00	100·00
Cannanore District	8·46	7·16	9·91
Kozhikode ,,	6·95	7·63	6·18
Palghat ,,	14·23	13·33	15·22
Trichur ,,	2·79	2·84	2·72
Ernakulam ,,	6·17	7·34	4·87
Kottayam ,,	38·71	39·80	37·51
Alleppey ,,	2·08	2·27	1·87
Quilon ,,	6·49	6·89	6·05
Trivandrum ,,	14·12	12·74	15·67

Source:—Census of India 1961, Vol. VII—Kerala—Part IA (i)

TABLE VII

Non-migrants and migrants per 1000 of the rural population

State/District			Males		Females	
	Non-migrants	Migrants	Non-migrants	Migrants	Non-migrants	Migrants
Kerala State ..	754	246	806	194	703	297
Cannanore District ..	702	298	722	278	682	318
Kozhikode ,, ..	753	247	809	191	698	312
Palghat ,, ..	780	220	862	138	706	294
Trichur ,, ..	734	266	807	193	668	332
Ernakulam ,, ..	772	228	843	157	703	297
Kottayam ,, ..	628	372	672	328	582	416
Alleppey ,, ..	804	196	878	122	732	268
Quilon ,, ..	781	219	816	184	747	253
Trivandrum ,, ..	838	162	851	149	825	175

Source:—Census of India 1961, Vol. VII—Kerala—Part IA (i)

TABLE VIII

Non-migrants and migrants per 1000 of the urban population

State/District	Non-migrants	Migrants	Males		Females	
			Non-migrants	Migrants	Non-migrants	Migrants
Kerala State ..	738	262	756	..	719	281
Cannanore District ..	762	233	763	..	761	239
Kozhikode ,, ..	767	233	789	..	745	255
Palghat ,, ..	729	271	757	..	702	298
Trichur ,, ..	712	288	753	..	673	237
Ernakulam ,, ..	686	314	705	..	666	334
Kottayam ,, ..	669	331	707	..	630	370
Alleppey ,, ..	760	240	800	..	720	280
Quilon ,, ..	732	268	736	..	727	273
Trivandrum ,, ..	764	236	762	..	762	238

Source:—Census of India 1961, Vol. VII, Kerala—Part IA (i)

TABLE IX

Inter-district inmigrants per 1000 rural population from rural to rural areas within the State

State/District	*Inmigrants per 1000 rural population*		
	Persons	*Males*	*Females*
Kerala State	44	42	46
Cannanore District	74	82	65
Kozhikode ,,	56	58	53
Palghat ,,	20	16	23
Trichur ,,	35	33	37
Ernakulam ,,	42	36	48
Kottayam ,,	69	67	72
Alleppey ,,	34	21	47
Quilon ,,	45	43	48
Trivandrum ,,	11	11	10

Source:—Census of India 1961, Vol. VII, Kerala—Part IA (i)

TABLE X

Inter-district inmigrants per 1000 urban population from the rural areas within the State

State/District	*Inmigrants per 1000 urban population*		
	Persons	*Males*	*Females*
(1)	(2)	(3)	(4)
Kerala	48	52	44
Cannanore	27	34	20
Kozhikode	36	40	32
Palghat	35	35	36
Trichur	49	50	48
Ernakulam	70	75	63
Kottayam	95	94	95
Alleppey	45	40	50
Quilon	57	61	53
Trivandrum	41	50	32

Source:—Census of India 1961, Vol. VII, Kerala—Part IA (i)

TABLE XI

Inmigrants to rural areas per 1000 rural population from urban areas by place of origin

Migrants urban areas	State/District														
	Kerala			Cannanore			Kozhikode			Palghat			Trichur		
	P	M	F	P	M	F	P	M	F	P	M	F	P	M	F
Districts ..	12	10	14	12	11	13	8	6	9	6	4	7	18	16	20
States ..	5	5	5	4	4	3	4	4	3	3	3	3	5	5	5
Union Territories in India ..	2	2	2	2	2	2	1	1	1	4	4	4	1	1	1
Total ..	19	17	21	18	17	18	13	11	13	13	11	14	24	22	26

TABLE XI—(*cont.*)

Migrants urban areas	State/District														
	Ernakulam			Kottayam			Alleppey			Quilon			Trivandrum		
	P	M	F	P	M	F	P	M	F	P	M	F	P	M	F
Districts ..	15	11	19	16	13	17	11	8	13	6	5	7	21	19	22
States ..	5	5	5	8	8	8	6	4	7	7	7	7	3	3	2
Union Territories in India ..	1	1	1	5	5	4	1	1	1	1	1	1	1	1	1
Total ..	21	17	25	29	26	29	18	13	21	14	13	15	25	23	25

Source:—Census of India 1961—Vol. VII, Kerala—Part I A(i).

TABLE XII

Inmigrants to urban areas per 1000 urban population from other urban areas by place of origin

Inmigrants from urban areas of	State/District														
	Kerala			Cannanore			Kozhikode			Palghat			Trichur		
	P	M	F	P	M	F	P	M	F	P	M	F	P	M	F
District ..	38	32	43	65	61	70	41	31	51	22	24	20	32	24	40
Districts in the State ..	29	30	29	20	24	17	23	24	21	29	33	26	25	25	25
States and Union Territories in India..	12	13	11	13	13	13	10	13	7	19	18	20	7	7	6
Total ..	79	75	83	98	98	100	74	68	79	70	75	66	64	56	71

TABLE XII—(*cont.*)

Inmigrants from urban areas of	State/District														
	Ernakulam			Kottayam			Alleppey			Quilon			Trivandrum		
	P	M	F	P	M	F	P	M	F	P	M	F	P	M	F
District ..	47	37	59	26	22	29	23	18	28	25	22	28	34	31	37
Districts in the State ..	45	46	44	35	33	38	31	27	35	41	41	41	23	26	21
States and Union Territories in India..	17	20	14	5	6	5	5	6	5	13	11	12	16	16	17
Total ..	109	103	117	66	61	72	59	51	68	79	76	81	73	73	75

Source:—Census of India 1961—Vol. VII, Kerala—Part I A(i).

TABLE XIII

Immigrants from other States and Union Territories of India into Kerala—Classified by sex, expressed as percentages of total, rural and urban population of the State 1961

State: Kerala	Population			Percentage of total immigration from other States and Union Territories of India to actual population of Kerala			Percentage of immigration from States adjacent to Kerala to actual population of Kerala			Percentage of immigration from States and Union Territories other than those adjacent to Kerala to actual population of Kerala		
	P	M	F	P	M	F	P	M	F	P	M	F
1	2	3	4	5	6	7	8	9	10	11	12	13
Total ..	16903715	8361927	8541788	1·38	1·47	1·29	1·26	1·32	1·20	0·12	0·15	0·09
Rural ..	14349574	7079168	7270406	1·20	1·25	1·15	1·15	1·20	1·10	0·05	0·05	0·05
Urban ..	2554141	1282759	1271382	2·40	2·66	2·13	1·92	1·99	1·83	0·48	0·67	0·30

Source:—Census of India 1961—Vol. VII, Kerala—Part I A(i).

TABLE XIV

Distribution of industrial categories of workers and non-workers among the general population and among immigrants from other States and Union Territories of India 1961

Industrial category/section		Population of Kerala State	Immigrants from States and Union Territories in India	Immigrants from States adjacent to Kerala	Immigrants from States and Union Territories other than adjacent States	Percentage of immigrants from States and Union Territories of India to population of Kerala		
						P	M	F
1		2	3	4	5	6	7	8
Total	..	16903715	233416	213673	19743	1·38	1·47	1·29
Primary Sector	..	2643858	84872	84533	339	3·21	2·49	4·81
Industrial Category	I ..	1178103	6827	6692	135	0·58	0·45	1·65
Do.	II ..	978396	6134	6085	49	0·63	0·65	0·60
Do.	III ..	487359	71911	71756	155	14·76	9·51	38·30
Secondary Sector	..	1088736	15685	15071	614	1·44	1·95	0·69
Industrial Category	IV ..	488562	2764	2652	112	0·57	0·69	0·49
Do.	V ..	529472	7731	7266	465	1·46	1·76	0·58
Do.	VI ..	70702	5190	5153	37	7·34	6·53	25·31
Tertiary Sector	..	1897739	36370	29726	6644	1·92	2·13	1·16
Industrial Category	VII ..	321933	7960	7201	759	2·47	2·56	1·32
Do.	VIII ..	152513	6067	3157	2910	3·98	4·12	1·22
Do.	IX ..	1423293	22343	19368	2975	1·57	1·73	1·15
Non-workers	..	11273382	96489	84343	12146	0·86	0·76	0·92

Source:—Census of India 1961—Vol. VII, Kerala—Part I A (i).

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TABLE XV

Percentage distribuion of persons by reason for migration

Districts	Reason for migration						
	In search of employment	In search of better employment	Other economics reasons	For study	Others	N.R.	Total
1	2	3	4	5	6	7	8
Trivandrum ..	7·30	1·87	23·92	21·78	45·13	..	100·00
Quilon ..	10·36	7·11	12·85	5·15	28·33	36·20	100·00
Alleppey ..	10·85	4·18	41·71	13·05	30·21	..	100·00
Trichur ..	1·68	7·56	10·92	..	5·89	73·95	100·00
Palghat ..	2·72	0·22	47·45	28·57	21·04	..	100·00
Kozhikode ..	..	9·84	13·98	0·90	1·79	73·49	100·00
Cannanore ..	10·06	..	15·30	0·28	74·36	..	100·00
Attingal ..	0·74	6·17	21·71	11·67	59·71	..	100·00

Source.—Attitude to Family Planning Demographic Research Centre, Bureau of Economics and Statistics, Trivandrum 1958–59,1959–60 and 1961–62.

SOME PATTERN OF MIGRATION IN KERALA

CONTENTS

SOME PATTERN OF MIGRATION IN KERALA

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1. *Introduction.*—Kerala State is a narrow strip of land along the south western coast of the Inian Union between the western ghats and the Arabian Sea. Its width varies from about 11 kilometers to 120 kilometers with a fairly long coastal line of about 580 km. The States with its present geographical boundaries came into existence from the year 1956 only as a result of the reorganisation of states in India. The area of the State is about 38,000 sq. km.

The land in the State presents a picturesque variety of physical features. It has three distinct natural divisions, namely lowland, midland and highland. The mountain regions on the eastern border of the State and the hilly areas close to them constitute the highland region. This region is rich in plantation crops like tea, rubber and cardamom. The coastal region with its copious coconut palms and paddy Cultivation forms the lowland. Between the highland and the lowland lies the midland blessed with a variety of crops like paddy, tapioca and spices like pepper and ginger.

The State has a pleasant climate. It gets abundant rainfall spread almost evenly throughout the year.

The administrative divisions in the State consist of eleven districts at present. During 1961 there were only nine districts. Each district is divided into taluks and each taluk into a number of revenue villages. For the population census purpose, each revenue village is further subdivided into census villages.

According to the decennial population census of 1961 which was the first census taken after the formation of the State, a total population of about 17 millions was recorded. In the next census of 1971, a population of 21 millions was recorded. A comparison of the population size of the State with that of the world and India would show that one out of every seven people in the world is an Indian and one in every 26 Indian is a Keralite.

The demographic situation in this small State presents certain sharp features. The growth rate of the State's population during the decade 1961-70 was 26·29 against the rate of 24·80 for the whole country. The population density in the State is 549 persons per sq. km. The State is perhaps the densest part of the country

excluding of course large metropolitan cities. Due to the high population pressure and its socio-economic implications, the State is often known as "the problem State" of India.

Agriculture still plays the leading role in the development with certain distinctive characteristics worthy of notice. The pressure of pupulation of land has rendered a large part of the rural population traditionally dependent on agriculture either unemployed or underemployed. Only about 56 per cent of the total area is available for cultivation. With little scope for extensive cultivation of agricultural crops, the increase in population has outstripped the increase in production.

The secondary soctor covering mining and industry is not adequately developed in the State. The traditional industries like coir and cashew have a weak base. They are labour-intensive and are marked by low levels of productivity. The State is not known to have any resource of oil or coal which is a serious impediment to industrial development. But the availability of cheap electricity a well doveloped transport system and a plentiful supply of intelligent labour are of course conducive to spead up the process of industrialisation.

The State holds an enviable position in the country with its high literacy rate of over 60 per cent which is more than double the rate for the country. But unemployment especially among the educated has brought about an explosive situtation in the State. The total unemployed and underemployed were estimated as 9 lakhs and 18 lakhs resectively during the year 1970.

The rapid increase in the population size has led to growing demands on the social overheads like education, health and housing at a tremendous cost and at the expense of development projects. The State spends the highest share of total expenditure on education.

The policy of population control accepted and implemented in the State from 1957 onwards could achieve a substantial reduction in the crude birth rate from 39/1000 in 1961 to 32/1971. But simultaneously the death rates also recorded a steep fall from 16/1000 to less than 10/1000. The net result was an accelerated growth rate.

The process of urbanisation is very slow in the State. The census towns in 1961 census were determined on the basis of a number of empirical tests namely, (*a*) a density of not less than 1000 per sq. mile, (*b*) a population of 5000, (*c*) three-fourths of the occupations of the working population should be outside agriculture and (*d*) the place should have a few pronounced urban characteristics and amenities like industrial areas, large settlements etc. As per the census 15 per cent of the population was living in urban areas. In 1951 it was only 13 per cent. Even the urbanisation reported was mostly due to annexation of new areas to the existing towns rather than by natural process.

It can be said that the process of urbanisation in Indian as a whole has been taking place without a corresponding trend towards industrialisation. Most of the urban centres in the State are trading or service centres. The distribution of towns according to the population size class was as follows in 1961:

Population size class		*No. of towns*
Under	5000	1
5000	9999	13
10000	14999	13
15000	19999	15
20000	24999	16
25000	39999	10
40000	99999	10
100000 or more		14
	Total	92

2. *Impact of migration on population change.*—The problem of migration in the State has to be appreciated into the background information in the foregoing paragraphs on the general setting of the State. Migration in the State does not have any appreciable impact on the growth rate of the State's population. This does not mean that the population is inert. As a matter of fact, the population in the State is a highly migratory community and in pursuit of subsistence they have moved into all corners of India and other countries. The volume of net migration in the State is negligible. The State has suffered a net less due to migration. The migrants from the State are highly selective with reference to their demographic, social and economic characteristics. Some of the salient features of the characteristics of the migrants are examined in this paper utilising the data available from 1961 population census reports.

3. *Source of data on migration.*—The questionnaire for the population census of India (1961) included the following enquiries regarding migration data:

(i) Birth place
(ii) Birth place (Rural/Urban)
(iii) Duration of residence, if born elsewhere
(iv) Nationality

The data so collected are capable of giving broad information on life-time migrants to and from the States.

It should however be noted that data on place of birth collected in census need not necessarily be accurate. Though the question on place of birth is easily understood there are many circumstances that could lead to inaccurate reporting in the census. For example, if a person resides at a given place for a long time, he may report that as his place of birth. Further the census taker obtains information about the members of the housohold from one member of the household, rather than by interviewing each persons separately. The informant may not know necessarily the places of birth of all the household members. Another important source of error occurs on account of certain customs followed in India. Invariably the first confinement of ladies after their marraige takes place in their parents' house which is not the usual residence of the lady. These babies are enumerated as life time migrants. The frequent changes in the boundaries of the administrative units are also likely to add errors in the place of birth data. Lastly, the census being conducted on a defacto basis comparison of the place of birth with the place of enumeration may lead to the inclusion of casual movers as migrants; add to the classification of real migrants as non-migrants.

4. *Coverage of the studies in this paper.*—In this paper, it is proposed to make some broad analysis of the following typologies of migration relating to the State using the 1961 census data:

(*i*) International migration to the State

(*ii*) Interstate migration

(*iii*) Intrastate or Inter-district migration

5. *International migration.*—Indian population census data (1961) give information about non-Indian National enumerated in Kerala State. A total of 12733 persons born outside India were enumerated in Kerala State. A sex-wise break up of these inmigrants given below shows the predominance of males in the sex-composition of migrants from all the continents.

Continent of birth	*Number of inmigrants*		
	Total	*Males*	*Females*
(1)	(2)	(3)	(4)
Asia beyond India including U.S.S.R.	10137	5256	4881
Eruope	1949	1615	334
Africa	405	208	197
Americas	206	155	51
Oceana	36	23	13
Total	12733	7257	5476

Data relating to out-migrants from the State to countries beyond India are not available.

6. *Interstate migration.*—This section deals with the inmigration to the State from other States in India and outmigration from the State to other States.

6.1. *Volume of interstate life migration.*—According to the census count taken in India in 1961, 6·2 lakhs of persons born in Kerala State were enumerated outside the State; and 2.3 lakhs of persons born in other States were enumerated in Kerala; resulting in a net loss of 3·9 lakhs of people to the State. The streams of these life time migrants are given in Table I appended. All the migration streams are found to favour the destinations without any exception. In other words the overall loss sustained by the origin State resulted in gains in every other State.

6·2. *Origin and destination of the migrants.*—The migration streams in the State seem to uphold the Revensteens laws of migration, which, interalias, state that the migrants preferably move to short distances. Analysis of the data in Table I appended shows that the volume of migration diminishes as the distance between the origin and destination increases. As much as 92 per cent of the inmigrants to the State, and 70 per cent of the outmigrants from the State are accounted for by the three neighbouring States of Madras, Mysore and Andhra Pradesh. Even among these States, the greatest impact on migration is seen to have taken place to and from the nearest estate of Madras. The important factors which influenced this situation are—

(a) the nearness of Madras State from Kerala

(*b*) similarities of socio-cultural factors in the southern states of the country.

As distance increases these factors socio-cultural language etc. assume heterogeneous characters and stand in the way of mobility.

6.3. *Selectivity of the interstate migrants—(i) Sex composition.*—The sex ratio of the general population in the State was 1022 females for 1000 males as per 1961 census. The sex ratio of the outmigrants was only 535 females per 1000 males. Among the inmigrants the ratio was 901 females/1000 males. In both the directions, the male predominance was pronounced and this was significantly more among the outmigrants. However an interesting fact is revealed that the sex ratio of migrants in both the directions is relatively more balanced, the nearer, the destination state is to the origin State.

(ii) *Rural-urban differential of migrants.*—The rural-urban break up of the migrants at the State of origin is given in the following table:

Born in	Outmigrants			Inmigrants		
	Total	Males	Females	Total	Males	Females
Rural ..	366962	243420	123542	174554	91556	82998
Urban ..	256480	161062	95418	57624	30635	26989
Unclassified ..	1002	661	341	1238	686	552
Total ..	624444	405143	219301	233416	122877	110539

While the general population in the State consisted of 85 per cent rural population, among the outmigrants only 59 per cent moved out from the rural areas. Relatively more migrants came out from the urban areas in the State. The sex-wise break down of the outmigrants shows that from both the sexes; relatively more migrants enumerated from the urban areas of the State. In terms of percentages 60 per cent of the male outmigrants and 56 per cent of the female outmigrants went out from the urban areas.

In the case of in-migrants 75 per cent of them came from the rural areas of the origin State and 25 per cent from the urban areas. This proportion is found to be the same for both the sexes. When the figures are compared with the fact that 80 per cent of the population in the country as a whole was rural it would appear that relatively more in-migrants also migrants from the urban areas at the places of origin.

(iii) *Streams of immigration.*—84 per cent of the migrants from the rural areas went to rural areas only and the remaining 16 per cent only to the urban areas. In the case of inmigrants from urban areas the selectivity was more towards urban side as 54 per cent of them went to urban areas and only 46 per cent went to the rural side. Taking the total number of inmigrants as 100 the break-down of the different streams worked out as follows:

Migration Stream		*Percentage of inmigrants*
(a) Rural to rural	..	63
(b) Rural to urban	..	13
(c) Urban to urban	..	13
(d) Urban to rural	..	11
Total	..	100

It is seen that the distribution of in migrants to rural and urban were respectively 74 and 26. In other words migration to rural areas was far greater than migration to urban areas.

Sex composition of the migrants in the above streams, presented in the table below, indicates that there was a male predominance in all the streams, which was more pronounced in the urban ward movement.

Percentage of sex composition in the inmigration streams:

Migration streams		*Persons*	*Male*	*Female*
(*a*) Rural to rural	..	100	51	49
(*b*) Rural to urban	..	100	52	48
(*c*) Urban to urban	..	100	57	43
(*d*) Urban to rural	..	100	54	46

(*iv*) *Outmigration streams.*—The special pattern of the outmigration streams was very much different from that of inmigration. Among the rural-based outmigrants only 35 per cent went to the rural areas, and as much as 65 per cent went to the urban areas. The same trend was seen in the urban based outmigrants also with 87 per cent of them having urban ward movement and with only 13 per cent having rural ward movemnt. Thus there was a strong selectivity for urban areas among the outmigrants from the state.

Taking the total outmigrants as 100, the percentage break down of the four migration streams was as follows.

Migration stream		*Percentage of outmigrants*
(*a*) Rural to rural	..	20
(*b*) Rural to urban	..	38
(*c*) Urban to urban	..	36
(*d*) Urban to rural	..	6

In this case 74 per cent of the outmigrants moved towards urban areas.

Sex-wise comparison of the outmigrants shows a male predominance in all the four streams. The figures are given below:

Migration stream	*Persons*	*Males*	*Females*
(*a*) Rural to rural	100	62	38
(*b*) Rural to urban	100	62	38
(*c*) Urban to urban	100	69	31
(*d*) Urban to rural	100	63	37

(v) *Industrial composition of the immigrants.*—About 58 per cent of the immigrants were workers and the 42 per cent non-workers. The industrial composition of the workers in the three broad industrial classification was as follows:

Imdustrial class	*Percentage of immigrant workers from*		
	Rural	*Urban*	*Total*
Cultivation	5	5	5
Agricultural labour	5	3	4
Other services	90	92	91
Total	100	100	100

A majority of the immigrant workers came from the neighbouring States of Madras, Mysore and Andhra Pradesh and they figured mainly in the group 'other services'. A further break down of this industrial class would show that nearly 50 per cent of these workers from the States belonged to the class mining, quarrying, plantation etc. As the State is having only nominal activity in mining etc., it could be inferred that these migrants are plantation workers from the neighbouring States. This is further supproted by the finding that 74 per cent of the immigrants moved to the rural areas in the State.

(vi) *Industrial composition of outmigrants.*—While in the general population workers formed only 33 per cent among the outmigrants 60 per cent were reported as workers and 40 per cent as non-workers. Classification of workers according to sex shows that among the male outmigrants 81 per cent were workers, and among the female outmigrants 21 per cent were workers. The industrial composition of the workers was as follows:

Industrial class	*Percentage workers in*	
	General population	*Migrants*
Cultivation	23	3
Agricultural labour	13	2
Other services	64	95
Total	100	100

Outmigrants are highly concentrated in the category 'other services'. It was already noted that 74 per cent of the outmigrants from the State moved to the urban areas. Considering the high level of literacy prevailing in the State it is quite likely that most of the outmigrants had good educational attainments and that they had taken up administrative and technical jobs at the cities and towns in

the States. A detailed break down of the outmigrants according to industrial classification was as follows:

Industrial class		*Percentage of outmigrants*
Cultivation	..	3
Agricultural labour	.	2
Mining, quarrying, plantation	..	9
Household industry	..	3
Other industries	..	20
Construction	..	4
Trade and commerce	..	10
Transport and communication	..	6
Other services	..	43
Total	..	100

7. *Inter-district migration*

7.1 *Volume of inter-district migration.*—During the year 1961 there were 9 revenue districts in the State. According to the census count, 9 lakhs life migrants were enumerated in districts other than their districts of birth.

District-wise figures of these migrants are not available. In order to have a relative assessment of the volume of net migration in the different districts, these figures were estimated by the growth difference method applying the growth rates for 1951 and 1961. The estimate results for the nine districts are given in Table II appended.

According to this estimate the volume of total inter-district migration is of the order of 7.4 lakhs. The two estimates are obviously not comparable as they differ in concepts, methodology and reference period. The exercise was done with a view to knowing the relative volume of net migration among the districts. The figures in Table II appended show that while the five districts of Cannanore, Kozhikode, Kottayam, Quilon and Trivandrum had net gains of population through inter-district migration, the remaining districts suffered net losses.

7·2 *Rural-urban differential of inter-district migrants.*—The rural-urban differential of the inter-district migrants was as follows:

Migrants	*Total*	*Males*	*Females*
From rural	702182	334823	367359
Urban	198066	10 523	92543
Total	900248	440346	459.02

Seventy eight per cent of the migrants were from the rural areas and the remaining 22 per cent from the urban areas. Among the rural based migrants females exceeded males; while among the urban-based migrants males exceeded females. The overall sex ratio was also the favour of females as they constituted 51 per cent of the total migrants.

7.3. *Migration streams.*—84 per cent of the inter-district migrants moved to the rural areas and the remaining 16 per cent to the urban areas. This shows that the intrastate migrants have a strong selectivity to rural areas. This might be due to the avenues of economic and settlement opportunities made available since 1956 (consequent on the States Reorganisation) in the high ranges and plantation areas in the districts of Kottayam, Kozhikode and Cannanore. The percentage break down of the inter-district migrants according to the rural-urban migration streams was as follows:

Migration	*Percentage of migrants*
(*a*) Rural to rural	70
(*b*) Rural to urban	8
(*c*) Urban to urban	8
(*d*) Urban to rural	14
	100

Sex-composition of the migrants in the above stream, given below, shows that females predominated in the rural to rural stream:

Migration stream	*Persons*	*Males*	*Females*
(*a*) Rural to rural	100	47	53
(*b*) Rural to urban	100	50	50
(*c*) Urban to urban	100	54	46
(*d*) Urban to rural	100	52	48

7.4 *Industrial composition of inter-district migrants.*—45 per cent of the inter-district migrants were workers and the remaining 55 per cent non-workers. The percentage distribution of the workers among the broad industrial groups was as follows:

Migrants from	*Workers*	*Cultivation*	*Agricultural labour*	*Other services*
Rural area	100	25	15	60
Urban area	100	8	4	88
Total	100	23	12	65

Forty per cent of the migrants from the rural area took up agriculture at their destination points. But 'other services' have absorbed larger share of the migrants both from the rural and urban areas. In order to locate more specifically the occupational area of preference of the migrants, a more detailed classification is given below:

Parcentage of inter-district migrants in the various to industrial classes

Industry	*Total*	*Rural*	*Urban*
1. Cultivation ..	23	25	8
2. Agriculture labour ..	12	15	4
3. Mining, quarrying, plantations ..	10	11	6
4. Household industry ..	4	5	3
5. Other industries ..	5	5	6
6. Construction ..	1	1	1
7. Trade and Commerce ..	2	2	2
8. Transport and communication ..	1	1	1
9. Other services ..	42	35	69
Total	100	100	100

This table shows that 51 per cent of the rural migrants are absorbed in agriculture and plantations. Proportion of rural migrants who took up 'other services' was only just half the proportion of the urban migrants in that category.

8. *Conclusion.*—The economic and social significance of migration in an area depends on the volume of migration and the characteristics of the migration streams. In other words, it depends upon the way in which the migration movements to and from the region affect the conditions in the region. Kerala State has a unique position in the country with reference to its several socio-economic problems with a high population growth rate and pressure of population, large scale educated unemployment, low level of industrialisation and a low per capita income. In such a situation the outmigration of some excess population is viewed as an advantage to the region as it helps to bring about a better balance between the employment opportunities and employment seekers. But the analysis of the characteristics of the outmigrants from the State, indicate larger proportion of outmigrants moved from urban areas and that these migrants are supposed to have high educational attainments. The investment made by the State Government for the education and development of skill of these migrant is not any dividend to the State. On the other hand the skills are utilised and benefits derived by the destination States. In the long run, when the State would be able to build up a sound industrial, sector this drain of the educated and skilled human resources may prove to be a loss to the State. In short the State is now suffering a net loss of population due to migration both in quantity and quality. The State will be in a position to attract these persons back to the region, only with the achievement of a substantial reduction in its population growth rate along with a boom in its economic and industrial prosperity.

TABLE I (A)

Life-time and outmigration of Travancore—1901-1951 (both sex)

	1901	1911	1921	1931	1941	1951
1	2	3	4	5	6	7
Inmigrants ..	81036	82226	86654	161622	170577	194106
Outmigrants ..	16172	21307	20873	41010	2186	205952

TABLE I (B)

Life-time inmigration to Travancore-Cochin State 1901-1951 (both sex)

State/Year	1901	1911	1921	1931	1941	1951
1	2	3	4	5	6	7
Tamilnadu .	73704	80003	84665	158965	167932	188516
Karnataka ..	314	391	393	517	463	1349
Maharashtra and Gujarat..	4968	1276	1038	1539	1208	1918
Others ..	2050	551	558	601	974	2323
Total ..	81036	82226	86654	161622	170577	194106

TABLE I (C)

Outmigration from Travancore-Cochin State—1901-1951 (both sexes)

State/Year	1901	1911	1921	1931	1941	1951
1	2	3	4	5	6	7
Tamilnadu ..	16044	20889	18417	31576	..	170124
Karnataka ..	126	423	771	1050	2186	11791
Maharashtra and Gujarat..	..	526	627	3691	..	15272
Others ..	2	269	1058	4713	..	9765
Total ..	16172	21307	20873	41010	2186	205952

K. C. Zacatria—Population growth in Kerala—Its Implications—

P. 99—Demographic Research Centre, Bureau of Economics and Statistics, Trivandrum—1966.

TABLE I

Life-time inmigrants in Kerala by States of origin and outmigrants from Kerala by States of destination

Serial number	State of origin and destination	Life-time inmigrants (I)			Life-time outmigrants (O)			Difference in total
		Total	Males	Females	Total	Males	Females	(I—O)
1	2	3	4	5	6	7	8	9
1	Andhra Pradesh ..	1962	1105	857	24989	17513	7385	— 22936
2	Assam ..	115	69	46	2182	1807	375	— 2067
3	Bihar ..	398	224	174	7135	4170	2965	— 6737
4	Gujarat ..	3143	2367	776	7849	5812	2037	— 4706
5	Jammu and Kashmir ..	113	78	35	194	145	49	— 81
6	Madhya Pradesh ..	646	337	309	18248	14386	3862	— 17602
7	Madras ..	192287	101031	91256	276518	162331	114187	— 84231
8	Maharashtra ..	5692	3383	2309	98094	71325	26769	— 92402
9	Mysore ..	21386	9654	11732	137220	90779	46441	—115834
10	Orissa ..	160	105	55	4262	3641	621	— 4102
11	Punjab ..	1152	847	305	5648	4618	1030	— 4496
12	Rajasthan ..	225	150	75	1997	1348	649	— 1772
13	Uttar Pradesh ..	1026	726	300	5673	4328	1345	— 4647
14	West Bengal ..	884	580	304	12419	9063	3356	— 11535
15	Union Territories ..	4227	2221	2006	22107	13877	8230	— 17880
	Total ..	233416	122877	110539	624444	405143	219301	—391028

Source.—Census of India (1961).
Vol. I—Part II (c)—Migration Tables.

SECTION V

Others

(*a*) Worker Participation

(*b*) Methodological

THE CHARACTERISTICS OF THE POPULATION OF KERALA AND THE IMPACT OF THE FAMILY PLANNING PROGRAMME

CONTENTS

THE CHARACTERISTICS OF THE POPULATION OF KERALA AND THE IMPACT OF THE FAMILY PLANNING PROGRAMME

1. *Introduction*—Kerala has been a land of human settlement from very early times. Blessed with an equable climate and fertile soil, the state has attracted settlers from other places, in the past. There has been a reversal of this trend occasionally but more so during the last four decades. This paper attempts, to trace the growth of population in the State, to analyse the changes in the distribution and characteristics of the population and to assess the impact of the Family Planning Programme, as far as data permit.

2. *Population growth.*—(*a*) *Area and population*—Situated at the southwest corner of India, the State has an area of 38864 sq. km. In the following table the area, population and density of the different States in India are given for purposes of comparison

TABLE 2·1

Area and population of the States of India as per 1971 census

Serial number	Name of the State	Area in Sq. K.M.	Rank in area	Population (in millions)	Rank in population	Density of population (No. per Sq. K.M.)	Rank in density
1	2	3	4	5	6	7	8
1	Andhrapradesh ..	276814	5	43·50	5	157	9
2	Assam ..	99610	12	14·96	13	150	11
3	Bihar ..	173876	9	56·35	2	324	3
4	Gujarat ..	195984	7	26·70	9	136	14
5	Hariyana ..	44222	16	10·04	15	227	7
6	Himachal Pradesh ..	55673	14	3·46	17	62	17
7	Jammu and Kashmir..	222236	6	4·62	16	N.A.	..
8	Kerala ..	38864	17	21·35	12	549	1
9	Madhya Pradesh ..	442841	1	41·65	6	94	15
10	Maharashtra ..	307762	3	50·41	3	164	8
11	Manipur ..	22356	19	1·07	19	48	18
12	Meghalaya	22489	18	1·01	20	45	19
13	Mysore ..	191773	8	29·30	8	153	10
14	Nagaland ..	16527	20	0.52	21	31	20
15	Orissa ..	155782	10	21·95	11	141	13
16	Punjab ..	50362	15	13·55	14	269	6
17	Rajasthan ..	342214	2	25·77	10	75	16
18	Tamil Nadu ..	130069	11	41·20	7	317	4
19	Tripura ..	10477	21	1·56	18	149	12
20	Uttar Pradesh ..	294413	4	88·34	1	300	5
21	West Bengal ..	87853	13	44·31	4	504	2
	India ..	..	..	547·95	..	178	..

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It is evident from the table that though Kerala is 12th in rank among the States in the matter of population size, she ranks 1st in density. Hence, the pressure of population is greatest in Kerala. Though the State forms only 1·27 per cent of the Indian Union in area, the population in the State 4·8 per cent of India's population.

(*b*) *Growth in population size and density.*—The pace of population growth in the early periods was extremely slow from about 30 lakhs during the beginning of the 17th century to 45 lakhs by 1850, but since the turn of the 20th century, the population of the State has been growing steadily. The sustained growth within a finite area has resulted in ever increasing density. These may be seen from the following table:

TABLE 2·2

Growth of Population in Kerala

Year	*Population in lakhs*	*Density per sq. km.*
1901	68 96	165
1911	71·48	184
1921	78·02	201
1931	95·07	245
1941	110·32	284
1951	135·49	349
1961	169·04	435
1971	213·47	549

The staggering difference in the absolute growth of numbers during the earlier decades of this century as compared to the latter decades may be seen from the above table. During the thirty year period 1901–1931, the addition to the population was 31·01 lakhs where as in the next thirty year period the corresponding figure was 73·9 lakhs. In the last one decade (1961–71) alone, 44·5 lakhs of persons have been added to the population.

(*c*) *Growth rates.*—Apart from the absolute growth in numbers, the decennial percentage variation and the geometric rate of growth, will reveal the pattern of growth of the population. These relevant figures for Kerala, are given below, along with those relating to India as a whole for purpose of comparison.

TABLE 2·3

Rates of growth of Population of Kerala and India 1901 to 1971

Decade	Kerala: Decennial variation Percentage	Kerala: Annual Geometric rate of growth Percentage	India: Decennial variation Percentage	India: Annual geometric rate of growth Percentage
1901–11	+11·75	1·9	+ 5·73	0·66
1911–21	+ 9·16	0·90	— 0·80	—0·03
1921–31	+21·85	1·98	+11·00	11·55
1931–41	+16·04	1·50	+14·23	1·34
1941–51	+22·28	2·08	+13·31	1·26
1951–61	+24·76	2·24	+21·64	..
1961–71	+26·29	2·26	+24·80	2·22

It may be seen from the above table that except for two breaks during the decades 1911–21 and 1931–41, the populations have followed an increasing trend since 1901.

On a comparison of the decennial growth rates among the states it is seen that 12 States have higher rates than Kerala—with the North Eastern States recording rates ranging from 30 to 40 per cent. But the rates of growth in Kerala have always been higher than that of the Indian Union—So much so that during the seventy year period from 1901–1971, while India's population increased only by 130 per cent. Kerala's population increased by 233·6 per cent. The disproportionate contribution by the State towards addition to the population of India during the 20th century is evident.

There is variation among the districts in the matter of growth rates. The northern districts show a much higher rate than the southern districts especially during 1961–71. The rates of growth of the various districts are given in the following table:

TABLE 2·4

Growth rates of Population in the Districts 1961–71

Name of District	Decennial variation Percentage	Geometric growth rate Percentage
Cannanore ..	32·85	2·9
Kozhikode ..	32·60	2·8
Malappuram ..	33·80	2·9
Palghat ..	23·06	2·1
Trichur ..	26·09	2·3
Ernakulam ..	27·69	2·4
Kottayam ..	20·78	1·8
Alleppey ..	17·73	1·6
Quilon ..	23·93	2·2
Trivandrum ..	26·03	2·3

How this growing population is distributed between rural and urban areas and among the various administrative and natural divisions of the State, may be seen in the following section:

3. *Distribution of population*—(*a*) *Rural—Urban distribution.*—The rural-urban distribution of the population of a State/Country and the changes therein over time are important indicators of the shifts in population resulting from socio-economic changes. Though the predominance of rural population continues here the relative changes are noteworthy.

TABLE 3·1

Rural and Urban Population in Kerala (1901–71)

Year	*Rural population (in lakhs)*	*Percentage*	*Urban population (in lakhs)*	*Percentage*
(1)	(2)	(3)	(4)	(5)
1901	59·42	92·9	4·54	7·1
1911	66·23	92·7	6·25	7·3
1921	71·56	91·7	6·46	8·3
1931	86·40	90·9	8·67	9·1
1941	99·03	89·8	11·28	10·2
1951	119·58	88·3	15·91	11·7
1961	143·50	84·9	25·54	15·1
1971	178·81	83·72	34·66	16·28

(*b*) *Variation in density among the districts.*—Besides the rural-urban distribution, the density of population is indicative of the extent of the pressure of population on land. But the overall density, high as it is for Kerala, conceals the uneven distribution of population in the various districts, taluks and villages. The density in the various districts according to 1971 census, (along with the corresponding

figures for 1961, for purposes of comparison) is given in the following table:

TABLE 3·2

Density of Population per sq. km. in the districts of Kerala

District		*Population in lakhs 1971*	*Density per sq. km. 1971*	*Density per sq. km. 1961*
(1)		(2)	(3)	(4)
Cannanore	..	23·65	415	312
Kozhikode	..	21·06	565	426
Malappuram	..	18·56	570	381
Palghat	..	16·85	383	311
Trichur	..	21·29	702	557
Ernakulam	..	23·83	729	571
Kottayam	..	20·85	326	270
Alleppey	..	21·26	1128	958
Quilon	..	24·13	522	421
Trivandrum	..	21·99	1003	796
Kerala State	..	213·47	549	435

It may be seen that the density of Alleppey District is more than double that of the State. Five districts have density, more than that of the State.

(c) *Distribution among natural regions and taluks.*—There is striking difference, in the matter of concentration of population among the three natural divisions of the State. The highland consisting of 48 per cent of the State's area accomodates only 15 per cent of the population, while the lowland which accounts for only 10.2 per cent of the area, accommodates 25.8 per cent of the population. The midland consisting of 41 8 per cent of the area is the habitate of 50 per cent population. The variation in density is also considerable—with just 172 persons per sq. km. in the highland, 778 in the midland and 1385 in the lowland.

There is considerable variation in density among the taluks which is evident from the following table:

TABLE 3·3

Distribution of taluks according to density

Density range	*No. of taluks*	*Percentage to total number*	*Percentage of population*
1. Less than 250 per sq. km.	8	14·29	8·32
2. 251 to 500 ,,	11	19·64	20·12
3. 501 to 750 ,,	11	19·64	19·71
4. 751 to 1000 ,,	9	16·07	21·37
5. 1001 to 1250 ,,	7	12·50	11·13
6. 1251 to 1500 ,,	3	5·36	4·96
7. Above 1500 ,,	7	12·50	14·45
State	56	100·00	100·00

The distribution of taluks according to population size is given below:

TABLE 3·4

Distribution of taluks according to population size

Population Range	Taluks 1971			Taluks 1961		
	Number	Percentage to total	Percentage of population to total	Number	Percentage to total	Percentage of population to total
Below 1 lakh ..	..	..	..	2	4·0	1·1
Above 1 lakh and below 2 lakhs ..	7	12·5	5·0	8	14·0	7·7
Above 2 lakhs and below 3 lakhs ..	12	21·4	15·0	16	30·0	23·8
Above 3 lakhs and below 4 lakhs ..	16	28·6	25·8	19	34·0	37·1
Above 4 lakhs and below 5 lakhs ..	10	17·9	20·9	5	9·0	13·5
Above 5 lakhs and below 6 lakhs ..	5	8·9	12·9	4	7·0	12·9
Above 6 lakhs ..	6	10·7	20·4	1	2·0	3·9
Total ..	56	100·0	100·0	55	100·0	100·0

The percentage of taluks with population above 6 lakhs and in the range 4 to 5 lakhs has increased considerably as compared to 1961. The maximum number of taluks are having population between 3 to 4 lakhs as was the case in 1961.

(*d*) *Distribution of population in villages.*—Coming down to the village whose settlement pattern is quite different from the rest of India, it is seen that the villages are larger in population size. Their distribution according to population size shows that the large majority of them are those with population of 10000 and above, as may be seen from the following table.

TABLE 3·5

Population	*No. of inhabited villages*	*Percentage*	*Corresponding percentage in 1961*
(1)	(2)	(3)	(4)
Less than 200	2	0·16	0·2
200 — 499	2	0·16	0·2
500 — 999	2	0·16	1·1
1000 — 1999	16	1·26	3·7
2000 — 4999	122	9·62	25·2
5000 — 9999	316	24·92	37·2
10000 and above	808	63·72	32·4
Total	1268*	100·00	100·00

It is noteworthy that, of the 178·81 lakhs population who live in 1268 villages, 83·5 per cent live in villages of population ten thousand and above. The villages are further sub divided into Karas/Muris/Desoms of which there are 5972.

(*e*) *Distribution in towns.*—With regard to the towns in Kerala, there are 88 of them as per 1971 and their distribution according to population size is as follows:

* Does not include 58 Revenue Villages which lie wholly within the towns.

TABLE 3.6

Distribution of towns according to population size

Population range	*No. of towns*	*Percentage to total number*	*Population in lakhs*	*Percentage to urban population*
(1)	(2)	(3)	(4)	(5)
Below 5000	2	2·3	0·09	0·3
5000— 9999	9	10·2	0·74	2·1
10000—19999	25	28·4	3·51	10·1
20000—49999	40	45·4	11·01	31·8
50000—99999	7	8·0	4·64	13·4
1 lakh and above	5	5·7	14·67	42·3
Total	88	100·0	34·66	100·0

Of the 88 towns, 32 are Municipal towns (including 3 Corporations and 29 Municipalities and the rest are non-municipal towns).

42·3 per cent of the urban population live in towns with population 1 lakh and above as against 27 per cent in 1961. If we consider towns with population above 20000, it is found that 37·5 per cent of the urban population are living in such towns as against 75 per cent in 1961.

4. *Composition of population.*—Quite unlike India as a whole and most other States of the Indian Union, the number of females in Kerala exceed the number of males. The sex ratio, of the State from 1901, is given below:

TABLE 4·1

Sex ratio of Kerala

Year	*No. of females per 1000 males*
1901	1004
1911	1008
1921	1011
1931	1022
1941	1027
1951	1028
1961	1022
1971	1016

There is variation among the districts in the matter sex ratio as may be seen from the following table:

TABLE 4·2

Sex ratio in the districts of Kerala, 1971

Name of District		*Number of females per 1000 males*
Cannanore	..	1017
Kozhikode	..	991
Malappuram	..	1041
Palghat	..	1056
Trichur	..	1081
Ernakulam	..	983
Kottayam	..	976
Alleppey	..	1028
Quilon	..	1001
Trivandrum	..	1008

(*b*) *Age.*—As in the case of India and other developing countries which experience fast decline in death rates and have more or less unchanging birth rates, the age pyramid shows a wide base. According to the 1961 census age distribution, 41 per cent of the population are in the age group 0–14 years, 55 7 per cent in the age group of 15–64 years and 3·38 per cent in the age group 65 years and above. The age data of 1971 census have not become available and hence are not presented here.

(*c*) *Marital Status.*—Similarly, the data on marital status distribution, which has the most significant effect on fertility, are not yet available from 1971 census. The 1961 census results on this item had shown important differences, compared to India and other States. The average age at marriage of females in Kerala during 1951–60 stood at 19·85 years, the highest among the States—while it was 16 years for India. As per 1961 census, 35·2 per cent males and 36·5 per cent females were married. In the young age groups the proportion of unmarried in Kerala was much higher. For example, among the females in the age group 15–24 years 43 per cent were unmarried in Kerala while the corresponding percentage for India was only 10.

(*d*) *Religion.*—As per the 1961 census 59·4 per cent of the population were Hindus 21·1 per cent Christians and 19·5 per cent Muslims. The changes in the distribution by religion are revealed from the following table:

TABLE 4·3

Variation in the percentage distribution of Population based on Religion

Year	Percentage of				Total
	Hindus	Christians	Muslims	Others	
1	2	3	4	5	6
1901	68·36	13·82	17·28	0·54	100·00
1911	66·63	15·41	17·68	0·28	100·00
1921	64·75	17·64	17·43	0·18	100·00
1931	63·34	19·52	17·08	0·06	100.00
1941	60·73	20·52	17·08	1·67	100·00
1951	61·59	20·85	17·53	0·03	100·00
1961	60·83	21·22	17·91	0·04	100·00
1971	59·41	21·05	19·50	0·04	100·00

The trend shows that the proportion of Hindus among the total population has been gradually declining while those of Christians and Muslims have been rising.

(*e*) *Literacy.*—According to 1971 census, the literacy rate of the population of Kerala is 60 per cent as against 29·5 per cent for all India. It is noteworthy that 54 per cent of the females in Kerala are literate as against 18·7 per cent in India as a whole. The progress attained in this respect may be seen from the following table:

TABLE 4·4

Census Year	*Percentage of literate population to total population*	*Percentage of literate males to total male population*	*Percentage of literate females to total female population*
(1)	(2)	(3)	(4)
1941*	48·1	58·1	36·0
1951**	53·8	64·4	43·4
1961	56·85	54·97	38·90
1971	60·16	66·54	53·90

* Travancore State.

** Travancore-Cochin State.

The district-wise variation in literacy and progress made during the decade 1961–71 may be seen from the table below:

TABLE 4·5

Name of district		*Percentage of literacy*	
		1961	*1971*
Cannanore	..	41·29	54·84
Kozhikode	..	44·88	57·23
Malappuram	..	34·29	47·90
Palghat	..	33·69	46·69
Trichur	..	48·16	61·61
Ernakulam	..	50·58	65·29
Kottayam	..	56·56	67·72
Alleppey	..	56·90	70·44
Quilon	..	50·49	64·97
Trivandrum	..	45·30	62·54

To facilitate comparison, the figures on percentage of literates in the other States is shown below:

TABLE 4·6

Percentage of Literates in the States according to 1971 Census

Name of State		*Percentage literates*		
		Total population	*Males*	*Females*
1. Andhra Pradesh	..	24·57	33·18	15·75
2. Assam	..	28·72	37·19	19·27
3. Bihar	..	19·94	30·64	8·72
4. Gujarat	..	35·79	46·11	24·75
5. Hariyana	..	26·89	37·29	14·89
6. Himachal Pradesh	..	31·96	43·19	20·23
7. Jammu and Kashmir	..	18·58	26·75	9·28
8. Kerala	..	60·42	66·62	54·31
9. Madhya Pradesh	..	22·14	32·70	10·92
10. Maharashtra	..	39·18	51·04	26·43
11. Manipur	..	32·91	46·04	19·53
12. Mekhalaya	..	29·49	34·12	24·56
13. Mysore	..	31·52	41·62	20·97
14. Nagaland	..	27·40	35·02	18·65
15. Orissa	..	26·18	38·29	13·92
16. Punjab	..	33·67	40·38	25·90
17. Rajasthan	..	19·07	28·74	8·46
18. Tamil Nadu	..	39·46	51·78	26·86
19. Tripura	..	30·98	40·20	21·19
20. Uttar Pradesh	..	21·77	31·50	10·70
21. West Bengal	..	33·20	42·81	22·42
INDIA	..	29·46	39·45	18·72

(*f*) *Occupation.*—The changes over time in the occupational composition of a population throw considerable light on the shifts taking place among the different sectors of the economy. Due to changes brought about in 1971, in the definition of worker and the grouping of industrial categories, there is no strict comparability between the data for 1961 and 1971. Ignoring the slight changes brought about in 1971, the salient changes during the two decades 1951–61 and 1961–71 are as follows:—

During the decade 1951-61 there is a decrease in the percentage of agricultural labourers but there is a reversal of this trend during the decade 1961–71. The slight decrease in the percentage of cultivators during the earlier decade is continued with increased acceleration during 1961–71. The significant increase noticed during 1961 (8·4 per cent) in the percentage under "other services", has come down to 3·95 per cent in 1971. In 1971, there is a decade in the percentage of population engaged in manufacturing (including household industry).

The percentage distribution of population by industrial category of workers and non-workers for the census years 1951, 1961 and 1971 are presented in the following table:

TABLE 4·7

Percentage distribution of population among industrial categories and workers—Kerala

Percentage distribution of workers	*1951*	*1961*	*1971*
1. Cultivator ..	7·5	7·9	5·2
2. Agricultural labourers ..	8·2	5·8	8·9
3. Livestock, Forestry, Fishing, Hunting and Plantations, Orchards and allied activities ..	2·4	2·9	2·0
4. Mining and quarrying ..	..	..	..
5. Manufacturing, processing, servicing and repairs:			
(*a*) Household industry ..	..	2.9	1·3
(*b*) Other than household industry ..	6·1	3·1	3·3
6. Construction ..	0·5	0·4	0·5
7. Trade and Commerce ..	2·1	1·9	2·7
8. Transport, Storage and communications ..	1·0	1·9	1·1
9. Other services ..	4·5	8·4	4·0
10. Non-workers ..	67·7	66·7	70·9
Total ..	100·0	100·0	100·0
Total No. of workers (in lakhs) ..	43·60	56·30	62·16

5. *Household size.*—According to 1971 census, the average number of persons per household in the State is 6·03: The corresponding figures for rural and urban areas are 5·95 and 6·39 respectively. If instead of household, the occupied houses are considered, the average number per occupied house for the State as a whole is 6·24 while it is 6·13 for rural and 6·91 for urban areas.

6. *Fertility and Mortality.*—Since the net effect of migration on population size of the State is not significant—Net loss being only 2·3 per cent of the 1961 population of the State—Changes in the size and characteristics of the population are mainly the result of the interplay of the other two important factors of population change namely fertility and mortality. The available data on these two important factors shall be examined in the following section:

(*a*) *Birth and Death rates.*—As the Civil registration of births and deaths is incomplete to a large extent, a better picture of the level and changes in fertility and mortality could be obtained from the measures derived from inter-censal estimates and the scheme of Sample Registration.

The following table gives the census estimates of birth and death rates and sample registration estimates.

TABLE 6·1

Birth and Death rates of Kerala

Census estimates			Sample Registration (rural estimation)		
Decade	Birth rate	Death rate	Year	Birth rate	Death rate
1	2	3	4	5	6
1931–40	40·0	25·0	1965–66	37·9	10·1
1941–50	39·8	20·0	1966–67	37·2	10·4
1951–60	38·9	16·1	1967–68	35·4	10·1
1961–70	NA	NA	1969–70	33·5	9·2
			1970–71	31·9	9·2

N.A.—Not available

The relatively faster decline in death rate, which has reached a low level is evident from the above figures. It may be mentioned that the death rate of Kerala is the lowest among the Indian States.

(*b*) *Other measures of fertility.*—Since the birth rate does not indicate the real fertility difference among the different age groups nor the extent of replacement, other measures of fertility have to be worked out. The following table shows the age specific fertility rates.

TABLE 6·2

Age specific fertility rates—Kerala

Period	Source	Fertility rates of age groups						
		15–19	20–24	25–29	30–34	35–39	40–44	45–49
1	2	3	4	5	6	7	8	9
1959–60	NSS 14th Round	83·0 (305)	227·00 (331)	278·00 (347)	193·00 (244)	154·00 (199)	45·00 (64)	..
1965–67	Sample Registration Rural	67·2 (236)	226·20 (313)	240·00 (285)	199·10 (237)	151·40 (186)	57·40 (78)	..
1970	do.	56·04	191·36	225·14	166·21	128·73	43·23	8·22
1971	do.	48·40	210·78	223·27	173·20	116·69	42·96	6·85

N.B.—The figures in brackets indicate the age specific marital fertility rate for the respective age groups. The figures given above show a noticeable reduction in fertility in the various age groups over the years. However, the pattern remains the same with the highest fertility in the age group 25–29, followed by the age group 20–24, while lowest fertility is found in the agegroup 40–44. There is a marked reduction in fertility in the agegroup 15–19 which is perhaps, partly result of a lower marriage rate.

The gross reproduction rate (GRR) which indicates the number of female children that a mother would give birth to by the time she reaches the end of her reproductive age without facing mortality, is 2·49 for Kerala during 1951–60 as against 2·7 for India. The gross reproduction rates for 1968 and 1969 based on Sample Registration (Rural) are 2·2 and 2·1* respectively. This rate has come down to 2 during 1971. The general fertility rate (No. of children born to women of age group 15–44 years) also shows a decline from 182 during 1951–60 to 140 in 1968 and to 129 in 1969 (the latter two rates are based on Sample Registration).

Thus, all the available estimates of the various measures of fertility show that a reduction of fertility has set in during the decade 1961–71.

* Measures of fertility and mortality in India -SRS Analytical series, No.2, 1972, Office of the Registrar General of India.

The net reproduction rate which shows the extent of replacement of female in the present generation by the number of females in the subsequent generation, after accounting for mortality also, remains between 1·6 and 1·7 during 1951 to 1971. This inspite of a reduction in GRR is evidently, the result of improvement in mortality also during the period.

(c) *Other measures of mortality.*—As mortality affects each age group, differently the age specific mortality rates give a better picture of the effect of mortality on a population. The available data on age specific death rates estimated from Sample Registration are given below:

TABLE 6·3

Age specific Death Rates (S. R. Estimates—Rural)

Age group (1)		*1970* (2)	*1971* (3)
Below 1	..	62 2	70·4
1 – 4	..	10·9	13·1
5 – 9	..	3·1	2·4
10 – 14	..	0·8	1 1
15 – 19	..	0·8	1·0
20 – 24	..	2·4	2·1
25 – 29	..	3·6	[illegible]·8
30 – 34	..	4·7	3·8
35 – 39	..	6·3	4·0
40 – 44	..	4·5	5·[illegible]
45 – 49	..	7·0	7·2
50 – 54	..	11·4	8·5
55 – 59	..	17·3	15·5
60 – 64	..	24·9	23·1
65 – 69	..	39·0	43·6
70+	..	124·6	102·1

The above data conform to the usual U pattern of high death rate before the age one, falling steeply upto age 10–14 and then slowly rising, until very high rates are reached for the advancing years of 65 and above.

The net differential impact of mortality on various age groups is reflected on the composite index namely expectation of life at birth and at each age. This is provided by the life table. The values of expectation of life at birth for the available periods, with source is given in the following table.

TABLE 6·4

Expectation of life at birth

Year	Source of data	Expectation of life at birth			
		Males		Females	
		Kerala	India	Kerala	India
1	2	3	4	5	6
1931–40	Census	33·2	32·1	35·1	31·4
1941–50	,,	39·9	32·5	42·3	31·7
1951–60	,,	46·2	41·9	50·0	40·6
1957–58	NSS (Provl.) for rural areas	47·9	45·2	47·2	46·6
1969	SR (Rural)	NA	*48·1	NA	*45·0
1971	,,	**60·6	..	**61·2	..

Figures in the table above show that the expectation of life at birth has been rising both in India and Kerala during the past decades.

7. *Efforts at controlling the population.*—In view of the accelerated growth of population noted above, and its effect on the various characterisation of the population all of which have not been beneficial to the State, efforts have been made to control the population through the Family Planning Programme. In this section, an attempt shall be made to present in brief, the set up of the family planning programme progress attained in the implementation and demographic impact of achievements so far made.

(a) *Set up of the Family Planning Programme.*—Though the programme was started as early as 1957 in Kerala, very little head way was made till 1964. Since the latter year, a well-knit organisational infrastructure has been built up throughout the State, with 158 Rural Family Planning Centres (at least one in each block covering 60,000 to 1 lakh people) 21 urban centres each covering 50 000 population and 1603 sub-centres, each covering 10,000 population. Through these centres, necessary services are administered to the couples with the assistance of a large number of paramedical staff (considering of about 1,760 A.N.Ms., 932 L. R. Vs. and 382 F.P.H.As.). To cater to the extension aspect of the programme 18 District Extension Educators, 10 District Mass Education Officers are working at the district level as also 180 Block Extension Educators at the Urban Centre/Block level. There is one District Family Planning Medical Officer each in a District who is in charge of the implementation of the programme at the District level.

* Measures of Fertility and Mortality in India—SRS—Analytical series No. 2, 1972, Office of the Registrar General.

** Based on S.R. Data.

Thus, at present more than 4,000 personnel are engaged in the programme. The programme offers a variety of methods like male and female sterilisation, I.U.C.D. insertions and different kinds of conventional contraceptives, like Nirodh, Diaphragm, Jelly/Cream tubes and foam tablets.

(b) *Progress of the Family Planning Programme.*—Till the end of 1972, 4·73 lakhs of vasectomies and 1·48 tubectomies have been done in the State, making a total of 6·21 lakhs sterilisations since 1957. During the first seven years of the programme (1957–63) only 42,059 sterilisations were performed, which hardly accounts for 7 per cent of the total performance till 1972. The performance rate of sterilisation for the years 1971 and 1972, works out to 4·73 and 4·33 per 100 population respectively.

The I.U.C.D. component of the programme which was started in 1965 has not been as popular as it was in the beginning. The total member of I.U.C.Ds. inserted till the end of 1972 comes to 2·52 lakhs. During the last two years namely 1971 and 1972, the rate of I.U.C.D. insertions per 1,000 female population has been 1·81 and 1·77 respectively.

There has been significant increase in the issue of conventional contraceptive (CC) since 1969. The estimated number of CC users has ranged between 10,000 to 17,000 during the years 1969–70 to 1972–73. The table below gives the progress of the programme since inception.

TABLE 7·1

Progress of Family Planning Programme in Kerala

Year	*Vasectomies*	*Tubectomies*	*Total*	*I.U.C.D. insertions*
1957	521	158	679	..
1958	1633	1507	3140	..
1959	4132	2236	6368	..
1960	3079	1953	5032	..
1961	3578	2939	6517	..
1962	4182	2916	7098	..
1963	10395	2830	13225	..
1964	17938	3966	21904	..
1965	36102	6532	42634	23062
1966	33251	6147	39398	43517
1967	49489	10504	59993	36887
1968	64081	14066	78147	39742
1969	42578	17982	60560	36816
1970	48847	10592	69439	32359
1971	76141	24191	100383	19521
1972	*77000	*29052	*106052	*19546
Total	472957	147572	620519	251650

* Provisional

Issue of Conventional Contraceptives

Year	Condom (Nirodh)	Diaphragm	Jelly/cream tubes	Foam tablets	Estimated No. of C.C. Users (No. of couple years of use)
1	2	3	4	5	6
1966-67	221760	..	14506	89250	7209
1967-68	1291536	..	12212	164000	23783
1968-69	1001528	154	11450	818723	19416
1969-70	1160106	103	5140	226970	22564
1970-71	1638686	51	2450	76730	25728
1971-72	2294847	75	760	20750	32541
1972-73*	1445502	48	6113	7820	21169
Total	9053965	431	52991	1404283	..

(c) *Demographic impact of the programme.*—(i) *Couples protected and unprotected.*—Since the persons sterilised over the years are subject to mortality, the number of couples protected due to sterilisation will not amount to the total of sterilisations done during the previous years. Taking into consideration the expectation of life and the age distribution of sterilised persons in Kerala, an average annual attrition rate of 2·3 per cent has been arrived at. It is seen that at the end of 1972, 5·64 lakhs of couples are currently protected as a result of sterilisation.

2.2. *I.U.C.D. acceptors.*—The programme of I.U.C.D. was started in the State in 1965 as in other parts of India. The age-distribution of the females who accepted I.U.C.D. from 1966-67 to 1969-70 has been considered and the average over the years has been worked out. This distribution is given below:

Age group in years	*Percentage of persons*
15–19	1·83
20–24	19·10
25–29	32·26
30–34	25·98
35–39	17·08
40–44	3·75
Total	100·00

3. *Survival ratios.*—The life tables calculated from census data for Kerala State from the 1951 and 1961 censuses show 46·17 years as the

* The estimation is done by assuming that a couple uses 72 nirodh, 2 diaphragm, 7 jelly/cream tubes and 72 foam tablets.

expectation of life at birth for males and 50·00 year as that for females. For the purposes of calculation of survivors the West Model life tables* with the following expectations of life at birth have been considered. Expectation of life at birth for the:

	1st five years	*2nd five years*	*3rd five years*	*4th five years*
Male	47·1	49·5	51·8	54·1
Female	50·0	52·5	55·0	57·5

It may be noted here that though for the 1st five years, the male expectation of life at birth is higher by 1 as compared to that during 1951–60 for the successive five year periods the expectation can be considered as less than the actual. This will only decrease the survivors slightly and in actual practice, the differences will be negligible for the age groups 15–44 years.

As regards the method of I.U.C.D. besides mortality other factors like expulsion, removal etc., also contribute to attrition. Considering the continuation rates assumed by S. P. Jain** and an average annual mortality attrition of 2·2 per cent of the estimated number of couples currently protected by I.U.C.D. at the end of 1972, works out to 73,530.

Thus the number of couples currently protected by sterilisation and I.U.C.D. together, comes to 6·38 lakhs or 19·78 per cent of the couples.

As for the protection of couples by C.Cs. which have no carry-over effect, the percentage protected (assuming 60 per cent of the estimated number of C.C. users as protected) over the years is insignificant, as may be seen from the following table:

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* Coale and Demeny—"Regional Model Life Tables and Stable Population" 1966.

** S. P. Jain—Estimation of population Growth Targets under Family Planning Programme—Journal of Family Welfare September 1969.

TABLE 7.2.

Number and percentage of couples protected method-wise

Year	No. of couples mid-year (lakhs)	Number				Percentage of couples protected by			
		Sterilisation	I.U.C.D.	C.C. users	All methods	Sterilisation	I.U.C.D.	C.C. users	All methods
1	2	3	4	5	6	7	8	9	10
1957	22·81	671	..	..	671	0·03	..	..	0·03
1958	23·31	3757	..	..	3757	0·16	..	..	0·16
1959	23·82	9959	..	..	9959	0·42	..	..	0·42
1960	24·34	14692	..	..	14692	0·60	..	..	0·60
1961	25·01	20777	..	..	20777	0·83	..	..	0·83
1962	25·59	27291	..	..	27291	1·07	..	..	1·07
1963	26·18	39702	..	..	39702	1·52	..	..	1·52
1964	26·78	60391	..	..	60391	2·26	..	..	2·26
1965	27·40	101064	17836	..	118900	3·69	0·65	..	4·34
1966	28·03	137562	46412	667	184641	4·91	1·66	0·02	6·59
1967	28·67	193535	62197	6066	261798	6·75	2·17	0·21	9·13
1968	29·33	266101	76591	5925	348617	9·07	2·61	0·20	11·88
1969	30·00	318511	84850	7184	410545	10·62	2·83	0·24	13·69
1970	30·69	37 517	87894	9650	477061	12·37	2·86	0·31	15·54
1971	31·52	470655	79581	7824	558060	14·93	2·52	0·25	17·70
1972	32·24	564139	73530	6522	644191	17·50	2·28	0·20	19·98

The above table gives the estimated number of couples and the percentage protected each year by each of the methods. The net average annual addition of married females in the age group 15–44 (couples) during the period 1951–61 is estimated as 50,000 and that during 1961–71 as 65,000. Thus, during the first eight years of the programme (1957–64) as against possible net addition of 4·6 lakhs couples, only 60,391 (13 per cent) could be protected thus leaving unprotected 87 per cent of couples accumulated during the period and the estimated original number of 23 lakhs couples. But, after the programme was greated up in 1965 till 1972, the protection extended by the programme methods, namely 5·84 lakhs couples is slightly more than the net addition of 5·2 lakhs during the period.

Thus, the programme during the 16 years since its inception in 1957, has given protection to only 6·44 lakhs couples, as against the net addition of 9·8 lakhs of new couples during the period.

(ii) *Births averted and the impact on birth rate.*—In the absence of reliable data on vital rates both before and after implementation of the programme, an attempt could be made to find out the impact on birth rate only through calculation of births averted. Following the

model presented by S. P. Jain*, but with parameters as they relate to Kerala, births averted over the years by each of the methods have been worked out. Detailed methodology of this calculation is given in another paper** published by this centre. In the same paper, the impact of the births thus averted till 1972, on birth rate and the resulting population during each of the years, as also the impact on birth rate till 1980, assuming the fulfilment of the targets set out in the fifth plan, have been worked out.

The total number of births averted, till the end of 1972, is estimated as 5·42 lakhs due to sterilisation, 1·27 lakhs by I.U.C.D. and 0·10 lakhs by conventional contraceptives thus making a total of 6·79 lakhs. Assuming a rough estimate of the effect of non-programme methods as 12·5 per cent of the programme methods, the total births averted works out to 7·64 lakhs.

As a result of the births averted, the birth rate is estimated to have come down from 39·9 during 1951–60 to 31·8 per 1,000 in 1972. The fact that this estimated rate is slightly higher than the sample registration estimates of 31 and 30 respectively for the years 1971 and 1972 (1972 rate not yet published) may be accounted for by the effect of changes in age at marriage, and marriage rates, whose effect is not taken care of in the estimates of reduction in birth rate by the calculation of births averted.

8. *The future population and birth rate.*—The goal of attaining a birth rate of 32 per 1,000 by the end of the fourth Five Year Plan i.e., by 1973–74 has been attained already in Kerala. At the All India level this is a most unlikely event (According to the estimates by Department of Family Planning, Government of India, birth rate has come down only to 36·5 in 1972–73 from 41·7 in 1951–60).

In view of the sustained higher (than of India) growth rate experienced by the State during the past several decades, the very high density in the State, the seriousness of her employment and food problems and her industrial backwardness, a higher goal of birth rate reduction for the State would only be justified. Besides, it has to be borne in mind that 80 per cent of the couples are left unprotected by the end of 1972 and an average annual number of 77,000 couples are likely to be added every year (till 1981). Hence, redoubled efforts have to be made on the Family Planning front.

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* Ibid.

** A note on the calculation of births averted due to Family Planning Programme in Kerala.

The targets set out for Kerala for the Fifth Five Year Plan period are given below:

TABLE 8.1

Targets set out in the Fifth Five Year Plan for Kerala

Year	*Sterilisation*	*I.U.C.D.*	*C.C. Users*
(1)	(2)	(3)	(4)
1974–75	100000	35000	80000
1975–76	110000	40000	100000
1976–77	125000	45000	120000
1977–78	140000	50000	140000
1978–79	150000	60000	160000
Total for five years	625000	230000	600000

But if a higher goal of birth rate reduction, as warranted for the Kerala situation is envisaged say 20 per thousand by 1984 from 30 in 1974 the above target will have to be inflated by 1/3 for both the 5th and 6th five year plan periods. But the feasibility or realising even the present targets set out in the fifth plan period is doubtful, if the average performance of the past eight years is taken as an indication (This works out to only 70,000 sterilisations and 32,000 I.U.C.D. per annum). Hence a still higher target is not within the realm of practicability, unless the programme is conceived as an important component of social and economic development and assigned top priority. Calculations have shown that if the targets of the Fifth Plan are achieved in full, and assuming the target of the last year of the plan period for the next year also, the birth rate will come down to 24·59 per 1000 by 1980.

Based on the births averted by Family Planning performance till 1972 and on the assumption of realising the above targets during 1974–79 if the death rate of 9·7 continues in later years, the population of Kerala will be 254 lakhs in 1979 mid year and 262 lakhs in 1981 mid year.

A STUDY OF THE PECULIARITIES IN THE WORKER PARTICIPATION RATE IN KERALA

Introduction.—The object of this paper is to study the peculiarities in the worker participation rate in the State and in its districts. The 1961 set up of Districts and States are considered here. The study is based on the information available from the 1961 population census data. The various concepts followed in this paper also conform to those adopted in the 1961 census.

Kerala State possesses certain unique demographic characteristics which distinguish it from other States in India. The State has the highest density among the States. The birth rate in the State is the lowest in India except for Madras. But due to the very low death rate, the growth rate is comparatively high in spite of considerable out-migration. The peculiarities are not confined to the growth pattern. The characteristics of the population of the State are also different from those of other States. Kerala has the highest literacy rate. As per the 1961 census Kerala and Orissa are the only two States in India where females outnumber males. In Orissa, the excess is only 1 per 1000 males. In Kerala there are 1022 females per 1000 males according to the 1961 census figures. In the worker participation rates also considerable differences are noted in the State when compared with the other States.

2. *Concepts and definitions.*—(*i*) *The workers and non-workers.*—The definition for the 1961 census was as follows:—

In the case of seasonal work like cultivation, livestock dairying, household industry, etc., if a person had some regular work of more than one hour a day throughout the working season he was to be regarded as "worker".

In the case of regular employment in any trade, profession, service business or commerce the basic, for work would be satisfied if the person was employed during any of the 15 days preceding the day on which he was enumerated.

A person who was working but absent from his work during the 15 days preceding the day of enumeration due to illness or other causes was treated as a worker.

A person who was offered work but had not actually joined it, was treated as a "non-worker".

A person under training as apprentice with or without stipend or wages was regarded as a "worker".

A public or social service worker who was actively engaged in furthering political activity of his party was also regarded as a "worker".

For persons engaged in two or more kinds of work, the principal work was determined on the basis of time spent on each occupation.

(ii) *Economic classification of the population.*—In the 1961 census the whole population was divided into "workers" and "non-workers" unlike in 1951 census. In the census of 1951, the population was classified as self-supporting, earning dependent and non-earning dependent. It was felt that in the classification followed in the 1951 census based on income, persons who worked in family enterprises without wages in cash or kind but who shared the profits were likely to be omitted. Hence a classification of the population into "workers" and "non-workers" was adopted in the 1961 census.

(iii) *Industrial classification of the "workers".*—The 'workers' were classified under the following nine industrial categories:—

(1) Cultivators.
(2) Agricultural labourers.
(3) In mining, quarrying, livestock, forestry, fishing, hunting and plantations, orchards and allied activities.
(4) In household industry.
(5) In manufacturing other than household industry.
(6) In construction.
(7) In trade and commerce.
(8) In transport, storage and communications.
(9) In other services.

(iv) *Worker participation rate.*—The rate is worked out as the number of workers per 1000 population.

(v) *Age specific participation rate.*—In each age group also the worker population rate is worked out. It is number of workers in an age group, per 1000 persons in that age group.

3. *Participation rates in the different States.*—Table I below gives the worker participation rates for the different States for each sex separately.

TABLE I

Worker participation rates for the various States

State		*Male*	*Female*
(1)		(2)	(3)
India	..	571	280
Andhra Pradesh	..	622	413
Assam	..	541	300

State		*Male*	*Female*
(1)		(2)	(3)
Bihar	..	556	271
Gujarat	..	535	279
Jammu and Kashmir	..	578	256
Kerala	..	472	197
Madhya Pradesh	..	602	440
Madras	..	597	313
Maharashtra	..	571	381
Mysore	..	584	370
Orissa	..	608	266
Punjab	..	529	142
Rajasthan	..	581	359
Uttar Pradesh	..	582	182
West Bengal	..	540	94

The participation rate for males varies between 472 and 622. The participation rate for males is the least in Kerala and the highest in Andhra Pradesh. In 11 out of 15 States the rate varies between 540 and 608. The two other States (excluding Kerala and Andhra Pradesh) which are outside the range are Gujarat (535) and Punjab (529). Excluding Kerala, the range of variation is only 93. The rates are above 600 in the three States of Madhya Pradesh, Orissa and Andhra Pradesh.

The participation rates for females are comparatively very low in all States. The rates vary from 94 in West Bengal to 440 in Madhya Pradesh. In Madhya Pradesh the male participation rate is also comparatively high (602). Kerala which has the lowest rate for males, has a rate of (197) for females which is higher than the rates observed in Uttar Pradesh, West Bengal and Punjab.

4. *Participation rates in different countries of the world*—A comparison of the percentage of the economically active population in various countries with the participation rates in India will be interesting. The concepts used is however slightly different. The U. N. Demographic Year Book, 1963 gives the percentage of economically active population by sex. The economically active population includes the following categories:—

1. Civilian employers, employees, own account workers and unpaid family workers.
2. Armed forces.
3. Employed and unemployed persons including those seeking work for the first time.
4. Persons engaged in part-time economic activities.
5. Domestic servants.

The percentage of economically active population for some of the countries are given in Table II below:—

TABLE II

Percentage of economically active population by sex

Country		*Reference date*	*Percentage of economically active population*	
			Male	*Female*
Canada	..	1-4-1960	51·3	19·7
U.S.A.	..	1-4-1960	53·8	24·6
Israel	..	22-5-1961	50·2	18·3
France	..	7-3-1962	64·0	33·2
Japan	..	1-10-1960	58·5	36·2
Germany	..	6-6-1961	65·9	33·2
Norway	..	1-11-1960	60·6	17·8
Poland	..	6-12-1960	54·7	40·6
Switzerland	..	1-11-1960	65·9	27·4
U.S.S.R.	..	15-1-1959	54·8	41·5
U.A.R.	..	20-9-1960	54·8	4·8

Source:—U.N. Demographic Year Book 1963.

It is to be noted that these percentages include unemployed persons seeking work for the 1st time, which is not included in the worker participation rates mentioned earlier in Table I.

The percentages of economically active males are above 50 in all the countries considered. In the States in India also it is above 50 per cent except in Kerala where the percentage is only 47. In the case of females, the range of variation is wider. It is as low as 4·8 per cent in U.A.R. and more than 40 per cent in Poland and U.S.S.R. Among the States in India also the women participation rates vary widely from 9·4 per cent in West Bengal to 44·0 per cent in Madhya Pradesh.

5. *Participation rates as estimated from the National Sample Survey.*—The National Sample Survey conducted by Government of India collects information on gainfully employed in all its yearly rounds of the survey. The census definition and N.S.S. definition of "workers" differ slightly. The difference is mainly due to the reference period adopted and relating to seasonal workers. The reference period is 15 days in the case of the 1961 census, while it is taken as one week in the N.S.S. In the census a seasonal worker will be treated as worker if he had some regular work of more than one hour a day throughout the working season only. In the N.S.S. on the other hand, work during the reference period of one week is insisted on in the case of seasonal workers also. The results obtained from the 16th round of

the N S S. conducted in 1960-61 are presented below. The participation rate for males compare well with the census results.

		No. of gainfully employed per 1000	
		Male	*Female*
Rural	..	483	143
Urban	..	419	158
Total	..	475	145

6. *Correlation of participation rates with other factors.*—The higher male participation rates are associated with higher participation rates in cultivation and agricultural labour. Correlation coefficients have been worked out between:

(*a*) total participation rates of males and worker participation rate in cultivation for various States.

(*b*) total participation rates of males and worker participation rate in cultivation and agricultural labour.

The figures are given in Table III below:—

TABLE III

Participation rates of males in cultivation and agricultural labour in the various States

States		*Total male workers*	*Male workers in cultivation*	*Male workers in cultivation and agricultural labour*
		(Per 1000 males)		
Andhra Pradesh	..	622	256	391
Assam	..	541	346	371
Bihar	..	556	297	408
Gujarat	..	535	265	329
Jammu and Kashmir	..	578	421	450
Kerala	..	472	108	170
Madhya Pradesh	..	602	358	439
Madras	..	597	250	335
Maharashtra	..	571	232	335
Mysore	..	584	312	385
Orissa	..	608	363	455
Punjab	..	529	274	318
Rajasthan	..	581	398	420
Uttar Pradesh	..	582	370	423
West Bengal	..	540	209	287
	r=		0·60	0·82

The correlation coefficient between total work participation rate and work r participation rate in cultivation rate in cultivation is found to be 0·60. The correlation coefficient between total work participation rate and the pa ticipation rate in cultivation and agricultural labour taken together works out to 0·82. This indicates that the total work participation rate and worker participation rate in agriculture are hig h ly correlated.

In the States where employment opportunities in agriculture are scarce, the total worker participation rate is also low. This is corroborated by the high negative correlation b tween male worker participation rate in agriculture and the density of population i.e., the density for geographical area. In fact, the density of population per net area sown would be a more precise index of measuring employment opportunity in agriculture. Due to non-availability of this data for all the States the density per geographical area is taken to work out the correlation. The correlation coefficient in this case works out to 0·74. In other words the availability of land and participation rate are highly correlated. The high total participation rate is associated with high participation rate in agriculture which in turn is associated with ava lability of opportunities in the agricultural sector.

7. *Participation rates in the Districts of Kerala.*—The variation in the participation rates among the Districts of the State is small. For males the rates vary from 455 in Trichur District to 515 in Palghat District. For females the rates vary from 144 in Kozhikode District to 271 in Palghat District. Table IV below gives the participation rates for the different districts

TABLE IV

Worker participation rates for the Districts in Kerala State

District		*Male*	*Female*
(1)		(2)	(3)
Trivandrum	..	461	160
Quilon	..	458	192
Alleppey	..	456	221
Kottayam	..	484	162
Ernakulam	..	470	193
Trichur	..	455	219
Palghat	..	515	271
Kozhikode	..	471	144
Cannanore	..	481	231

In the case of the various States there is high correlation between total work participation rate and rates in cultivation and agricultural labour. But when the corresponding correlation coefficients are worked out for Kerala using the figures for the various districts, they are very low. The correlation coefficient between total male work participation rate and worker rate in cultivation is 0·01. The correlation coefficient between total male workers and those in cultivation and agricultural labour 0·36. This indicates that in the Districts of Kerala, the total worker participation rate is very little affected by the rates in cultivation and agricultural labour in the State.

The high negative correlation between worker participation rate in agriculture and per capita availability of land noticed in the case of the various States is also not seen in the case of Kerala. When the corresponding correlation coefficient is worked out using the figures for the Districts, there is negative correlation between worker participation rates in cultivation and density per square kilometre, the correlation coefficient being 0·16. Thus the per capita availability of land and worker participation rate in cultivation in Kerala are not so highly correlated as for the other States in the country.

The above two differences for Kerala State namely (*i*) the absence of a high positive correlation between the total worker participation rate and the rate of participation in cultivation and agricultural labour; and (*ii*) the absence of a high negative correlation between the worker participation rate in agriculture and the per capita availability of land can be in explained by the low availability of land and consequent lack of opportunities for employment in the agricultural sector.

8. *Age specific participation rates in Kerala and other States.*—The age specific participation rates are worked out as the number of workers in each age group per 100 persons in the age group. The broad age groups of 0–14 years, 15–34 years 35–59 years and 60 years and above are considered here. Rates are worked out separately for males and females. Table IV gives the rates for the various States.

TABLE IV

Worker participation rate for the different States in India by broad age groups and sex

State	Male					Female				
	0-14	15-34	35-59	60+	All ages	0-14	15-34	35-59	60+	All ages
1	2	3	4	5	6	7	8	9	10	11
All India ..	94	881	967	766	571	66	436	476	224	280
Andhra Pradesh ..	157	921	973	778	622	112	635	603	311	413
Assam ..	78	858	960	749	541	64	558	548	215	309
Bihar .	96	876	973	823	556	59	414	483	231	271
Gujarat	73	869	963	663	535	66	464	464	171	279
Jammu and Kashmir	96	883	953	738	578	63	426	397	178	256
Kerala	22	765	944	676	472	19	326	373	148	197
Madhya Pradesh	118	931	977	805	602	108	696	725	360	440
Madras .	93	885	966	734	597	67	457	514	258	313
Maharashtra ..	86	875	969	728	571	83	409	637	263	381
Mysore .	119	901	970	764	584	82	504	559	247	320
Orissa .	123	912	966	788	608	66	403	434	194	266
Punjab ..	79	850	955	709	529	38	234	246	105	142
Rajasthan .	176	910	965	719	581	121	572	560	234	359
Uttar Pradesh .	86	894	979	855	582	41	261	323	198	181
West Bengal ..	50	824	940	679	540	12	153	183	79	94

The worker participation is the lowest in the 0–14 years group both for males and females in all the States. Among the States the males participation rate in the 0–14 age group is the lowest in Kerala. Among the females the lowest participation rate in the 0–14 age group is reported in West Bengal. The lower participation rate of 0–14 years is associated with high rate of school enrolment.

The percentage of full-time students among non-working population of 0–14 age group, in Kerala is considerably higher than in India, in respect of both males and females as may be seen from the data given below:

Percentage of full-time students among non-working population

Age group	*Males*		*Females*	
	Kerala	*India*	*Kerala*	*India*
0–14	44·0	28·2	38·2	13·4

In the next higher age group of 15–34 also the enrolment of students in colleges is higher in Kerala than India. According the

figures available for the year 1962–63 the number of students in colleges per lakh of population is 3 4 in Kerala as against 278 in India. Thus in both the age groups 0–14 and 15–34 the difference in the worker participation rate is mostly accounted for by the school and college enrolment of the students belonging to the age groups. This is corroborated by the finding in the report on "Planning for Employment in Kerala" published by the Bureau of Economics and Statistics, Kerala, the relevant portion of which is reproduced below:

The overall labour force participation rate in Kerala is only 32·0 per cent. The dependency load on a worker is thus very high. On an average one person works and learns to maintain himself and two others. The labour force participation rate in Kerala is much less than in India as a whole. In the absence of comparable data relating to 1965, the figures obtained from the census of India 1961 are used here to examine the reasons for the low participation rates in Kerala. The relevant figures are given in the table below:

Classification of population by activity—Census 1961 percentage distribution

Sl. No.	Activity	Kerala			India		
		Male	Female	Persons	Male	Female	Persons
1	2	3	4	5	6	7	8
1	Workers ..	47·2	19·7	33·3	56·8	27·8	42·8
2	Full-time students engaged in ..	22·5	17·6	20·0	13·0	5·8	9·5
3	Household duties ..	..	33·3	16·8	0·2	31·2	15·2
4	Dependents, infants and disabled ..	27·5	28·4	28·0	28·7	34·6	31·5
5	Others ..	2·8	1·0	1·9	1·3	0·6	1·0
	Total ..	100·0	100·0	100·0	100·0	100·0	100·0

"It is seen that 20 per cent of the population of Kerala reported as students compared with only 9·5 per cent in all India The difference between all India and Kerala as regards the other categories not in the labour force are not very high. The percentage of workers in Kerala is only 33·3 as against 42·8 in the country as a whole. It may be seen that the bulk of the difference in the labour force participation rates between India and Kerala is accounted for by the higher proportion of students in Kerala".

The participation rate of meales 0–14 years is above 100 in Andhra Pradesh, Madhya Pradesh, Mysore, Orissa and Rajasthan.

Only in Kerala it is below 50. Most of the States have rates varying between 70 and 100.

It is seen that the participation rate for males below 15 years and total participation rate are highly correlated (r=0·72). The participation of children below 15 years is one of the reasons for high rate in some of the State.

The figures in Table IV indicate a general trend that the States which have high male participation rates have also high female participation rates in the age group 0–14 years. The range of variation of female participation rates in 0–14 years is from 12 to 121. The highest rate of female participation in the 0–14 age group is reported from Rajasthan and the lowest rate from West Bengal. Kerala has the lowest male participation rate of 22 in 0–14 years, of age. The States of Andhra Pradesh, Madhya Pradesh and Rajasthan have high female participation rates exceeding 100 in the age group of 0–14.

In the case of males and females the rates of participation for the 15–24 age group are high. All the States except Kerala have rates above 820 for males. For females the rate is the lowest in West Bengal. In all the other States the rates are above 230. The range of variation of female participation rate in the age group is from 153 in West Bengal to 686 in Madhya Pradesh. Only four States, namely, Kerala, Punjab, Uttar Pradesh and West Bengal have female participation rates below 400.

The participation rates are found to be maximum in the age group of 35–39 in all the States both for males and females. A deviation from this observation is in respect of the female participation rates in the two States namely Jammu and Kashmir and Rajasthan. For males, the participation rates in the age group 35–39 are above 940 in all the States, the range being from 940 (West Bengal) to 979 (Uttar Pradesh). For females the range is wider varying from 183 in West Bengal to 725 in Madhya Pradesh.

In the older age group 60 and above also there is a considerable percentage of workers. Among males the participation rate in this age group is above 650 in all the States. In all the States except Gujarat, Kerala and West Bengal the rates are above 700. In the case of females also the rates are not negligible. In most of the States it is above 170. Only in West Bengal the rate is below 100. Madhya Pradesh, which has the highest female participation rate, has the highest rate in this age group also.

Considering Kerala State alone the characteristics of the age specific participation rates are more or less the same in the various

districts of the State. Table V below gives the rates for the different districts in the State.

TABLE V

Worker participation rate in the different districts of Kerala by age and sex

District	Male					Female				
	Age groups					Age groups				
	0–14	15–34	35–59	60+	All ages	0–14	15–34	35–59	60+	All ages
1	2	3	4	5	6	7	8	9	10	11
Trivandrum ..	20	732	953	694	461	21	249	321	170	160
Quilon ..	11	728	961	752	458	16	344	352	151	192
Alleppey ..	11	699	944	696	456	24	355	410	189	221
Kottayam ..	14	776	964	681	484	15	286	312	99	162
Ernakulam ..	16	758	947	612	470	18	325	371	125	193
Trichur ..	23	751	927	604	455	19	358	408	135	219
Palghat ..	53	844	943	648	515	32	434	487	182	271
Kozhikode ..	23	784	929	615	471	16	229	284	117	144
Cannanore ..	30	807	932	630	481	17	394	426	162	231

The variation in rates between the various districts is small.

In 0–14 age group the rates vary between 11 and 53 for males and between 15 and 32 for females. The male rates are higher than the female rates in some of the districts. The lower participation rate in 0–14 years may be probably associated with the high rate of school enrolment in the State. For males, the participation rate in 0–14 years and percentage of literates aged 5 years and above in the various districts are negatively correlated, the correlation coefficient being 0·93.

In the 15–34 age group the rates are high in all the districts. For males the rates vary between 699 and 844. For females the range of variation is much wider from 229 to 434. In both the age groups of 0–14 and 15–34 the highest rates of participation of males and females are in Palghat District, which has the lowest literacy rate in the State.

The participation rates among both the males and females touch the maximum level in the age group 35–39. This is so in the other States of India also. Between districts the range of variation in the

rates is small in the case of males. The rates vary from 927 to 964 among males. Among females in the age group the variation of participation rates between the districts is more marked the rates varying from 284 to 487.

In the older age groups of 60 and over also there is a considerable percentage of workers among males. The rates for males vary between 604 and 752 between the districts. The rates of participation of females in this group are much lower and the rates between the districts vary from 99 to 189.

An interesting fact revealed by the participation rates for the different age groups given in Table V is that the rates of participation for all ages and that for the 0–14 age group are highly correlated giving a correlation coefficient of $r=0{\cdot}84$. This shows that the higher participation rate for all ages is associated with the higher rate of participation in the 0–14 age group.

9. *Workers in various industrial divisions.*—The distribution of the total work participation rates among the various industrial groups show wide variation between the States also Table VI gives the distribution of workers in various industrial categories.

TABLE VI

Distribution of 1000 persons in each sex among 9 industrial categories and non-workers

State	Sex	Worker participation rates in									
		(1)*	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	Non-workers
1	2	3	4	5	6	7	8	9	10	11	12
India ..	M	294	77	18	32	32	8	36	13	67	429
	F	156	67	6	22	4	1	4	N	20	720
Andhra Pradesh ..	M	256	135	26	63	21	10	33	13	65	378
	F	159	162	5	37	5	3	12	N	30	587
Assam ..	M	346	25	46	4	14	6	28	12	60	459
	F	204	5	41	46	2	N	2	N	9	691
Bihar ..	M	297	111	23	26	17	4	19	10	49	444
	F	148	80	5	20	2	N	3	N	13	729
Gujarat ..	M	265	64	7	32	47	7	36	15	62	465
	F	170	57	3	21	4	2	3	N	19	721
Jammu and Kashmir ..	M	421	9	10	23	16	4	17	7	71	422
	F	213	1	4	32	1	N	N	1	4	744
Kerala ..	M	108	62	48	22	47	8	36	17	124	528
	F	32	54	10	35	16	N	3	1	46	803
Madhya Pradesh ..	M	358	84	23	32	18	9	21	9	48	398
	F	296	90	7	20	2	2	3	N	20	560
Madras ..	M	250	85	20	40	44	10	39	15	94	403
	F	133	83	6	31	6	2	6	N	46	687
Maharashtra ..	M	232	103	17	28	58	10	38	21	61	429
	F	209	105	3	14	6	2	5	1	16	619
Mysore ..	M	312	74	20	37	30	13	27	9	62	416
	F	178	76	8	22	5	3	6	N	22	680
Orissa ..	M	363	92	11	33	8	3	13	6	79	392
	F	133	57	4	28	2	N	4	N	38	734

TABLE VI—(*cont.*)

State	Sex	Worker participation rates in									
		(1)*	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	Non-workers
1	2	3	4	5	6	7	8	9	10	11	12
Punjab ..	M	274	44	6	39	31	12	35	13	75	471
	F	107	6	1	13	2	1	N	N	12	858
Rajasthan ..	M	398	22	11	38	14	9	26	11	52	419
	F	297	17	5	21	2	1	2	N	14	641
Uttar Pradesh ..	M	370	53	4	34	20	5	26	10	60	418
	F	117	35	1	14	1	N	2	N	12	818
West Bengal ..	M	209	78	24	16	67	8	45	21	72	460
	F	35	20	9	11	5	N	2	N	12	906

*(1) Cultivators (2) Agricultural Labour (3) Mining, Quarrying livestock, etc. (4) Household industry (5) Manufacturing other than household industry (6) Construction (7) Trade and Commerce (8) Transport, Storage and Communications (9) Other Services.

In all the States except Kerala, the largest percentage of workers are engaged in cultivation. In Kerala, the largest percentage of workers is reported from the 'other services' sector. As mentioned in the earlier section the participation rate in cultivation and availability of land are highly correlated. In the developing countries a high percentage of the workers will be usually in the primary sector. The tertiary sector occupies the second place and the secondary sector occupies only the third place. In the developed countries, the percentage in the primary sector will be quite low and the percentage in the tertiary sector will be high. Viewed from this perspective, the various States in India show the characteristics of the developing countries.

In order to get a clearer picture about this aspect the workers in the nine industrial categories in Table VI are grouped into the three sectors, by combining the categories (1), (2) and (3) to form the primary sector, the categories, (4), (5) and (6) to form in the secondary sector and the categories (7), (8) and (9) to form in the tertiary sector. It may be noted that the industrial category (3) includes mining and quarrying which ought have been included in secondary sector. The percentage of workers in this category being small in most of the States, no attempt has been made to split the industrial category (3). The distribution of male and female workers in the three sectors is given below in Table VII.

TABLE VII

Distribution of 1000 persons in each sex in the primary, secondary and tertiary sectors

State	Number of workers per 1000 persons					
	Primary		Secondary		Tertiary	
	M	F	M	F	M	F
All India ..	389	229	72	27	110	24
Andhra Pradesh ..	417	326	94	45	111	42
Assam ..	417	250	24	48	100	11
Bihar ..	431	233	47	22	78	16
Gujarat ..	336	230	86	27	113	22
Jammu and Kashmir ..	440	218	43	33	95	5
Kerala ..	218	96	77	51	177	50
Madhya Pradesh ..	465	393	59	24	78	23
Madras ..	355	222	94	39	148	52
Maharashtra ..	352	337	96	22	123	22
Mysore ..	406	262	80	30	98	28
Orissa ..	466	194	44	30	98	42
Punjab ..	324	114	82	16	123	12
Rajasthan ..	431	319	61	24	89	16
Uttar Pradesh ..	427	153	59	15	96	14
West Bengal ..	311	64	91	16	138	14

The participation rates in the primary, tertiary and secondary sectors proceed in a descending order in all the States in the case of both males and females.

Considering only the male participation rate Orissa has the highest rate and Kerala the lowest rate in the primary sector. All States except Kerala have rates above 300 for males. In the case of tertiary sector, Kerala has the highest rate, while Bihar and Madhya Pradesh have the lowest rates. In the secondary sector Maharashtra tops the list with a rate of 96. Assam has the least rate in the secondary sector. The disparity in the rates for the various States is more pronounced in the case of secondary sector. Here, the least rate and the highest rate are 24 and 96 respectively; the highest rate being four times the lowest rate. In the primary and tertiary sectors the highest rate of male participation is only a little more than double the lowest rate.

The distribution of workers in the various industrial categories in the districts of Kerala is given in Table VIII below:

TABLE VIII

Distribution of 1000 persons in each sex among 9 industrial categories and non-workers

District	Sex	Workers in									Non-workers
		(1)*	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	
Trivandrum ..	M	110	70	29	28	33	8	31	13	139	539
	F	24	21	2	43	15	N	9	1	45	840
Quilon ..	M	174	62	34	17	48	6	28	14	75	542
	F	32	27	6	40	63	N	2	N	22	808
Alleppey ..	M	103	68	37	24	49	7	39	19	110	544
	F	19	61	2	90	13	N	2	1	33	779
Kottayam ..	M	113	62	108	13	36	10	31	12	99	516
	F	16	36	55	17	3	N	2	N	33	838
Ernakulam ..	M	97	43	38	22	60	11	39	30	130	530
	F	40	50	4	30	14	N	3	1	51	807
Trichur ..	M	83	44	46	27	50	9	40	18	138	545
	F	30	56	6	37	13	N	2	2	73	781
Palghat ..	M	115	112	33	32	39	12	31	16	125	485
	F	46	132	5	22	6	1	2	N	57	729
Kozhikode ..	M	79	49	60	17	42	6	40	20	158	529
	F	19	38	N	23	9	N	1	1	53	856
Cannanore ..	M	105	54	39	27	66	7	40	13	130	519
	F	67	69	7	20	8	N	3	1	56	769

*(1) Cultivators (2) Agricultural labour (3) Mining, quarrying, livestock, etc. (4) Household industry (5) Manufacturing other than household industry (6) Construction (7) Trade and Commerce (8) Transport, Storage and Communications (9) Other services.

The range of variation between districts in the distribution of workers in the various industrial categories is found to be very small. Among males the rate of participation as cultivators ranges between 79 in Kozhikode District and 174 in Quilon District. For agricultural labourers the range is from 43 in Ernakulam District to 112 in Palghat District. The industrial category mining, quarrying, livestock, etc., shows a wider range of variation of participation rate ranging from 29 in Trivandrum to 108 in Kottayam District.

When the participation rates in the nine industrial groups are combined into the three sectors namely, primary, secondary and tertiary, the position is as presented in Table IX below:

TABLE IX

Distribution of 1000 persons in each sex in the primary, secondary and tertiary sectors of employment in Kerala State

District	No. of workers per 1000 persons					
	Primary		Secondary		Tertiary	
	M	F	M	F	M	F
Trivandrum ..	209	47	69	58	183	55
Quilon ..	270	65	71	103	117	24
Alleppey ..	208	82	80	103	168	36
Kottayam ..	283	107	59	20	142	35
Ernakulam ..	178	94	93	44	199	55
Trichur ..	173	92	86	50	196	77
Palghat ..	260	183	83	29	172	59
Kozhikode ..	188	57	65	32	218	55
Cannanore ..	198	143	100	28	183	60

The participation rates in the primary sector are found to be higher than that in the other two sectors in all districts except Trichur, Ernakulam and Kozhikode. In these three districts the highest participation rates are reported in the tertiary sector.

In the primary sector the ranges of variation in the male participation rate is from 173 in Trichur District to 283 in Kottayam District. In the secondary sector the rates vary between 59 in Kottayam District and 100 in Cannanore District. In the tertiary sector the lowest rate of 117 is in Quilon District and the highest rate of 218 is in Kozhikode District.

Conclusion.—The study of the variation in participation rate in the various States shows that total participation rate and the participation rate in cultivation and agricultural labour are highly correlated. In the districts of the State such as relationship is not noticed.

The participation rates in 0–14 and 15–34 age groups are the lowest in Kerala. This is on account of the higher proportion of school and college going students in these age groups in the State.

In all the States the highest participation rate is reported in the primary sector and the lowest rate in the secondary sector, which is a characteristic of developing countries.

References.—1. Census of India, 1961—Vol. III—Kerala Part II-A(i) General Report, Superintendent of Census Operations, Kerala.

2. Census of India, 1961—Vol. I—India Part II-B(iii) General Economic Tables, Registrar General of India, New Delhi.

3. National Sample Survey 16th Round, Kerala.

4. U. N. Demographic Year Book, 1963.

5. Planning for Employment in Kerala by the Bureau of Economics and Statistics.

APPENDIX

TABLE 1

Characteristics used to work out correlation co efficients

State		*Density of population per sq. km. 1961 census*	*No. of literates per 1000 persons 5–14 years 1961 census*
(1)		(2)	(3)
Andhra Pradesh	..	131	190
Assam	..	97	266
Bihar	..	268	115
Gujarat	..	112	292
Jammu and Kashmir	..	26	70
Kerala	..	435	490
Madhya Pradesh	..	74	123
Madras	..	259	323
Maharashtra	..	129	274
Mysore	..	123	227
Orissa	..	113	157
Punjab	..	166	225
Rajasthan	..	59	94
Uttar Pradesh	..	250	106
West Bengal	..	394	203

TABLE 2

District		Density of population per sq. km. 1961 census	No. of literates per 1000 persons 5 years and above 1961 census
(1)		(2)	(3)
Trivandrum	..	798	631
Quilon	..	410	685
Alleppey	..	988	745
Kottayam		273	734
Ernakulam	..	557	682
Trichur	..	557	657
Palghat	..	346	497
Kozhikode	..	393	604
Cannanore	..	314	613

ON A METHOD OF ESTIMATING DEJURE BIRTH AND DEATH RATES FROM DE FACTO REGISTRATION RECORDS IN THE PRESENCE OF UNDER REGISTRATION

By

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Introduction.—This paper intends to present the method adopted in the State of Kerala to obtain dejure birth and death rates from the birth and death registers in the Municipal and Corporation areas. Registration is de facto in the State and though compulsory a substantial percentage of events are not registered. While in the State as a whole the registered rates are very low and estimation is done from Census data to arrive at true birth and death rates, the urban rates are usually high especially in areas where there are good hospitals. There is a large flow of expectant mothers and sick persons to urban areas to take advantage of the better medical facilities available there. The annual averages obtained from decennial census data are naturally not representative of the situation in each year and the annual variations cannot be studied through these. In the present state of affairs when there is a need to know the correct birth and death rates to assess the effectiveness of family planning and public health activities, the

importance of estimating the birth and death rates for local areas hardly needs emphasis. Attempts for improving registration and the quantity and quality of vital statistics are been made in the various States in India and the effectiveness of these can be measured only if the trend in under registration is studied. While a description of all the methods of improvement of vital statistics is outside the scope of this paper, the relevant details for the presentation of the method herein envisaged will be mentioned at the proper places. An outline of the registration system in the State is presented in the following section.

2. *The system of registration in the State.*—As already mentioned registration is de facto in the State which means that the event is registered at the place where it occurs. There are however specific rules for registration when the event takes place in moving vehicles etc. which are not relevant here. In the Travancore–Cochin part of the State, registration in rural areas is attended to by the Health staff while in the Malabar rural areas this is the work of the Revenue staff. In the towns and cities with separate elected councils the registration is done by Health Assistants under the Health Officer and the Commissioner. Though at the State level the Director of Health Services is the Registrar General, the supervision at taluk and district levels in the Malabar rural areas is done by the Revenue Department as in Madras State. There has been a proposal to entrust the work of registration to the Panchayats but it will take some more time to achieve this. The Processing of vital statistics is the responsibility of the State Bureau of Economics and Statistics. The Bureau is collecting the information on registered births and deaths through separate birth and death report cards which will be filled in by the Registrars themselves and forwarded through the Tahsildar (Taluk Registrar), Medical Officer, Primary Health Centre or by the Municipal Commissioner as the case may be, utilising the "Service unpaid system" of the Postal Department. From towns and cities with population 30,000 and over the filled in cards are received every week while from the other places they are received every month. The information received is coded, transferred to punch cards, sorted and tabulated on I. C. T. machines and the results are published by the Bureau of Economics and Statistics.

The chronic deficiency in registration warranted urgent steps for improving the situation. The Registrar General of India initiated some schemes for short term estimation of birth and death rates and for long term improvement in registration and vital statistics. As a part of these a nucleus staff consisting of a Senior Research Assistant and a Statistical Compiler have been posted in the District Statistical Offices in the State. A Statistical Unit consisting of a Research Assistant, an Upper Division Compiler and a Lower Division Compiler has been set up in each town or city with population between 1 and 5 lakhs and an Upper Division Compiler in the other Municipal Towns

with population less than one lakh. The arrangement for mechanical tabulation mentioned above has been possible with the Central aid sponsored by the Registrar General of India.

In the following section the work done by the Statistical staff in the Corporations and Municipalities will be briefly explained in so far as they help improving registration and vital statistics and in the estimation of dejure rates.

3. *The work of the Statistical staff in Corporations and Municipalities.*—The Statistical staff posted in the Corporations and Municipalities work under the control of the Commissioners and will be supervised immediately by the Health Officer or Senior Health Inspector. They form part of the Health sections and do both office work and field work. In the office, they collect the birth and death report cards, scrutinise them, remove discrepancies by reference to the registers or by visiting the hospitals etc., compile the number of live births, stillbirths, infant deaths and other deaths by sex and arrange to forward the same to the State headquarters office. In the field they enumerate the number of normal residents, the number and details of events to normal residents and visitors, verify with the registers and cause the unregistered events to be registered after proper official action. The field visits are made after selecting wards at random by the use of random numbers assigned to them. On the basis of these spot checks conducted by them, they improve registration and calculate the birth and death rates to normal residents. For this, they separate out the events to normal residents of the area from the registers and wait these for under registration and events occurring outside. While the uses of this calculation are many, they give the dejure rates based on the estimated population of the town or city and also provide the extent of under registration and the events occurring outside.

Improvement in registration will be shown by decrease in the extent of under registration. House visits also give them a chance to propagate the need for correct vital statistics not only to the individal but also to the society and the nation. The method adopted in the calculation of the residents rates (dejure rates) will be explained below.

4. *Method of estimation of dejure rates.*—If E denotes the dejure rate of the event in question, E is equal to the registered rate (R) for normal residents of the town or city waited for events not registered and occurring outside which may either be registered or not registered. Let Pr denote the proportion of events not registered from among all events enumerated and $Qr = 1 - Pr$; similarly let Pdenote the proportion of events to the normal residents of the town or city that occur outside the town or city during the period under study and $Qo = 1 - Po$. Then E can be estimated as $\frac{R}{Qo\ Qr}$

where Qo and Qr are estimates obtained from spot checks and may involve samping errors. E will therefore have a variance equal to $VPr/Q^2 + Po/Q^2$.

Where Vpr and Vpo denote the variances of Pr and Po respectively and denotes an estimate of the corresponding characteristic which can be substituted for the population value. Substituting estimates of Vpr and Vpo this simplifies to $\frac{Pr}{nQr} + \frac{P_o}{n^1Q_o}$ where n and n^1 are the number of events enumerated as inside and both inside and outside respectively. The percentage standard error will be equal to $100 \left[\frac{Pr}{nQr} + \frac{P_o}{n^1Q_o} \right]$.

Here the extent of non-sampling errors in separating out events to normal residents from among the registered events, the biases in the estimation of Pr and Po from spot checks etc. will affect the estimate E but a discussion on these is deferred to a later study.

5. *Application.*—The method explained above has been applied to the data obtained from registration and spot checks for four towns in Kerala with population above 1 lakh, namely Trivandrum, Quilon, Alleppey and Ernakulam. The results are given in the following 2 tables for births and deaths separately for the year 1967, for the first three towns and for 1966 for Ernakulam.

TABLE 1

Dejure birth rates in 4 towns in Kerala

Name of Town	Year	Registered birth rates for normal residents	Enumerated birth inside / outside		Percentage of under registration	Percentage outside	Dejure birth rate	Percentage standard error
1	2	3	4		5	6	7	8
Trivandrum ..	1967	28·4	535	66	12·2	11·0	36·3	2·1
Alleppey ..	1967	24·1	960	53	36·3	5·2	39·9	2·5
Quilon ..	1967	31·1	1338	184	16·2	12·1	42·3	1·5
Ernakulam ..	1966	25·4	351	20	33·9	5·4	40·6	4·0

TABLE 2

Dejure death rates in 1966/67 in 4 towns in Kerala

Name of Town	Registered death rates for normal residents	Enumerated deaths occurred in side/utside		Percentage of under registration	Percentage outside	Dejure death rate	Percentage standard error
1	2	3		4	5	6	7
Trivandrum ..	6·9	103	3	22·3	2·8	9·0	5·5
Alleppey ..	8·4	287	3	31·0	1·0	12·4	4·0
Quilon ..	5·5	203	8	10·8	3·8	6·5	2·8
Ernakulam (1966) ..	5·8	57	0*	54·4	0*	12·7	14·5

Source:—Bureau of Economics and Statistics, Trivandrum.

Reports on Vital Statistics in Municipalities and Corporations—numbers 2 to 5, 1969.

The dejure birth and death rates and the percentage standard errors show much variation. It is, however, interesting to note that the percentage standard errors are low in cases where a large number of events have been enumerated. This proves the necessity for conducting spot checks in a large number of households so as to yield meaningful results.

6. *Summary and conclusions*.—In the above paragraphs, a method of estimating the dejure birth and death rates and their standard errors is presented. The method has been applied to the data obtained from the 4 towns Trivandrum, Alleppey, Quilon and Ernakulam. There are many limitations to the estimates arrived at due to the small number of events enumerated, the errors due to memory lapse difficulties in matching events etc. which are not dealt with here. The estimated rates will, however. give an idea about the true rates and will be useful for purpose of comparison. It is hoped that by covering 50 per cent of the wards in the towns, the standard errors will become smaller and the rates will prove to be more useful for studying the impact of family planning and public health programmes. The difference between de facto and dejure rates may throw light on the "pull effect" of the towns, in the absence of significant differences in the surrounding rural areas, which is however not attempted here.

* No. events were enumerated as occurred outside, 0 is a valid estimate here.

NOTE ON THE CALCULATION OF BIRTHS AVERTED DUE TO FAMILY PLANNING PROGRAMME IN KERALA

CONTENTS

NOTE ON THE CALCULATION OF BIRTHS AVERTED DUE TO THE FAMILY PLANNING PROGRAMME IN KERALA

By

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1. *Introduction*.—The programme of family planning started in Kerala State in 1957. Considered as a system, the programme has various sub-systems like mass education and information, services and supplies, transport and evaluation. This note attempts to discuss one aspect of the evaluation sub-system.

Evaluation of the family planning programme is done concurrently through the service-statistics generated. Two registers, the family planning survey register and the target couple register kept at the level of the Primary Health Centre/Urban Centre provide the details of the population covered. Registers on sterilisation, I.U.C.D. and offtake of conventional contraceptives furnish the evaluator with details of services accepted by the couples. Together with the basic demographic characteristics of the population like fertility and mortality, the data generated by the programme yields all the necessary information for evaluating the programme.

Evaluation as is currently conducted is of three types: (1) immediate evaluation consisting of the percentage change in current acceptors compared to the population and to the previous year and the percentage of couples protected currently as against the target for the year, (2) intermediate evaluation wherein the availability of services and supplies as against the required is assessed, and the progress of mass education and extension activities and training is noted and (3) ultimate evaluation in which the effect of the programme in reducing the birth rate is worked out. In ultimate evaluation, the number of births averted by the programme is calculated. A model of averting births has to be assumed for this purpose. In this note the model adopted is that explained by S. P. Jain* in the calculation of births averted in India as a whole. The parameters used are those that are available for the population of Kerala. In the following paragraphs the actual calculation is explained in detail, as this will be useful for purposes of reference.

2. Age-distribution of acceptors.

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*S. P. Jain "Estimation of population growth under Family Planning Programme". Journal of Family Welfare (Vol. XVI No. 1) Bombay—September 1969.

2·1. *Sterilised persons.*—The age distribution of wives of sterilised males in the Trivandrum (January 1972) and Ernakulam camps (second camp in July 1971) and the age distribution of sterilised females from 1957 to 1970 have been averaged for estimating the age distribution for purposes of these calculations. As the age of the wife in vasectomies was not collected and tabulated earlier except for the 2 camps considered here, this could not be taken here. The final age distribution is as given below:

Age group (years)		*Percentage of persons*
20—24	..	15·40
25—29	..	34·44
30—34	..	27·78
35—39	..	18·40
40—44	..	3·98
Total	..	100·00

3. *Survival ratios.*—Using the West Model life tables, the survivors sterilised persons have been found out for the successive five year periods. Joint survivorship ratios have been worked out, assuming that the husband is older than the wife by 5 years.

4. *Fertility rates.*—The following are the age-specific marital fertility rates as calculated from the National Sample Survey 14th round (Rural) for Kerala State conducted during 1959–60, adjusted to correspond to the birth rate of 38·9 per 1000 estimated for Kerala during 1951–60.

Age group in years		*Marital age-specific fertility rates*
		Rs.
15—19	..	305
20—24	..	331
25—29	..	347
30—34	..	244
35—39	..	199
40—44	..	64

These fertility rates have been used for calculation of births to females in the various age groups.

5. *Births averted by sterilisation.*—Assuming that the acceptors and non-acceptors in each of the age groups have the same fertility, the number of births averted can be calculated as the number of births that would have occurred to that part of the females in the age group who have accepted family planning. Sterilisation is a method which if properly performed cannot lead to failure.

Thus the number of sterilised persons (taking wife's age) is multiplied by the fertility rate for each age group after allowing for

attrition due to mortality and aging. This gives the number of births in the first year, 6th year, 11th year and 16th year and 21st year. Interpolating for the individual years will provide the number of births that would have occurred in each year after acceptance of a method. As there is a gestation period of 9 months necessary for a birth the actual timing of the birth in terms of calendar year or financial year has to be determined by tracing the time paths.

Starting with figures of acceptance by calendar year, for each month and adding 9 months to the reference month, the number of births that would have occurred in each of the months beginning with the 9th can be calculated. Assuming that the acceptors are uniformly distributed over the various months and centering them at the middle of the month, it can be easily seen that the first year births are to be distributed in the ratio of 25:75 over the 1st two years, to get the births by calendar year. If the births by financial year are to be obtained from figures for calendar year, the ratio is 1:2:9 for 1st year, 2nd year and 3rd year. Here for each of the 12 months of acceptance, the births in 12 months following the 9 months of gestation are considered so that they are in all 144 months for occurrence of the event. For January, February and March, after having centered the acceptors at the middle of the month, the number of months remaining for exposure in one year starting from the month of acceptance will be 2½, 1½ and ½ respectively. The remaining months of exposure fall in the next year, the number of months being 9½, 10½, 11½ respectively. This method of allocation of exposure months gives 4½ total months in the first financial year, 99 in the second and 40½ in the third, summing for all the 12 months of acceptance. Thus the ratios are 4½: 99: 40½ which on simplification gives 1:2:9.

Starting with a cohort of 1 lakh acceptors with the age distribution given in section 2.1, multiplying by the fertility rates and adding up, the total number of survivors and births in the 1st year, 6th year, 11th year, 16th year and 21st year are as follows:

Survivors	1st year	6th year	11th year	16th year	21st year
20—24	15400	..	..	..	..
25—29	34440	14381	..	..	..
30—34	27780	31822	13396	..	..
35—39	18400	25306	29259	12430	..
40—44	3980	16463	22873	26702	11451
Total births ..	27743	18844	10555	4183	733

Interpolating the births linearly to get the births for each successive year and allocating in the ratio of 25:75 for the 1st and 2nd year and adding up, the following distribution of births over the year is obtained for each sterilisation.

Calendar year	Births	Calendar year	Births	Calendar year	Births
1	2	3	4	5	6
1	·06931	9	·15113	17	·04010
2	·27298	10	·13456	18	·03321
3	·25518	11	·11798	19	·02630
4	·23738	12	·10236	20	·01941
5	·21958	13	·08963	21	·01250
6	·20178	14	·07688	22	·00672
7	·18429	15	·06415	23	·00426
8	·16772	16	·05140	..	..
Total ..	..	..	..	..	2·53886

A similar exercise for allocation of births by financial year gives the following figures.

Financial year	Births	Financial year	Births	Financial year	Births
1	2	3	4	5	6
1	·00867	9	·15936	17	·04530
2	·19885	10	·14273	18	·03665
3	·26401	11	·12631	19	·02988
4	·24631	12	·10988	20	·02288
5	·22848	13	·09600	21	·01585
6	·21057	14	·08320	22	·00917
7	·19291	15	·07041	23	·00917
8	·17600	16	·05783	..	·00515
Total ..	..	..	..	..	2·53635

6. *Births averted by I.U.C.D. acceptors.*—In the calculation of births averted by I.U.C.D. acceptors, the retention rate of I.U.C.D., and the effectiveness have also to be considered besides mortality and aging.

Retention rates used here for this purpose are based on the Taiwan experience utilised by S. P. Jain in his paper in 1969. I.U.C.D. is assumed to be 95 per cent effective. The following table gives the distribution of survivors and total births in the 1st year, 6th year and 11th year.

Survivors by age	*1st year*	*6th year*	*11th year*
(1)	(2)	(3)	(4)
15—19	1,830	..	..
20—24	19,100	1,725	..
25—29	32,260	17,836	1,622
30—34	25,980	29,807	16,614
35—39	17,080	23,666	27,406
40—44	3,750	15,282	21,391
Total births	28,053	19,721	11,439

After interpolation and allowing for attrition due to non-effectiveness and non-retention (expulsion, removal, etc.) allocation for calendar and financial years are made as for sterilisation. The following figures are obtained, by these calculations:

Year	*Interpolated No. of births each year*	*Net birth after allowing attrition*	*Allocated No. of births per I.U.C.D. or calendar years*	*Allocated No. of births per I.U.C.D. for financial years*
(1)	(2)	(3)	(4)	(5)
1	28,053	21,454	·05364	·00670
2	26,387	14,339	·19675	·15198
3	24,721	11,461	·13619	·16250
4	23,055	8,520	·10726	·12179
5	21,389	5,893	·07863	·09265
6	19,721	3,747	·05357	·06565
7	18,065	2,746	·03497	·04319
8	16,409	1,871	·02527	·03000
9	14,753	1,121	·01683	·02094
10	13,097	498	·00966	·01313
11	11,439	0	·00373	·00657
Total	..	..	·71650	·71510

It may be noted here that though by the end of the 10th year, there is no acceptor retaining the I.U.C.D., the effects of averting births by those who have retained the I.U.C.D. in the 10th year remains in the 11th year also.

7. *Births averted by acceptors of conventional contraceptives.*—The 1961 population of the state was 169·04 lakhs with 24·82 lakhs couples in the reproductive age groups showing 147 couples per 1000 population. Considering the birth rate of 38·9 per 1,000 in 1951–60 the number of births per couple works out to ·265. Assuming that the acceptors of conventional contraceptives are uniformly distributed and allocating for the years after applying 60 per cent effectiveness, the number of births averted by one c.c. user in the first and second calendar years will be ·04 and and ·12 respectively and in the first 3 financial years will be ·005, ·110 and ·045 respectively.

8. *Population and birth rate in Kerala based on births averted.*—Table No. III in the appendix gives the population and birth rate in each calendar year based on the achievements in family planning and the likely achievements in future years, as targetted for the fifth five year plan (these figures are given as Table I in Appendix I to this note). Here the population in middle 1957 as estimated from census figures is the starting point. The birth rate of 38·9 in 1951–60 as estimated from census and the death rates of 16·1 in 1951–60 from census and 9·7 in 1972 as adjusted from sample registration (Rural) have been used in these calculations. Death rate has been assumed to fall by ·4 points each year.

Apart from the effect of programme methods like sterilisation, I.U.C.D. and conventional contraceptives, couples use natural methods like abstinence, rhythem and withdrawal. Also the effect of other artificial methods like oral pills, depoprovera, etc. has not been considered while calculating the effect of programme methods. While these are the effects of the programme of family planning, a major change in fertility will take place by increase in age at marriage. As the increase in age at marriage cannot be estimated now, its effect on the birth rate has not been worked out. The Table therefore gives only the effect of programme methods and non-programme methods, the latter having been assumed to have an effect equal to 1/8 of the forum; this assuption is based on the P.E.O.* study and O.R.G.** study. The number of births averted by each of the methods is given in Table II.

The birth rate in 1972 according to these calculations is 31·8 which is slightly higher than the rate of 30·8 estimated from sample registration. The estimates of population for 1971 and 1972 mid-years are 21·7 and 22·2 millions respectively which are higher than the census population and estimate based on the same.

9. *Future course of birth rate.*—Calculation of births averted by the future family planning programme gives a birth rate of 24·59 for 1980,

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* P.E.O. of Planning Commission—Family Planning in India—An Evaluation of the programme—19.0.

** Operational Research Group, Baroda—Family Planning Practices in India—1972.

assuming the fifth plan targets for the state are fully achieved. The population would have then grown to 25·8 millions. Here the death-rate of 9·7 has been assumed to continue from 1972–1980.

It may be noted here that Kerala State is achieving the goal of reduction of birth rate to 32 by the end of the fourth plan (1973–74) and 25, two years after by the end of fifth plan. While independent evaluation based on sample registration shows a lower birth rate than concurrent evaluation based on family planning achievement statistics, the effects of other variable like acceptance of abortion, increase in age at marriage and the like have yet to be considered.

10. *Acknowledgements.*—This note was prepared by Dr. R. S. Kurup, Deputy Director with the assistance of Sri P. S. Gopinathan Nair, Assistant Director and computational assistance of Sri K. Divakaran Pillai, Research Officer and Sri P. Gopinathan Nair, Research Assistant.

APPENDIX

TABLE I

Achievements in family planning over the years and targets to the future

Year	*Sterilisation*	*I.U.C.D.*	*No. of users of conventional contraceptives (estimated as couple-years) of use*
(1)	(2)	(3)	(4)
A. Achievements—			
1957	679	..	..
1958	3,140	..	..
1959	6,368	..	..
1960	5,032	..	..
1961	6,517	..	..
1962	7,098	..	..
1963	13,225	..	..
1964	21,904	..	..
1965	42,634	23,062	..

TABLE I—(*cont.*)

Year	*Sterilisation*	*I.U.C.D.*	*No. of users of conventional contraceptives (estimated as couple-years of use)*
(1)	(2)	(3)	(4)
1966	39,398	43,517	1,111
1967	59,993	36,887	10,110
1968	78,147	39,742	9,875
1969	60,560	36,866	11,973
1970	69,439	32,559	16,084
1971	100,338	19,521	13,041
1972	106,052	19,546	10,870
B. Targets.—			
1973	84,000	30,000	60,000
1974	100,000	35,000	80,000
1975	110,000	40,000	100,000
1976	125,000	45,000	120,000
1977	140,000	50,000	140,000
1978	150,000	60,000	160,000
1979	150,000	60,000	160,000
1980	150,000	60,000	160,000

* These targets have been fixed for financial years in consultation with Planning Commission and Department of Family Planning, for calendar years the same targets are assumed and for 1979 and 1980 the targets for 1979 have been assumed to continue.

APPENDIX

TABLE II

Number of births averted by each of the methods over the years

Year	Sterilisation	I.U.C.D.	C.C.	Total	Non-programme methods
1	2	3	4	5	6
1957 ..	47	..	..	47	6
1958 ..	403	..	..	403	50
1959 ..	1,472	..	..	1,472	184
1960 ..	3,050	..	..	3,050	381
1961 ..	4,345	..	..	4,345	543
1962 ..	5,894	..	..	5,894	737
1963 ..	7,869	..	..	7,869	984
1964 ..	11,570	..	..	11,570	1,446
1965 ..	18,218	1,237	..	19,455	2,432
1966 ..	28,535	6,871	44	35,450	4,431
1967 ..	38,841	13,682	537	53,060	6,633
1968 ..	53,908	17,791	1,608	73,307	9,163
1969 ..	69,328	21,301	1,664	92,293	10,287
1970 ..	82,568	23,024	2,080	107,672	13,459
1971 ..	97,666	22,774	2,452	122,892	15,362
1972 ..	118,288	20,483	2,000	140,771	17,596
For proposed targets—					
1973 ..	136,838	19,412	3,704	159,954	19,994
1974 ..	150,241	20,343	10,400	180,989	22,624
1975 ..	166,273	21,914	13,600	201,787	25,223
1976 ..	183,814	24,110	16,800	224,724	28,091
1977 ..	203,784	26,792	20,000	250,576	31,322
1978 ..	225,609	30,053	23,200	278,872	34,859
1979 ..	247,404	34,005	25,600	307,009	38,376
1980 ..	266,030	36,859	25,600	328,489	41,061

APPENDIX

TABLE III

Estimated population and birth rates over the years

Year	Mid-year population (in '0000)	Number of births averted	Birth rate*	Assumed death rate†
1957 ..	1,555	53	38·9	16·7
1958 ..	1,591	453	38·9	15·8
1959 ..	1,629	1,655	38·8	14·9
1960 ..	1,668	3,431	38·7	14·5
1961 ..	1,708	4,888	38·6	14·1
1962 ..	1,750	6,630	38·5	13·7
1963 ..	1,793	8,853	38·4	13·3
1964 ..	1,838	13,016	38·2	12·9
1965 ..	1,884	21,887	37·7	12·5
1966 ..	1,932	39,881	36·8	12·1
1967 ..	1,982	59,693	35·9	11·7
1968 ..	2,028	82,470	34·8	11·3
1969 ..	2,076	103,830	38·9	10·9
1970 ..	2,172	121,131	33·2	10·5
1971 ..	2,172	188,254	32·5	10·1
1972 ..	2,221	158,367	31·8	9·7
1973 ..	2,270	179,943	31·0	9·7
1974 ..	2,318	203,613	30·1	9·7
1975 ..	2,365	227,010	29·8	9·7
1976 ..	2,411	252,815	28·4	9·7
1977 ..	2,456	281,898	27·4	9·7
1978 ..	2,500	313,731	26·4	9·7
1979 ..	2,542	345,358	25·3	9·7
1980 ..	2,582	169,550	24·6	9·7

* This includes the effect of non-programme methods also.

† Death-rate has been assumed to decline by four every year from 16th January in 1956 (middle of 1951-60).