DEMOGRAPHIC RESEARCH CENTRE

BUREAU OF ECONOMICS AND STATISTICS

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RESEARCH NEEDS ON THE POPULATION PROBLEMS OF KERALA

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EDITED BY

Dr. R. S. KURUP

and

P. S. G. NAIR

ASSISTED BY

N. V. GEORGE

TRIVANDRUM, September 1969

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FOREWORD

Much water has flown since the first Seminar on the "Implications of the Growth of Population in Kerala," in August 1964 under the auspices of the Demographic Research Centre, Trivandrum. A greater awareness about the population problem is noticeable in every quarter. The specific "Research needed on the Population Problems of this State," was considered a suitable topic for a Seminar in the present context. This volume consists of all the papers presented at the Seminar and the history, status and details of research done on population and Family Planning. It is hoped, that the specific research areas and schemes pointed out in several of the papers will stimulate greater research interest among the research workers in this Centre as well as elsewhere in the Country.

Dr. P. K. GOPALAKRISHNAN

DIRECTOR,

BUREAU OF ECONOMICS & STATISTICS

ACKNOWLEDGEMENTS

The Demographic Research Centre, Trivandrum has completed ten years of its existence. To commemorate this occasion an All India Seminar was held on 25th January 1969. The Centre wishes to record its deep sense of gratitude to the unstinted co-operation and assistance rendered by all, without which, the seminar would not have been as much successful as it turned out to be.

The Centre is particularly grateful to the Honourable Minister for Health Sri B. Wellington, who graced the function by kindly inaugurating the same. The sincere gratitude of the Centre is also due to Dr. C. O. Karunakaran who presided over the inaugural session and to Messers Prof. V. R. Pillai, Dr. Mathew Kurien, Economic Adviser, Sri. N. Gopalakrishnan Nair, Additional Director and V. Ramachandran I. A. S., Planning Secretary, for having presided over the sessions of the Seminar.

To all those who attended and took part in the deliberations of the Seminar, we are extremely thankful.

Dr. R. S. KURUP
and
P. S. G. NAIR
The Editors.

ACKNOWLEDGEMENTS

PART I

INTRODUCTION

1. ABOUT THE SESSIONS

The one day All India Seminar on "Research Needs in Population and Family Planning in Kerala", was held on 25-1-1969. The Seminar was divided into four sessions, the inaugural session, session on" problems arising from population growth in Kerala," the session on "Needed Research on Population Problems" and the concluding session.

The inaugural session commenced with the inaugration speech by the Honourable Minister for Health Sri. B. Wellington. This was followed by the presidential address by Dr. C. O. Karunakaran. The Honourable Minister, while pointing out the need to view the population problem in all seriousness, equally emphasised the need to undertake research on the good and bad effects of Family Planning Programme. The president Dr. C. O. Karunakaran made a fervent appeal to follow the example of Japan in controlling the population problem in view of the writing on the wall.

In the first technical session, of which Prof. V. R. Pillai was the Chairman, five papers were presented on the characteristics of population growth and the economic and social consequences of the population pressure in the State. The Papers presented and the lively discussions that followed, threw much light on the various aspects of population growth and its consequences, from many different angles.

The second technical session was presided over by Dr. Mathew Kurien, Economic Adviser to the Government of Kerala. Eight papers were presented which covered a wide range of related subjects like family planning, communication and motivation. Suggesstions for specific research studies were made in several of the papers.

With, the concluding session, presided over by Sri. V. Ramachandran, I. A. S., Planning Secretary, the Seminar came to a close. The Chairman Sri V. Ramachandran suggested the need to give a practical bias to the research studies, undertaken.

PROCEEDINGS OF THE SEMINAR HELD ON 25—1—1969

A Seminar on "Needed Researches on the Population problem of Kerala" was held on 25-1-1969 at V. J. T. Hall, Trivandrum. The seminar consisted of four sessions-the maugural session, two technical sessions and the concluding session.

The Seminar was inaugurated at 10 A. M. by the Honourable Minister for Health shri B. Wellington. Dr. C. O. Karunakaran was in the Chair. Dr. P. K. Gopalakrishnan, the Director, Bureau of Economics and Statistics welcomed the guests.

In his inaugural address, the Hon 'ble Minister, while agreeing to the urgent need for controlling population, emphasised that research studies on both the good and bad aspects of the Family Planning Programme should be undertaken. He also pointed out that the problem of population has to be viewed in all seriousness.

Dr. C. O. Karunakaran, in his presidential address pointed out the adverse effects of rapid population growth. Pointing out the example of Japan, he pleaded for the urgent necessity of controlling the population in our State.

Sri P. S. Gopinathan Nair, Assistant Director read out a summary of a report about the activities of the Demographic Research Centre during the past ten years.

The session ended at 11 A. M.

The first technical session on "The population problem of Kerala', began at 11 A.M. with prof. V.R. Pillai, in the chair. Out of six papers received five papers were presented. The papers related to:

Economic & Social Problems resulting from excessive popuiation:
Characteristics of population Growth and an appraisal and the need for conducting sample surveys of prospective growth to obtain better registration data.

By way of introductory remarks, Prof. V.R. Pillai pointed out the need for more researches on the various aspects of the population problem.

In the background paper on "The population problem of Kerala" the adverse effects of population growth on the various sectors of the State's economy were pointed out. The hampering effect of the explosive population growth on economic growth, through its repercussions on consumption, savings and investment, was brought out by O. Ayyappan. in his paper on "Economic Problems of population Explosion - A lesson from the experience of Kerala State". A two way approach of faster economic growth and ccntrolling of population growth was suggested. In the discussions that followed N. Gopalakrishnan Nair remarke1 that since those who are to enter the labour force now are already borne, birth control will have only long term eflect and as such urgent and immediate steps should be taken to reduce the birth rate drastically.

In his paper on "The Distinctive characteristics of populatlon growth in Kerala - some side lights from the socio cultural perspectives" G. Surendranathan Nair dealt with the role of immigration in the past, and of the interaction of fertility and mortality against the socio cultural background of Kerala, in the population growth of Kerala. His suggestion of outmigration as a policy to reduce the population pressure was pointed out as impracticable in the present context by Dr. George Varghese.

R. Ramalingam in his paper "an appraisal of the population growth of Kerala and prospective growth" pointed out that the assumption that the State and the south zone are having proportionate values of expectationof life at birth for the sexes was wrong. On the basis of birth rates and expectations of life estimated by him and using the revised model life tables of Dr. R.S.Kurup, he has projected the population of Kerala which shows much variation when compared to the projections of the Expert group. The importance of Sample Surveys in obtaining better registration data was emphaised in his paper by Sri P.N. Bhatachariya, drawing from the experience of West Bengal.

Dr. P. K. Gopalakrishnan, Director, Bureau of Economics and Statistics pointed out that the population problem was not so serious, if the unutilised capacity in land, factories and labour force were fully utilised.

In this concluding remarks, prof. V.R. Pillai, stressed the need for cost-benefit analysis, collecting data on consumption, savings and investment.

The papers presented and the discussions that followed, brought to light the various facts of the alarming growth of population in the State and the immediate need for reducing the birth rate. Messrs S. Bhagavatheeswara Iyer, T.R. Thankappan, G. Viswanatha Pillai, N. Krishna Pillai, Dr. P.K. Gopalakrishnan Dr, George Varghese and V.K. Sasidharan also took part in the discussions.

The second session on "Needed Researches on population Problems of Kerala commenced at 2 P. M. with Dr. Mathew Kurien, Economic Adviser to the Government of Kerala, in the Chair. In his introductory remarks, Dr. Mathew Kurien stressed the need for co-ordinating the research schemes of the various demographic Research Centres so as to avoid wasteage and to re-examine the philosophical basis of most of the studies undertaken. After Dr. Mathew Kurien left, Sri N. Gopalakriahnan Nair, Additional Director, Bureau of Economics and Statistics took the Chair. Eight papers dealing with:

Family planning, communication and motivation, need for research on migration and on specific demographic problems of Kerala were presented.

In a review of Family Planning, Dr. M. P. Manomohan suggested an evaluation of the programme-its success as well as failure, the psychological and emotional failures of acceptors as well as study to find out the influence of religion on Family Planning. Dr. G. Velayudhan has rightly stressed, in his paper "what might improve birth control in Kerala", the need to convince the common man about the safety and effectivity of the methods available today. Dr. R. S. Kurup, and K. M. P. Pillai, have proposed a cost benefit analysis of various methods of motivation, state-wide attitude surveys and follow-up studies and social psychological effect of family planning besides a few analytical studies.

Dr. George Varghese in his paper on "Family Planning and motivation basis for communication" emphasised the need for family life education, depth studies to determine the dynamics of non-acceptance and discontinuation and use of indigenous systems of communication. Vrindavanam Venugopalan suggested a package programme of communication to effectively motivate the common man.

The fact that migration was continued to be a comparatively neglected field of population Research in India was brought out in a paper by P. S. Gopinathan Nair. An annual sample survey to collect migration data, enquiry into causes of migration, changes in population growth and occupational structure, as a result of migration were suggested.

Suggestions for studying the reasons for the high sex-ratio, high fertility rate, higher expectation of life for females and making forecasts of school going population were made in the paper by Dr. K. V. Ramachandran and G. S. Nair. The importance of, population and labour force projection, after taking into account the effect of migration, study of mortality structure of selected occupation groups and classification of rural population by educational standard was emphasised by Sri. P. M. Abraham.

During the discussions that followed, the need for research in the fields suggested was endorsed by most of the participants. The study of factors other than population growth which influenced the labour force participation rate, was pointed out by Sri N. Gopalakrishnan Nair. The importance of sex education for motivational purpose of family planning, and the need for liberalisation of abortion were pointed out by Dr. George Varghese. Messrs N. Krishna Pillai, O. Ayyappan and V. K. Sasidharan also took part in the discussions. The session ended at 4 P. M.

The concluding session, with the Planning Secretary Sri V. Ramachandran in the Chair, commenced with a presentation of the proceedings by O. Ayyappan. The specific research problems that came up through the Seminar are given in tabular form in the appendix. In all 35 studies were suggested. Of these, 6 studies fall under general studies in demography, 4 under fertility, 3 under mortality, 5 under migration, 3 under projections and 14 under family planning. The Chairman suggested the need for researches to be more practical and scientific.

The Seminar came to a close at 5 P.M.

STUDIES SUGGESTED

I. General studies in demography	II. Fertility	III. Mortality	IV. Migration	V. Projections.	VI. Family Planning
1	2	3	4	5	6
i. Evaluation and adjustment of demographic data.	i. Study of the reasons for high fertility rate in Kerala	i Study of the reasons for high expectation of life for females.	i. Assessment of the extent of in and out migration	i. Study of the intercommunal and inter-religious balance after 10 years	i. Study of motives for and against having children.
ii. Reasons for the high sex-ratio and decreasing trend	ii. Study of differential fertility according to occupation and caste in the various regions.	ii. Study of the mortality pattern of selected occupation groups	ii. Short term studies in areas of concentration of mobile labour.	ii. Forecasts of labour force and school going population.	ii Assessment of Psychological and emotional failures of those who have mechanically adopted family planning
iii. Analysis of birth and death statistics to find out the trend, seasonality and cycle if any	iii. Survey on fertility to yield annual rates	iii. Survey to estimate mortality rates.	iii. Studies on changes in occupational structure due to migration.	iii. Population projections based on the progress of family planning in the State.	iii. Separation of cases of frustration sexual, inadequacy and impotency as real and fanciful.
iv. Collection of data regarding consumption investment and savings.	iv. Study of the effect of increase in age at marriage on fertility rates.		iv. Generation of migration streams from high man-land ratio, under employment and unemployment.		iv. Study of the extent of understanding of family planning ideas by villages.
v. Studies on the peculiar labour force participation pattern.			v. Application of Stouffer's theory of intervening opportunities.		v. Assessmeet of the extent of acceptability by masses.
vi, Classification of rural population by educational standard.					

1	2	3	4	5	6
					vi Assessment of the influence of religion on family planning.
					vii Depth studies to determine the dynamics of non-acceptance and discontinuation.
					viii K. A. P. Studies.
					ix Maintaining complete and accurate data regarding family Planning acceptors.
					x Cost benefit analysis of various methods of motivation.
					xi State wide attitude surveys and follow up studies.
					xii Socio-Psychological studies on the effect of family planning.
					xiii Study into the failure of achieving the Programme target.
					xiv Evaluation of family planning programme.

DEMOGRAPHIC RESEARCH CENTRE, TRIVANDRUM TEN YEARS OF WORK·

INTRODUCTION

The State of Kerala lies in the South-western corner of India. It has an area of 15002 Sq. miles, and a population of 169.04 lakhs according to 1961 census, and its present population is estimated at 202 lakhs. The State was formed on 1-11-1956 as per the State's Reorganisation Act.

The rate of population growth was very high in the State from very early times. The historical factors had considerable influence on the size and distribution of the population in the State. The fertile soil, and healthy climate had attracted migrants from very early times. Our sandalwood and spices which were valued very much in foreign markets, also attracted migrants, even as early as 1000 B. C. A long coastal line with a number of natural ports placed the State in constant contact with several foreign countries. From very early times there was migration from countries like Ceylon, Arabia etc. The healthy environments and habits of the people of the State have been putting an effective check on the spread of epidemics. The availability of different medicinal herbs and the consequent development of the Ayurvedic system of treatment using rare herbs might have placed another check on the death-rate of the population. But there are no factors which are favourable to low fertility.

As a result of comparatively high fertility rate and low mortality rate the size of the population of the State was very large from early times. Besides, from 1901 onwards the rate of growth itself was increasing. The increasing trend in growth rate is interrupted only in two decades-namely 1911-21 and 1931-41. The population of the State has increased by 164% during 1901-61 while the All India increase during the same period is only less than 90%. During 1951-60, the population of Kerala increased by 24.76% while the All India rate of growth was 21.50%.

The population of Kerala possesses certain unique features which distinguish it from the population of other states and that of the country. The excess of females over males is one of the unique features. From 1901 to 1951 the sex ratio has shown an increasing trend. In 1961 the sex-ratio has decreased from 1028 to 1022. The density of population of the State even in 1901 was higher than the density of India in 1961. The pressure of population on land is obvious. At present the State has got the highest density in India. The religious composition of the population is also different from other States of India. Christians orm only less than 5% in other States. But their percentage is about 21 in Kerala.

The peculiar features of the population of Kerala and the problems arising from them have attracted the attention of demographers from early times. But the studies about population were confined to the material available during the decennial censuses. During the Second Five year Plan period, demographic studies gained added importance. Demographic Research Centres were established in Bombay, Calcutta and Delhi. The fourth Demographic Research Centre was established in the Bureau of Economics and Statistics, Trivandrum in 1958. The Demographic Research Centre was directed to give top priority to the following items of work.

i) collection of information on attitude to family planning which may be of immediate use in the education progromme and later help in assessing the changes in these attitudes brought about by the family planning programme.

ii) investigation of socio-economic factors affecting fertility which may lead to appropriate social action for reducing birth rates.

iii) study of the effect of the family planning programme on attitudes and birth-rates in areas where it is being implemented.

The studies undertaken by the centre have been in conformity with these directives.

2. STAFF.

The centre started functioning in August 1958 with the technical staff consisting of one Assistant Director, one Research Officer, two Research Assistants and four Compilers. The number of Compilers was later raised to fourteen. This staff pattern continued till 1965 when the number of Compilers was reduced to six. Two Research Officers were additionally appointed-one with Sociology and another with Economics background-so that more research projects of a multi-disciplinary nature could be taken up by the Centre.

The activities of the centre are guided by the Deputy Director (Vital Statistics), the Additional Director and the Director,

3. TECHNICAL WORKS

The various studies conducted by the Centre can be classified under the following categories.

i) Population growth and projections.
ii) Fertility and family planning.
iii) Factors affecting fertility.
iv) Mortality and morbidity.
v) Other demographic studies

Though more emphasis is being given to fertility studies and studies on family planning, the other topics are not neglected. In the following paragraphs, a brief review of the studies conducted under the above headings, is given together with the main findings.

3.1. POPULATION GROWTH AND PROJECTIONS

The factors affecting population growth of Kerala and their implications have been studied in a number of papers issued from the centre.

In the paper 'Population of Kerala' issued in 1965 the high growth rate of population since 1901 and its economic implications were studied. The higher growth rate is the result of high fertility and low mortality. The per capita availability of cultivable land is decreasing due to the increase in population, in the absence of any possibility to increase the area of cultivable land; the food deficit of the State is becoming more acute with every increase in population. Though the state income at current prices has increased by 47% during 1955-56 to 1960-61, the per capita income has increased only by 32% during the period. The gap between the above two increases is accounted for by the population increase.

In the draft of the "Demographic Report for Kerala 1901-61 a detailed analysis of the population situation of the State during the 60 years is made. The growth of population in the state since 1901 and factors contributing to the growth of population are examined. Before the analysis is taken up, the historical and geographical background is presented. There is considerable variation between Districts in the rate of growth. Trivandrum, Quilon and Kottayam Districts form the first category with a high percentage variation throughout the period. Palghat and Trichur have lower percentage variation throughout. Cannanore and Kozhikode have initially lower variation but have higher variation during the final stage. Alleppey and Ernakulam Districts which have higher percentage variation initially have lower variation in the final stage. There is also considerable variation between the growth is pattern of Kerala and the neighbouring States. The rate of growth is higher than that in the neighbouring states of Madras and Mysore during 1901-61. Among the States in India, Kerala has the highest density of population. Urbanisation has been taking place in Kerala

at a higher rate than that in India and in the adjacent States. One of the important characteristics noticed about the population of Kerala is the predominance of females. From 1901 onwards females exceed males. The sex-ratio is seen to be increasing from 1901 to 1951 and has decreased slightly in 1961. Like other developing countries Kerala has a large percentage of persons in (more than 40%) the early age-group of below 15 years. The study of marital status pattern has shown that about 57% are unmarried, divorced or separated. A rapid decline in mortality is noticed from 1901-1961. Migration has played only a very minor role in the population growth of the State. The worker participation rate is seen to have decreased from 44 in 1901 to 33 in 1961. With the anticipated progressive decrease in mortality and fertility rates, the population estimates have been worked out for the quinquennial periods up to 1981.

In a study of the population of Trichur District, the growth of population of the District, since 1901 and its implications are discussed. The population of the District has increased by 149% during 1901 - 1961. The District has the highest sex-ratio (1090) among the Districts of the State. 42% persons are below 15 years and 33.2% are workers. It is proposed to undertake similar studies of other districts.

The effect of population growth on national income, savings, investment, consumption and employment are examined in the paper, 'Impact of population growth on economic development of Kerala.' The food production of the State is sufficient to meet only half the requirement of the state. The expenditure on social services sector is very high, It increased from 159.29 lakhs in 1956-57 to 450.46 lakhs in 1964-65. The per capita income at 1960-61 prices has increased only by 14% during 1950-51 to 1963-64 while the State income has increased by 52%.

The study has revealed that in Trivandrum there was no appreciable difference in fertility between income groups.8% husbands and 2% wives have sufficiently good knowledge of family planning. Of these only 39% couples practise family planning methods. The highest percentage of couples had expressed the desire to have a family of 2 sons and 2 daughters.

In Quilon 61% husbands and 58% wives had favoured to have a family of 3 or less children.

In other centres also, a substantial percentage had expressed their willingness to have a small family.

3.2. FERTILITY AND FAMILY PLANNING:

Family Planning has been adopted as a national policy. Studies on this topic have been given top priority by the centre. A number of studies were conducted on the socio-economic and demographic characteristics of family planning acceptors, evaluation of attitude to family planning, differential fertility, factors affecting fertility, the effectiveness of contraceptives and the effects of sterilisation. The first item of work undertaken by the centre was a survey on attitude to family planning. A Pilot Survey was conducted in Trivandrum City in 1958. After the completion of the pilot survey, the survey was extended to other district headquarters of the State and to the municipal town of Attingal. The survey was intended to:-

i. assess the attitude of persons to family planning.
ii estimate the percentage of persons who prefer known methods of birth control.
iii. study differential fertility according to income and occupation, and
iv. study spacing of births.

The difference in fertility between occupation or income groups is not significant. The interval between successive terminations was about 30 months. The difference in average interval between various centres was only very little.

A survey was conducted in Sreekariyam Village during 1961-62. The socio-economic factors affecting fertility, the extent of under-registration of births and deaths, the change in age at marriage, and the attitude of couples to family planning were studied. The birth rate was estimated to be 26.3 and death rate 8.1. The increase in average age at marriage during the 40 years 1921-61 was 3 years. 74% males and 31.0% females

had heard of family planning and among them 45.7% males and 98.6% females knew methods of family planning.

Several studies were conducted by the centre on the demographic and socio-economic characteristics of sterilised persons. The details available in the hospital records were incomplete regarding income and education in a large number of cases. For the years 1956-61, 1961-62, 1962-63 and 1963-64 the data for the state were used. For 1964-65 and 1965-66 District-wise data were analysed separately to study the variation among districts. Some of the common features noticed in all these studies are the following.

The method of sterilisation operation is less popular among Muslims compared to other religious groups. The percentage of persons from the low income groups is very large among the sterilised persons. Sterilisation has become comparatively more popular among literates. The average number of children born to sterilised persons is more than 4.

A sample survey was conducted in 1962 on persons who have undergone sterilisation operation. The study was intended to throw light on the relationship of complaints attributed to sterilisation and age, number of children, occupation and interval between operation and resumption of sex-life etc. The interview was conducted by District Statistical Officers in the presence of Medical Officers. A substantial percentage of the persons had reported complaints like pain, thinning of body and lessening of sex desire. Since there is a tendency to ascribe all complaints as after-effects of sterilisation operation, it is necessary to have a thorough medical check up before sterilisation. This should be followed by periodic checkups.

Three studies were conducted on persons who have adopted contraceptives. The first study on this topic was conducted in 1960 using data available with the family planning clinic at Attipra in Trivandrum district It was revealed from the survey that 63% wives were eager to get information on family planning.

Two other studies in 1962 and 1966 were conducted using data from all the family planning clinics in the State. In these studies the socio-economic and demographic characteristics of couples and the effectiveness of contraceptives were studied. Hindus are over-represented and Muslims are under-represented among the couples visiting family planning clinics. The pregnancy rates for the various contraceptives ranged from 8.3 to 24.2 in the first study and from 7 to 27 in the second study.

In two papers published by the centre, in 1965 and 1968 the progress of sterilisation operation in the State has been reviewed. The targets of sterilisation operations to be conducted in the State and the reduction achieved so far due to sterilisation has been worked out in these papers.

The I. U. C. D. was widely adopted by females in Kerala from 1965 onwards. The characteristics of these females have been studied using data available from 2 hospitals in Trivandrum city. In addition to the study of the demographic and socio-economic characteristics, the expulsion, removal and reinsertion rates, and the interval between I. U. C. D. insertion and last menstrual period have also been worked out.

The effect of industrial, public health, family planning and extension activities on fertility and mortality is studied with the help of data available from a survey conducted in 4 villages. The four villages belonged to the following categories,

i. villages with intensive industrial activity.
ii. villages with intensive public health and family planning activities.
iii. villages in the Post-developmental phase.
iv. villages with none of the above activities.

The study has revealed that the activities are in its initial stages and it may take a longer period to show significant results. The survey was conducted in 1963.

Another survey conducted in 16 villages and 16 wards was intended to provide estimates of birth and death rates and to study differential fertility, mortality and attitude to family planning.

The birth and death rates obtained from the survey are very low. Migration does not affect population growth substantially in the areas surveyed. Study of differential fertility has shown that Christians have the highest fertility while Hindus have the lowest fertility. Questions on attitudes and preferences on joint family system, education of daughters, age at marriage of sons and daughters number of children desired and knowledge and practice of family planning methods were asked.

The joint family system is welcomed by 62% in Trivandrum and more than 90% in other places. Early marriage of sons and daughters is not favoured by a substantial percentage. 41% husbands in Trivandrum, 20% in Palghat, 40% in Ernakulam-Irinjalakuda and 30% in Kozhikode preferred to have 3 or less children. The percentage of couples who know the methods, is very low. Even among the couples who know the methods, very few practise the methods.

3 3. Factors affecting fertility: Human fertility is affected by a number of factors. Age at marriage and practice of contraception are two important factors which directly influence the fertility of women, besides other factors, which have an indirect bearing on fertility. Several studies on this topic have been made in the centre.

In a study using the data available from the survey on attitude to family planning in Trivandrum city, the age at marriage, age at first delivery and age at widowhood of females in different religious, occupational and education groups are investigated. The age at marriage is highest for christians and lowest for Muslims. There is no significant difference between income and occupation groups. Age at marriage is seen to increase with education.

In another paper based on the data from the same survey in respect of 8 towns of the state, the variation in fertility between two generations is studied. The two generations considered are the women contacted by the Investigators and their mothers. The study has revealed higher fertility for mothers and tendency to have less fertility and more spacing in the current generation.

The data available from the 1961 sample census have been used for a study of the fertility pattern of women in Kerala. The average age at marriage of females has increased from 16.8 years in 1930 to 19.2 years in 1960. Of the births during the 12 months preceding the date of survey 1/3rd are 5th or higher order births. Among women of completed fertility 2.5% have no issues. In urban areas about 1/3rd and in rural areas 29% have 4 or less children. Among rural couples having less than 5 years of marriage duration, 1/3rd have no children and 50% have only one child.

The marumakkathayam system of inheritance prevalent in Kerala during the past has influenced the fertility pattern of the women of Kerala to a considerable extent. A detailed study on this topic has been conducted by the centre. The partition deeds of Tarwads, census reports and surveys conducted by the Department are the main sources of data for the study.

The report has been issued in two volumes. The following hypotheses are formulated and examined.

(i) Under the marumakkathayam system the Tarwad was a corporate unit. As such economic security was not essential for marriage. Marriages were therefore universal and at early ages under this system which increased the fertility rate.

(ii) The marumakkathayam Acts during 1925-31 brought out numerous civil suits based on partition of Tarwads. Since the share of each woman was proportional to the number of children she had, there was a tendency to produce more children before the suit was disposed off.

(iii) The fertility rate of marumakkathayis who adopted makkathayam will be the same as other makkathayis.

The first hypothesis was found to be not true. Though there are certain factors which are favourable to higher fertility, there are other factors which act in the opposite direction. The second and third hypotheses are found to be correct.

In the second volume, the characteristics of the present form of marumakkathayam are discussed. The information collected through an-ad-hoc survey is used for the study, Many radical changes have taken place and the present form has only very few characteristics of the old system.

3.4. Mortality and Morbidity. The trend in mortality has been studied by constructing life tables. Life tables for the decades from 1901 onwards have been published from the Centre. These life tables have been constructed using the census age tables. The method of construction was that of 'tracing of cohorts'. For the decade 1931-40, the expectation of life at birth was 33.18 years and 35.00 years for females. The expectation of life for males has increased to 39.89 years for males and 42.34 years for females during 1941-50. In 1951-60 the expectation of life stood at nearly 46 for males and 50 for females.

In a paper on the models of mortality research issued from the Centre, a stratification of countries on the basis of a composite index of socio-economic and health conditions is suggested. The stratification suggested provides models for the study of mortality trends. The stratification model can be applied for fertility and migration studies also.

A study of the incidence of small-pox was made from monthly data on attacks and deaths of small-pox during 1951-1959. Seasonality and long term trend were found out from the data. The seasonal indices for January to April were high compared to other months. February had the highest index. The yearly average rate of incidence was nearly 15 per lakh persons with a range of 6 to 25. The average death rate was 5.4 varying from 3 to 11 per lakh persons.

3.5. Other demographic studies: The first study conducted in this category is an analysis of a survey conducted in 1957. In the rural areas the details were collected along with the land utilisation survey. In the urban areas, separate samples were selected and enumerated. The study of rural-urban differentials has shown that there is no significant rural-urban differential in fertility and mortality.

The seasonality, long term trend and rural-urban differentials of birth and death registration were studied using birth and death registration figures for the years 1953 to 1957. It was found that there was seasonal effect on fertility and mortality. The month of June had the highest seasonal index. July, August and September had comparatively higher indices of death. Urban birth rates were found to be higher than rural rates. This may be due the registration of all births in hospitals in urban areas as urban.

The relationship of birth weight of infants and duration of labour, with factors like age of mother at the time of delivery, order of birth, maturity and sex of child was studied using data from two maternity hospitals in Trivandrum. In the case of both mature and premature births, male infants weighed more than female infants. The weight of baby was seen to increase with age of mother and order of birth. Duration of labour was seen to decrease with parity upto 5th order for mature births and upto 4th order for premature births' whereafter it increased for both.

4. Training: Foreign training through population Council Fellowship was utilised by Dr. R.S. Kurup, formerly Assistant Director of the centre in 1961-62. The training facilities at the Demographic Training Research Centre, Bombay were utilised by the staff of this Department. From 1961 onwards officers are deputed to the centre for training. Four Officers have completed training and the fifth one is at present undergoing training.

In 1967, the Demographic Research Centre organised training classes at all Distrct headquarters, for the computors Posted in the primary Health Centres, with a view to improve the recording and maintenance of registers, which from the primary source of data for studying the characteristics and nature of composition of those adopting family planning methods.

The centre had in colloboration with other training agencies conducted training classes to Gramasevaks, Health Inspectors, family planning personnel and Medical Officers. The classes were taken by Dr. R. S. Kurup, Deputy Director covering subjects like Demographic features of India and Kerala, theories of demography and rates and ratios in the field of demography and family planning, elements of statistics, sampling and conduct of field surveys.

5. Seminars and Conferences: A seminar on the implications of the population growth in Kerala was organised by the centre in August 1964. Eminent demographers from all over the country participated in the seminar. There were three technical sessions for the seminar. In the three technical sessions the following topics were discussed:-

(i) Demographic characteristics of the population of Kerala.
(ii) Social and medical implications of the population growth in Kerala.
(iii) Economic implications of the population growth of Kerala.

Technical papers prepared by the staff of the Centre were sent to various seminars conducted inside the State as well as outside. As representative of the Centre, Dr. R.S. Kurup has attended most of the All India Seminars held at various places in the country, as well as the World Population Conference held in Belgrade.

6. Publications:- A half-yearly news letter is being issued from the Centre from 1963 onwards. The news letter is intended to provide information to research workers in the field on the work done at the centre. An annotated bibliography of the publications was issued from the centre in 1966.

The Centre has so far published 53 papers, a list of which is attached. Though the aim has been to cover all fields of Demographic Research, more emphasis has been given to fertility and Family planning and this is only proper in our present context. It is hoped that in the coming years, diversified areas of research would be covered, and that the centre will be able to render more and more useful service to the country.

PUBLICATIONS OF THE DEMOGRAPHIC RESEARCH CENTRE TRIVANDRUM

Sl.No.	Title of Paper	Month of issue
1	A note on the vital events in Travancore-Cochin Region of Kerala.	February 1959
2	Trend in registered births and deaths in Travancore-Cochin Part of Kerala.	-do-
3	Attitude to Family Planning Vol. I (Revised March 1961).	July 1960
4	On the response to Family Planning.	October 1960
5	On the incidence of small-pox in Travancore-Cochin Part of Kerala.	December 1960
6	Mortality tables for Kerala 1941-50.	-do-
7	A Study of the demographic characteristics of certain occupational groups in Kerala.	-do-
8	On the age at marriage, age at first delivery and age at widowhood.	October 1961
9	A study of persons who have undergone sterilisation operation.	January 1962
10	Attitude to Family Planning Vol.II	March 1962
11	-do- Vol.III	-do-
12	-do- Vol.IV	-do-
13	A study of birth weight of infants and duration of labour.	September 1962
14	Fertility control in Kerala-A Study of couples visiting family planning Clinics.	-d-
15	Attitude to Family Planning Vol.V	November 1962
16	-do- Vol.VI.	-do-
17	-do- Vol.VII	-do-
18	-do- Vol.VIII	-do-
19	-do- Vol IX	-do-
20	Studies in Demography Volume I	March 1963
21	Demographic particulars of sterilised persons 1961-62.	-do-
22	A study of the after effects of sterilisation.	September 1963
23	Life tables for Kerala 1931-40	October 1963
24	Report on the intensive Village Survey in Sreekariyam.	December 1963
25	Attitude to Family Planning Volume X	-do-
26	Demographic particulars of sterilised persons 1962-63.	December 1963
27	Population of Kerala.	July 1965
28	Models in Mortality Research.	May 1965
29	A study of persons who have undergone sterilisation operation 1963-1964.	-do-
30	Sterilisation as a method of Family limitation in Kerala.	September 1965

31	The fertility pattern of the women in Kerala.	November 1965
32	A study of the couples visiting family planning Clinics-	January 1966
33	Demographic particulars of sterilised persons in Trichur District 1964-65.	February 1966
34	Report on the demographic particulars of sterilised persons in Quilon District 1964-65	March 1966
35	Report on the demographic particulars of sterilised persons in Kottayam District 1964-65	May 1966
36	Report on the demographic particulars of sterilised persons in Ernakulam District 1964-65.	August 1966
37	Report on the demographic particulars of sterilised persons in Kozhikode District 1964-65	-do-
38	Report on the demographic particulars of sterilised persons in Trivandrum District 1964-65.	September 1966
39	Demographic particulars of sterilised persons in Cannanore District 1964-65-	December 1966
40	Report on the intensive field survey to study the impact of industrial, public health, family planning and extension activities on fertility and mortality.	December 1966
41	Report on the demographic particulars of sterilised persons in Alleppey District 1964-65.	January 1967
42	Demographic particulars of sterilised persons in Palghat District 1964-65.	February 1967
43	Demographic particulars of sterilised persons in Trichur District 1965-66	March 1967
44	Population of Trichur District.	-do-
45	Demographic particulars of sterilised persons in Quilon District 1965-66	August 1967
46	Demographic particulars of sterilised persons in Ernakulam District 1965-66.	January 1968
47	Study of the effect of marumakkathayam on the fertility pattern of women in Kerala Vol:1	February 1968
48	Study of the effect of marumakkathayam on the fertility pattern of women in Kerala Vol.II.	March 1968
49	Demographic particulars of sterilised persons in Cannanore District 1965-66.	June 1968
50	Demographic particulars of sterilised persons in Palghat District 1965-66.	-do-
51	Variation in fertility between two generatins.	July 1968
52	Sterilisation operations in Kerala.	July 1968
53	A case study of IUCD Acceptors in two hospitals in Trivandrum City.	December 1968

CHAPTER I

HISTORY OF POPULATION RESEARCH AND FAMILY PLANNING

CHAPTER 1

History of population Research and Family Planning

1.0 Introduction:-

The last three or four decades have seen a phenomenal expansion of population research and interest in problems connected with population, throughout the world. The gravity of the problems arising from population explosion have opened the eyes not only of Governments in different parts of the world but even of International Organisations like the U.N. and philanthrophic organisations like the Rockfeller foundation. The result has been an unprecedented spurt in the output of books and literature relating to various aspects of population. It will be of interest to note briefly, the history of this vast expansion of population research.

1.1 The Development of Demography:-

The field of population studies is mainly covered by the science of Demography. Though the development of the subject as a separate discipline is of very recent origin, systematic investigation of the factors affecting population growth, their causes and consequences began, after the publication of the controversial Essay, of Malthus at the end of the 18th century. This does not, however, mean that before Malthus, the question of population never attracted the attention of scholars.

Even in very ancient writings, germs of such ideas as the dangerous consequences of excessive population growth, an ideal proportion between land and population, and checks to population growth are found in the ancient chinese writings of Confucius and others of various schools of thought. Both Plato and Aristotle-the great Greek Philosophers - considered, from the point of view of the city state, the ideal size of the population that would ensure the full development of man's potentiality and the need to limit the size of the population to avoid poverty. They even suggested such means of controlling the size of the population as restraining the production of those who are more fertile, child exposure and abortion. Unlike the Greeks, the Romans gave more attention to the ways of increasing the population and its military advantages, than to the means of limiting population growth.

The general tendency of medieval writers was in favour of an increasing population. Such a tendency gained ground due to high mortality rates and the possibility of massive human losses through famines, epedemics and wars. Two writers of the medieval period, who deserve special mention are Ibn khaldun, a fourteenth century Muslim author and Botero, an Italian author of 16th century. Ibn Kholdun, expouned in detail a theory of cyclical variations of population and their relation to economic, political and social-psychological conditions. Botero ably presented a line of thinking which was later developed by Malthus namely – that man's capacity to produce his subsistenee is limited but that his "generative powers operate with undiminished vigour, irrespective of his numbers". (2)

The mercantilist school of political thought favoured population growth as it would augment national income; by increasing the scope for better division of labour. The scientific analysis and mesurement of population trends began during the period when mercantilism flourished. The underlying order in Birth and Death Statistics was discerned by John Graunt, whose writings (1662) mark the beginning of modern

demography. Some of the other writers of this period who have left their mark and contributed to the science of demography, are William petty, Cantillon, Sussmilch, Godwin, condorcet and others.

The most important mile-stone in the historical development of demography is the publication of the highly controversial theory of population by Thomas R. Malthus in 1798. In the 19th century very little contribution to Demography was made to enable its emergence as a district discipline in spite of some progress in mortality investigation and other topics like fertility, migration and analytical theory. These studies emerged from different related lines of interest in the study of population changes and hence were dis-jointed and diffused. Demography, acquired its status as a district discipline only, during the 20th century by advancing its techniques and precision as well as the progress in the analytical theory, expanding the relations between fertility, mortality and migration. Besides, a shift from undue emphasis on biological factors to an interdisciplinary approach significantly affected the scope and orientation of population studies.

Since 1920 interest in population studies gained considerable momentum. The first world population conference was held in 1927. ..... This was organised by Margret Sanger of U.S.A. This was followed by the organisation of I.U.S.S.P. in 1928 and the population Association of America in 1931. Since 1930 research and training facilities have been provided in several universities. The formation of a Division of the U. N. secretariat for the development and promotion of population studies and the establishment of foundations like the population council, entirely devoted to population research aud study, have all contributed to unprecedented progress and advancement of this science.

1. 2 Demography in India and Kerala:-

The development of demographic interest in India began in the late 1930 as evidenced by the holding of the first Indian population conference in February 1936 in Lucknow. Individual Research Institutes and workers with interest in the subject, began to pay greater attention to population problems. But these studies were often handicapped by lack of reliable basic data. The collection of data on fertility by I.S.I. since 1937, the research studies undertaken by the all India Institute of Hygiene and Public Health and interest shown by Gokhale Institute of Politics and Economics in population studies, have all helped in the furtherance of the demographic interest in India.

With the advent of the Five year Plans for national development, the need for demographic research has been keenly felt in official circles. As a result, four demographic research centres were established in the IInd Five year Plan, followed by 3 more, during the IIIrd Plan and another three in 66-67. The national exigencies arising from the Goverment's programme of economic and social development, including the massive programme of family planning have given a fillip to the development of demographic research and an ever growing interest in the subject. The factors affecting fertility have to be unravelled if the Government's policy of reducing the birth rate is to be purposefully pursued. Besides, the massive size of the programme, involving interference with the most intimate and private lives of millions of couples, has thrown up several problems requiring research and solution.

The increasing interest in and development of, population research at the All India level had its repercussions in the State of Kerala also. With its peculiar demographic features like higher sex ratio highest density and a high growth rate, the State has attracted the attention of demographers. In view of the above facts one of the first four Centres established during the IInd Plan was started at Trivandrum, in the Department of Statistics (which later on became the Bureau of Economics & Statistics) in the year 1958.

The only attempts, in population studies, before the establishment of the Demographic Research Centre were studies relating to some aspect of population along with decennial censuses After the

establishment of D. R. C. several studies have been completed on fertility, mortality and assessment of achievement of familyplanning programme.

The Department of Statistics of the university of Kerala is having a regular post graduate course in Demography. Recently the University has also started useful research on the communication aspects of family planning.

1. 3 History of Family Planning in India:-

The Government of India has the proud place of being the first Government to initiate a large scale national programme of Family Planning among its people. Whereas in developed countries the family planning programme gained currency out of an earnest desire on the part of the people themselves, in India, it has spread as a Government programme.

Looking at the history of the movement in India, one may find isolated instances of private social organisations taking the lead in making recommendations and trying to bring the subject for public discussion. But, except for such recommendations as the All India Women's Conference, the suggestion of the National Planning Committee set up by Indian National Congress in 1935, and the establishment of birth control clinics in some hospitals in Mysore State (1930) and Madras (1943) the progress achieved before 1940 was very negligible. The first committee at Government level which recommended official support of birth control was the Bhore Committee appointd in 1943. The Bengal Famine Enquiry Commission reporting in 1946 also recommended active Government support in spreading birth control though most of the provincial Governments in their replies to the Commission. did not favour government taking an active part in the propaganda and spread of birth control. Two Family planning clinics were started under the Bombay Municipal Health Services in 1947. Later their number increased to four. But in spite of organised propaganda from 1949 to 1951, only very few made use of the services.

1.3.1. Progress during Ist and IInd Five Year Plans:-

After the advent of independence the Planning commission was set up in 1950 to prepare the Ist Five Year Plan for the country, The Commission included Family planning programme in its plan and thus the programme commenced from 1951. At this stage the census report of 1951 had highlighted the need for family planning, in view of the danger of "improvident maternity." The progress of family planning attained during the five year plans are summarised below.

Both in terms of expenditure incurred and achievements made, progress during the Ist Plan (1951-56) was very slow, only Rs. 14. 51 (1) lakhs was actually spend on family planning. The experiment of rhythm method on which Geverment relied proved a failure. 147 clinics (126) urban and (21 rural) were opened during this period. (2) Though 725 P.H. units were opened, only a few contained family planning clinics, due to shortage of trained staff. (3) The movement was not nationwide during this period.

The Second Five year plan (1956-61) commenced with the establishment of an autonomous central Family Planning Board and State Family Planning Officers. Voluntary sterilisation and use of convertional

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1. J N. Sreevasthava Family Planning in India D.R.C. ECo, Dept. Lucknow university (Page 4)
2. Savithri Thapar Population Studies July 1963 (Page 9)
3. Ibid
4. J.N. Sreevasthava Family Planning in India (Page 9)

contraceptives were accepted as official programme. The expenditure on family planning rose to Rs. 215.5 lakhs as compared to only Rs. 14.51 lakhs during the Ist Five year Plan. The number of family planning clinics was raised to 549 in urban areas and 1100 in the rural areas to provide services (4). As a result of facilities provided 147000 operations were carried out during the five year plan period.

It was the IIIrd Five year Plan (1961-66) that gave a real momentum to the Family planning programme. When there was provision for a wider net work of services and increased expenditure. The IIIrd plan placed the Family Planning movement at the very centre of planned development as the gravity of the population increase was made still more clear by the results of the 1961 census.

1.3.2. Organisational changes and progress during the IIIrd plan

During the course of the IIIrd plan-by October 1963-the following organisational changes were effected. But the progress of active implementation of the changes was slow and extended upto the end of the plan. The creation of a Department of Family planning with a separate secretary, appointment of a commissioner of Family planning assisted by six Regional Directors for executing the implementaion of the national programme, and the redesignation of the Ministry of Health as Ministry of Health and Family planning and urban development were some of the notable organisational changes. Besides, a cabinet committee and three expert committees were appointed. Th Central Family planning Board was reconstituted as C.F.P. Council. These changes were meant to speed up administrative action to the programme, with the pronounced objective of reducing the birth rate from 41 to 25 by 1978-79

At the state level, the State Family planning council was formed with the Minister of Health as chairman. A Family planning Bureau, for each state was formed with a Deputy or Joint Director in the Directorate of Health Services, for Family planning purposes, assisted by a Mass Media Officer, Health Education Officer, Medical Officers etc. At the District level the District Family Planning Bureau with a D.F.P.M.O. as the head and assisted by Extension Educator, Mass Media Officer, Statistical Officer and an Administrative Officer, was also formed. The integration of Famiiy Planning programme with other health activities has been effected upto the Block level. All these have helped to strengthen the organisation.

The above changes were meant to suit the shift from the former "clinic approach" to "extension approach", where the aim is to take the message of family planning to the door steps of the people and explain to them the benefits of a small family. For the furtherance of this objective, honorary education leaders were appointed at all levels and the voluntary organisations were also brought in to the fold.

The changes also resulted in a better coverage of the entire country. Each P.H. Centre was to cover a population of 80000. The number of subcentres for each P.H. Centre was raised to 8, so as to have a sub-centre for each 10000 population.

In the country as a whole the expenditure during the IIIrd plan was Rs. 2485.95 lakhs Compared to a mere 215.68 lakhs during theIInd plan. The number of clinics rose from 1649 to 11474 during this period (5). Besides there were 9329 centres for distribution of contraceptives.

With the organisational changes noted above, speedy implementation of programmes and increased allocation, the sterilisation programme gained considerable momentum during the IIIrd plan. 1,378,833 operations were done during this period. Thus, the achievements upto the end of the IIIrd plan works out

(5) Demography & Development Digest Vol. I No., January 1967. D.R.C. Dept. of ECo. University of Lucknow.

to 2 97 per thousand 67-68 population and 1-65% of the estimated reproductive couples (67-68) in the country (6). Even though I.U,C.D. was introduced only towards the end of the IIIrd plan period, 8 lakhs insertions were made during the year 65-66.

1.3.3. Progress during 66-67 and 67-68:-

The tempo of progress, for which solid foundation was laid during the IIIrd plan (61-66) continued during the years following IIIrd plan though the IVth plan as such, did not take final shape. Those states which could not complete the organisational set up contemplated by the changes effected in 1963, proceeded with the completion of implementing such changes. In order to reach remote and inaccessible rural pockets, one mobile sterilisation unit was sanctioned for each District Bureau.

The progress of achievement during 66-67 in terms of sterilisations done was 868350 which works to 0.94% of the estimated reproductive couples in the country (7). But the number of I.U.C,D. insertions met with a setback with only 0,917 million, against a target of 4:20 million. probably due to the large incidence of complaints. In the following year 1967-68 a further set back was received and only 662178 insertions could be done. But the progress of sterilisation operations in 1967-68 was remarkable with 1823760 sterilisations, which works out to 3 55 per 1000 (8) 1967-68 population as against 1.69 (9) during the previous year. The sterilisation in 67-68 is 333% (10) of the 65-66 performance.

The programme as it has evolved and developed during the course of years, has given to the country an organisation with a very wide net work of suitable agencies, at various levels, for ensuring the distribution and supply of services, and of motivating and educating all the eligible couples. Adequate provision within the organisation is made for training of personnel, research in widely different but related fields like demographic, communication, action and biomedical aspects, evaluation of the programmes and for the local manufacture of contraceptives to meet the increased demand in future.

1.4 Family Planning in Kerala:-

The family planning programme in the State has only a very recent origin. Though individual attempts were made earlier, the official beginning the State was a very modest one with the opening of 11 clinics during the year 1955. With the beginning of the IInd five year plan, 70 clinics were opened. Facilities for sterilisation operation were provided in 53 institutions during this period and the system of allowances to persons undergoing sterilisation operations, was introduced. The State Family Planning Board, consisting of officials and non-officials, was constituted in 1958 to guide the Family Planning activities in the State.

With the IIIrd Five year plan, which set a momentum to the programme over the whole of India, there was expansion of activities in the State also. 50 more clinics started functioning. Family Planning centres were opened in 93 Panchayats. For effective supervision of the programme three Regional Family Planning officers were appointed in addition to one medical officer in each of the District. Facilities for sterilisation operations were provided in 20 moreinstitutions in 1962. Further the state Government introduced a scheme of incentive by paying Rs. 5/-to the promoters of the sterilisation cases. Committees were formed at the Panchayat, Taluk and District levels. 20 private institutions also extended their services in family planning activities. In July 1965, the I.UC.D..was introduced as a safer but effective contraceptive.

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6. J.N. Sreevasthava 'Family Planning in India' (Page 21)
7. J.N. Sreevasthava 'Family Planning in India (Page 31)
8 & 9. Ibid
10. "Studies in Family Planning" Novembsr 68 (Population Council)

The family planning organisation was reorganised under the directions of the Government of India in April 1964. According to the new set up there are four important units:-

1. The State Family Planning Bureau
2. The District Family Planning Bureau
3. The urban Family Planning Centres,
4. The rural Family Planning Centres.

The Family Planning activities of the state are under the control of the D.D. (F.P. and M.C.H) who is assisted by A.D.H.S. (F.P.) and ancillary staff. At the District level the District Family planning Medical Officer is in charge of the family planning activities in the District. There are 22 urban centres in the State. The urban centres are attached to Hospitals in important towns having a population of 50000 and over.

The rural family planning units numbering 160 in the whole state function under the Medical Officers in charge of P.H. Centres. Auxilary nurse midwives-one for every 10000 population and Family Planning Health Assistants at the rate of one for every 20000 population are also posted.

There are two Regional Family Planning Training Centres in the State, one at Trivandrum and the other at Kozhikode.

The expenditure incurred for Family Planning during the three plan periods and the two years following the 3rd plan are as given below.

I.	Five Year Plan	Rs.	4407
II.	Five Year Plan	Rs.	942550
III.	Five Year Plan	Rs.	137,23,887
	1966-67	Rs.	86,58,439
	1967-68	Rs.	1,31,83,850

The rapid progress of the programme is evident from the mounting figures of expenditure. In the years that followed the IIIrd Plan also. there is evidence of increased attention to family planning.

The achievement in the field in terms of sterilisation and I.U.C.D, insertions over the years are given below,

Year	*Vasectomy*	*P.P.S.*	*Total Sterilisations.*	*I.U.C.D.*
1957	521	158	679	....
1958	1653	1507	3160	....
1959	4132	2236	6368	....
1960	3079	1983	5032	....
1961	3578	2932	6517	....
1962	4182	2916	7098	....
1963	10396	2830	13226	....
1964	17938	3960	21904	....
1965-66	43371	7797	51168	34812
1966-67	33069	7205	40274	40760
1967-68	53756	11399	65155	37553
1968-69@	527222	10853	63575	30083

@ (Up to (31-12-1968)

In addition to these a considerable number of couples use other methods of contraception. The following figures indicate the progress in the use, of different types of contraceptives.

Contraceptives issued	*Units*	*Year* 1966-67	1967-68	1968-69 (*upto 31-12-68*)
Nirodh	Gross	1540	8959	8236
Jelly	Tubes	14506	12242	5196
Foam tablets	Tubes of 10 tablets.	8929	16100	8550

The achievements during the last few years have been encouraging. Foundations have been well laid for still better results in the years to come. Considering the urgency and seriousness of the problem, and what remains to be done, the work done so far does not give room for any complacency. The intensive efforts of motivation made possible during the last few years, are likely to bear long term effects by wider acceptance of the programme.

CHAPTER 11

PRESENT STATUS OF POPULATION RESEARCH WITH SPECIAL REFERENCE TO FAMILY PLANNING

2.0 - Introduction.

2.1.0 - Status of population Research in India.

2.1 1 - Progress of population Research in India

2.2.0 - Shift of emphasis to Research on communication and evaluation.

2.2 1 - Communication Research.

2.2.2 - Evaluation

2.3 - Research work of D.R.C.

CHAPTER II

Present Status Of Population Research With Special Reference To Family Planning.

2.0. Introduction:

With the dangers and problems posed by the unprecedented increase in human number, the subject of population as a matter of scientific study, has gained considerable status and popularity during the course of the last three or four decades. Even though its emergence as a separate and distinct discipline is recognised only in very few academic institutions, it is treated as a course of specialised study, under one or other major subjects like Sociology Statistics or Economics. The interest shown by individual thinkers and autonomous or semi-official bodies of national governments and international organisations, have also helped to increase the inportance and status of the subject. Along with the increased attention and gain in status, research on various aspects and related fields of population has attained new dimensions with the help of modern statistical techniques and research methods of social sciences. The evolution of the idea of conscious and deliberate economic planning, as a means to raise the level of living and the technological possibilities opened up by various methods of birth control, have given further fillip to the advancement of population research.

2. 1. 0. Status of Population Research in India.

India being the second largest populous country in the world and accomodating within its boundaries 14% of the world's population, has of late rightly given increasing attention and importance to the development of population research. Government of India have adopted the policy of planned econmic development for raising the living standards of her people, Government have also accepted the responsibility of spreading the message of family planning to limit the size of family and thereby the country's population. Both these factors have contributed to the increasing importance of population research as well as research on family planning. Thus the status of population research with special emphasis on family planning has been raised to an enviable level, considering the short period since it was given recognition.

The ambitious programme of 1961 census which aims to bring out 1476 volumes, is another example of a felt need for more and better population data and of a new emerging interest in population analysis. The establishment and development of a country wide sample registration to obtain reliable estimates of birth and death rates, annual sample censuses and model Registration and the plan to include in 1971 census elaborate information on fertility and migration, are all evidences of the increased status and importance given to providing basic population data for furtherance of population research. The establishment of premier "Regional Training and Research Centre" in Bombay (D.T.R.C.) is another land mark in the recognition of the status of population research.

2. 1. 1. Progress of population Research in India

There were some earlier attempts to study the different aspects of the population and to compare the fertility performance among some cross sections of the population as back as 1930. But official attention was given only in 1951, the beginning of the Ist five year plan, which stressed the need for demographic researh in

the field of family planning and Man power requirements. The increasing importance given to Demographic Research and Training, by the Government of India is amply illustrated by the mounting increase in expenditure for demographic training and research as shown below during the plan periods, and the number of Demographic Research Centres established.

	Expenditure on Demographic Training and Research (Rs. in lakhs)	No. of Demographic Research Centres established.
Ist Five Year Plan (51-56)	0-99	....
IInd do (56-61)	19-22	4
IIIrd do (61-66)	41-00	3 (and 3 in 1966-67)

With the commencement of the Ist Five Year Plan, a family planning Research and Programme committee was appointed to give direction and to effect necessary co-ordination to the research activities of the various organisations. Though some changes were introduced in the organisation of this committee the main lines along which research was directed were (1) the Socio-economic and cultural aspects and (2) biological and quantitative aspects of population. The increase in the number of demographic research centres, established during the course of the various plan periods, has helped to bring out a large volume of research studies on the different aspects of population. Though fields like internal migration and urbanisation, mortality, population projection and demographic problems of economic development are covered, there is heavy weightage in favour of studies relating to fertility and family planning. This is only natural in the present context..

2 2 0. Shift of emphasis to Research on Communication and evaluation.

The evaluation of family planning programme in India as a comprehensive national programme; with its basic philosophy, of educating and motivating the people to accept a small family norm, has given a natural shift of emphasis in research, to communication aspects and evaluation of the different objectives of the programme.

2. 2. 1. Communication Research.

The communication aspect of the programme has gained significant importance because of the emphasis given to motivating the people through education. The most effective channel of communication has to be decided. This varies from place to place, in view of the diversity of Indian socio-economic condition. Similarly the best medium of communication (which will give the maximum effect) has also to be chosen after trials of various media under different socio-economic and cultural settings- The realisation of the importance of this communication aspect of the family planning programme has led to the establishment of nine communication action research centres, which have been specialising on this aspect only. The research activities of these centres have been attempting to locate the accepted credible sources of new ideas, the invisible process of information-dissemination in the villages, the relevance of power stricture in the family and the village, for the spread of new ideas and such other aspects of the communication process.

2 2.2. Evaluation:

Any large scale programme involving huge cost in terms of money and personnel have to be evaluated against the broad objectives laid down for the programme: The programme has got a built-in evaluative machinery, starting from the lowest level, to ensure a continuous flow of relevant statistical data. Besides

the various Demographic Research Centres, have undertaken evaluation Studies of the different aspects of the programme. Since educating and motivating the people, are the most important aspects of the programme, evaluation has to be in the direction of finding out the level of knowledge before and after the programme, direction and degree of change in the attitude and behaviour of the people, after the introduction of the programme etc. The present emphasis is not only in measuring the existing level of knowledge, or prevailing opinions and attitudes, but also in assessing the changes resulting from action programmes.

The interview method is still in common use. But it will be worthwhile to attempt on evolving sophisticated techniques of introducing scoring system to grade "Knowledge" to measure "attitudes" by using standardised attitude scales and to ensure sharpness in definitions, so as to gain an accurate picture of knowledge and attitudes and the degree and extent of their change. Several cross-sectional studies to assess the extent of contraceptive practice the attitude of clientele towards the services offered by clinics, etc. have also been undertaken. Baseline surveys to give a benchmark of the existing level of knowledge, attitude and practice and retrospective surveys have also been common.

2. 3. The Research works of the D. R. C. Trivandrum.

In Kerala, which is considered a demographic laboratory, one of the first four Demographic Research Centres, was established in 1958, as part of the Bureau of Economics and Statistics. The Centre has conducted several studies on attitude to family planning, on fertility, mortality, assessment of family planning programmes and on the socio-economic and demographic characteristics of family planning acceptors. The attitude survey conducted in 1958, showed that there was a favourable climate for the propagation of family planning. Fertility differentials were found to be very little between rural-urban or between different occupational groups. Studies on the characteristics of sterilised persons and I. U. C. D. acceptors and after-effects of sterilisations, have given an insight into the types of persons coming forward to Family Planning Services and to the unfounded nature of complaints. Studies about the effect of matriarchal system on fertility, variation in fertility between two generations, morbidity and mortality patterns and reports on population trends in the State and Districts, have been some of the other items of work undertaken by the Centre.

Besides the D.R.C., the University of Kerala is conducting research on the communication aspects of family planning.

The results of the studies are used by the Government, particularly the Departmet of Health Services, for making policy decisions.

CHAPTER III

RESEARCH ON POPULATION AND FAMILY PLANNING

CHAPTER III

Research on Population and Family Planning

3.0. Introduction:

From the first two chapters, it is evident that the research on population and Family Planning is of recent origin. Considering the very short period, there is a proud record of research output and this in spite of scanty reliable data. Yet much more remains to be done and there are areas that still remain unexplored.

An attempt is made in the following paragraphs, to high light some of the important research activities, undertaken by the various Institutions all over India in the field of population and family Planning. The studies have been classified into 7 broad divisions and other studies have been put together in the 8th group. The coverage is not by any means exhaustive and omission of studies, in any, should not be construed as minimising their importance.

3. 1. Family Planning.

The acceptance of Family Planning as a national policy by the Government of India and the massive size of the programme have naturally resulted in some weightage to Family Planning, in the matter of research. The studies, relating to Family Planning have been conducted by the various Demographic Research Centres, Directorates of Health Services, of States, State Bureau of Economics and Statistics, Indian Statistical Institute, Family Planning Training and Research Centres and some medical research organisations.

The range of Family Planning studies covered by the above institutions are of a wide and varied nature. The more common areas covered are, the demographic and socio-economic characteristics of Family Planning acceptors, follow up study to assess the aftereffects of sterilisation and I. U. C. D. as well as complaints arising from sterilisation and I. U. C. D. and K. A. P. Surveys. Other aspects which have been studied, though not so common as the above, are impact of sterilisation on Birth Rate, discrepancies in the response of husbands and wives regarding their practice of family planning, availability of contraceptives, psychological study of I. U. C. D. acceptors, impact of radio broadcast on I. U. C. D., evaluation of family planning, educational sessions to women in post-natal clinics, communication and motivation for vasectomy, process of decision making, reasons for drop out, delay in getting vasectomised, relation of I. U. C. D. acceptance to residential status, and social status, age at menarche, and incidence of abortion.

The most common aspect of family planning covered by all the centres, is the demographic and socio-economic characteristics of persons sterilised, I. U. C. D. acceptors and visitors to Family Planning Clinics. According to a study on the characteristics of persons sterilised, by the Demographic Research Centre, Baroda, the median age at sterilisation is 35.6 for females and 36.1 for males. The median age in Kerala is found to be 37.5 for males and 30.3 for females, according to the studies conducted by Demographic Research Centre, Trivandrum.

The highest percentage of males sterilised in Kerala is in the age group 35-39, (34.75%) and females in 30-34 age group (34.51%) According to a study by the D.H.S. Gujarat, in Kaira District more than 45% tubectomies were on females aged 33-34 years. A study of 8443 cases of Vasectomy in Punjab, by the Family planning Training and Research Centre, Punjab has revealed that only 28% were below 34 years.

The number of children living to sterilised males is 44 & to females 4.9 in Kerala. According to a study in Karia District 81% of Tubectomy cases (Female sterilisations) had more than 3 children living. An Andhra study shows that 87% Vasectomy cases and 84 tubectomy cases are for persons having 3 or more children.

The studies of the Kerala Demographic Research Centre as well as that of D.H.S. Gujarat show that persons from the lower income groups resort to sterilisation.

The relative number of females accepting sterilisation is showing a decreasing trend in Kerala from 33% in 1956-61 to 19% In 66-67. But the study by the Demographic Research Centre, Baroda shows the ratio of Vasectomy to tubectomy as 2:9 in Baroda city and 1:10 in rural Baroda.

According to the Kerala studies, it is found that Muslims are comparatively reluctant to adopt sterilisation.

Studies have also been made about the characteristics of I.U.C.D. acceptors, in various parts of the country. According to a study of loop cases by the Family Planning Training and Research Centre, Punjab 53.5% of the cases were between 20-29 years, while an analysis of cases inserted with loop in the clinics of Chandigarh, 55% are mothers of less than 30 years of age. A preliminary evaluation of I.U.C.D. programme in Sabarkantha District by the D.H.S. Gujarat, has shown that 41% belong to 30-34 age group. According to an analysis of 1258 cases in two hospitals of Trivandrum city by the Demographic Research Centre, Trivandrum; 34.4% are in the age group of 25-29 years, while 60% are below the age of 30 years.

As regards the number of living children to I.U.C.D. acceptors, a study by the D.T.R.C. Bombay has shown that 60% of the women had 3 or less living children while another study of D.T.R.C. shows this as 64%: Yet another study of 1212 cases of loop insertions has revealed that approximately half the mothers had 4 children or less. The Kerala study shows, that 57.7% had 3 or less children.

The D.T.R.C. study on I.U.C.D. acceptors shows that 82% of the women had never used an contraceptive before inserting the loop.

Findings regarding the nature of complaints and the proportion reported as suffering from each complaint in the various studies in the different parts of the country, are interesting. A follow up study of I.U.C.D. acceptors by the D.T.R.C. shows that 82% of the women had bleeding after I.U.C.D. insertion. In a similar study by the F.P.T. and R.C. Punjab, the percentage reporting bleeding is 31%, while in a follow up study by D.H.S, Andhra Pradesh, the percentage is 24%

Coming to the rates of expulsion and removal for different cumulative periods, in months, wide variation is found. According to a D. T. R. C. study the cumulative rates of expulsion at the end of 6, 12 and17months were,8.3, 13.5 and 20.2 per 100 women respectively.

In a follow up study of loop cases after one year of insertion, 14.5% of the mothers had the loops expelled or removed. The study by the D. H. S. Andhra Pradesh shows that after two years, the expulsion rate was 29% and removal rate was 31%.

The after effects of sterilisation have been covered in a study by the D. R. C. Trivandrum. Analysis of the reported complaints shows that 13% of the females and 14% of the males had no sort of complaints due to sterilisation, while 24% of the females and 18% of the males reported only one complaint. The bonafides of the complaints being attributable to sterilisation is doubtful, as there was no previous medical checkup of the persons coming forward for sterilisation.

A number of K. A. P. surveys have been conducted in various parts of the country, to find the level of knowledge, attitude and practice and the degree of changes in such levels. These surveys have been more or less of the standard type. Survey along this line was the first to be undertaken by the Demographic Research Centre, Trivandrum.

According to a study conducted by the I. S. I. on the impact of sterilisation on birthrate, on the condition of eligibility for sterilisation being that the married women must have at least 3 children and must be in 20-44 years, a rate of 7 sterilisations per 1000 population per annum, would bring about a fall in birth rate by about 20% in 10 years.

In a study by D. T. R. C. Bombay on the discrepancies in the response of husbands and wives regarding the practice of family planning, it is seen that wives report less frequently the use of condom and rhythm and more frequently the use of withdrawal.

In an enquiry into the availability of contraceptives in Chembur by the D.T.R.C. Bombay, it was found that in a population of 25000 currently married women between the ages of 15-44, there were six medical stores and general stores that sold contraceptives

A psychological study of I. U. C. D. acceptors by the D. T. R. C. has shown that,unhappy acceptors had emotional shock at the time of menarche and lacked knowledge of the physiology of reproduction.

The impact of a radio broadcast about I. U. C. D. has been the subject of another study. According to this study, 67% had heard about the I. U. C. D, on the radio. 85% were in favour of including Family Planning in radio broadcasts. The listeners felt that they were convinced about the contents of the programme that their doubts had been cleared, the information was adequate and the presentation interesting.

An evaluation study of family planning educational sessions with women in the post-natal clinics has shown that 80 percent women spoke to their husbands about family planning sessions. 96.5 percent of them agreed to take positive steps for practising family planning.

Yet another study by the D.T.R.C. about the communication and motivation aspects of vasectomy campaign has shown that prompt and easily available service was one of the important factors in getting persons to undergo the operation. Most of the vasectomised persons are willing to motivate others.

The process of decision making for I. U. C. D. has shown that 92.4% of the couples had discussed between themselves before arriving at the final decision.

The reasons, for dropout among men registered for vasectomy have been enquired into. This study shown has that 45 percent had not accepted the appointment voluntarily. The dropouts occured more often among men who were younger in age, were less educated and holding unskilled jobs.

An enquiry into the reasons for delay in getting vasectomised, conducted by the Family Planning Training and Research Centre, Punjab has shown that the delay was due to such reasons as fear of pain during operation, fear of impotence, shyness, fear of undefined consequences, lack of faith in efficiency fear of loss of respect, idleness, ignorance, lack of faith in hospital staff, preference for tubectomy and lack of communication between husband and wife.

An analysis by family planning Training and Research Centre, of I . U . C . D. cases by residential status and number of living children has revealed that loop was accepted slightly more in urban than in rural and few mothers accept any contraceptive, unless they have at least one living son. According to another study by the same centre, on the social status of mothers accepting loop and fathers accepting

vasectomy, it is seen that 43 percent of the mothers belonged to scheduled castes 20 percent of vasectomised persons belonged to scheduled castes.

The Family Planning Training and Research Centre, Bombay has conducted some research study on family planning. A study on the age at menarch of school girls in Bombay has put the average age at the onset of mensturation at 13 years and 5 months. The menarche is found to occur earlier in the group which had a balanced and nutritious diet.

A study on abortions has revealed, high prevalenec of both induced and natural abortion, among lower income group.

The newest scientific discovery, in the field of contraceptive is the pill. Because of its effectiveness and convenience, it has become increasingly popular throughout the world. The Dr.Purandere Obstetric and Gynacological Research Centre, attached to K. E. M. Hospital, Bombay has been conducting trials with oral contraceptives since June 1962. Many drugs of varying compositions and doses have been tried at the Centre. Some of the findings are, that 56.7 percent of the patients continued the method at the end of one year and that only 5.4 percent discontinued because of side effects. Another 7.2 percent changed over to some other drug because of disturbing side effects; pregnancy rate noted is only 0.7 percentage. However some of the patients confessed for having missed some tablets. Follow up studies on 225 patients, who desired programmes showed that 75 percent conceived within the first 3 months of stopping the pills, and most of the remaining conceived within six months.

Another study of the users of oral contraceptives showed that 50 percent discontinued the tablets. Of this only 9 percent discontinuedt for related reasions - which include side effects fear of side effects and inconvenience to take the tablets regularly; the other 41 percentage dropped out for reasons unrelated to the use of pills-namely change of address, patients going back to their native places, persons finding it inconvenient to attend the centre, desire of pregnancy etc.

The Centre is also conducting studies on the long term effect of these pills on the liver, eyes blood, urine, endometrium, cervix etc. No irreversible harmful effects have been found. The studies of the Centre have also led to the imperative need for a through physical examination before with pills,as some of the diseases of the liver, cancer of the breast or reproductive organs thrombosis or varicose veins are contraindications for the use of the pill.

Fertility.

Not only is fertility one of the important components of population change, but it is the component that is crucial in attaining the ultimate object of the Family Planning programme-namely reducing Birth rate and thus controlling population growth. In view of the growing importance of family planning, fertility studies have also gained importance. The studies under this category include, those on differential fertility, fertilty trends, factors affecting fertility, birth intervals and variation in fertility between two generation.

The D.T.R.C. Bombay has conducted several studies on these aspects. These include Indian fertility levels in a changing economic and social setting, physiological factors affecting fertility in India estimates of reproductive rates for Asian countries from census data and the effect of induced abortion on Indian fertility. A survey of lacation amenorrohea shows that among fully breast feeding women the period comes to 19 Weeks with a standard errors 0.48 weeks.

The D.R.C. Calcutta has conducted a study on the association between social mobility and fertility in West Bengal.

The results have revealed that a moment from agricultural occupations, other than agriculture labour to agricultural labour class or urban manual labour class lowered fertility.

Another study, using N.S.S. data (7th round-rural) has revealed that at the rate of 1.5 percent increase per annum in the average living standard (per capita consumption), the rural birth rates will drop from 40 to about 30 per thousand in about 30 years.

Net reproductivity by Districts of west Bengal around the year 1961, has been studied with the help of a replacement index. It has been found that there is a significant negative association between net reproductivity and factors such as literacy, female age at marriage and density of population.

The Demographic Research Centre, Baroda has conducted a fertility study in Baroda city and adjoining rural parts. The over all median age at marriage of females is noted to be 15 years in urban areas and 12 in rural areas. Another study, on the impact of demographic variables like education of couple, occupation of husband, and rural urban characteristics of the couples on fertility, has revealed that education and occupation have a significant impact on fertility of a couple, but rural urban difference does not have much impact. Wife's education seems to be more important in bringing down the fertility level.

Other D . R . Cs bave also conducted studies on various other aspects of fertility, like analysis of birth intervals of Indian women, inter state variations in vital rates and family planning efforts. Studies by D. R. C. Trivandrum have covered such aspects as the effect of matriarchal system on fertility and variation in fertility between two generations. The finding is that the matriarchal system is not conducive to high fertility. The fertility of mothers as compared to their daughters, as more and the daughters do not as a rule, accept the mothers as their reference group, for their fertility behaviour. In the matter of spacing also the daughters have shown a deviant behaviour, when campared to their mothers.

A Demographic survey of six rural communities by the Gokhale Institute of Politics and Economics has studied the physiological factors affecting fertility such as age at menarche, and menopause and period of amemorrohea. Nearly 40 percent women reach menarche at the age of 13 or earlier. 54 percent of age 45 are found to have attained menopause.

A Demographic survey of Patna has shown the completed fertility of women above 44 years to be 5.5 and that the age at marriage is increasing over time. The average number of children increased with income upto Rs. 100/-P.M. when the income increases further the fertility decreases. The non vegetarian mothers had a slightly larger number of children.

3 8. Marriage:

As one of the important factors affecting fertility, the effect of the age at marriage has been studied in several papers. The D.T.R.C. Bombay has studied the demographic, social and psychological implication of raising the age at marriage and the effect of change in age at marriage on birth rate. A study on the age at marriage, at widowhood and first delivery, by D.R.C. Trivandrum has revealed an increase in age at marriage as the educational standard increased. There is no significant difference in age at marriage between income and occupation groups. The average age at marriage is greatest for Christians and least for Muslims. Regarding age at widowhood no noticeable difference seen between various, religious, income and occupational groups.

3.4. Mortality & Morbidity:

The number of studies on mortality is comparatively less than the number on other topics.

The major contribution is from the D.R.C. Calcutta. A pilot survey was conducted in Calcutta City in 1959-60, to obtain age specific death rates and causes of death for the resident population of the City. A study of regional mortality in India was conducted using data from the Municipal corporations of Calcutta, Bombay, and Madras.

The effect of decline in mortality on birth rate and related measures has been studied by D.T.R.C. while the D.R.C. Delhi has studied the inequalities in infant mortality.

The D.R.C. Trivandrum has prepared life tables for kerala for the decades 1931-40 and 1941-50 A paper on "Models in Mortality Research" reviewing mortality research and stratifying countries on the basis of a composite Index of Socio Economic and Health Condition has been published. The U.N. Model life tables were revised by Dr. R. S. Kurup, of the Centre based on the composite index of stratification.

On morbidity only a few studies have been conducted in India, apart from the data thrown out by the N.S.S. The D.R.C. Calcutta has conducted a pilot health survey in West Bengal and a follow up study of inpatients of maternity wards. The objective of the study was to examine infant health conditions, in terms of morbidity, mortality and development and their association with factor like birth weight, social status, housing condition etc. The analysis of data revealed that the leading cause of death during neonatal period was prematurity. A maternity standard in terms of birth weight has been worked out taking into account the chance of survival and level of five pound was found to be reasonably satisfactory. The D.R.C.Trivandrum has conducted a study on the incidence a smallpox in T.C. area of kerala.

3.5. Migration:

The migration studies conducted in the country are mainly based on the place of birth statistics available in census reports.

The major contribution under this category is from the D. T. R. C. Bombay. These include the historical study of internal migration, interstate migration 1951-61 juvenile working migrants in great Bombay, etc. Data on place of birth and duration of residence have been used in studying the age structure of migrants. In another study, migration and economic activity in Orissa State, has been dealt with migrants from contiguous states showed smaller differences with nonmigrants in their industrial composition than did migrants from far away States.

Some of the other studies in this category are the internal migration in India, Pakistan and Ceylon by D.R.C. Delhi, migration studies by D.R.C. Poona and a study of immigrants in Dharwar area and immigration in a Mysore village by D.R.C. Dharwar.

3.6. Urbanisation:

Since urbanisation is a very important phenomenon of our time, this subject has received attention from some quarters. The D. R. C. Delhi has studied the urban sprawl, land development and land prices. Besides, six decades of urbanisation in India 1901-61, urbanisation in Durgapur-Ranchi industrial complex, and urbanisation in Greater Delhi have been covered in the studies by D. R. C. Delhi.

The D. T. R. C. Bombay has studied the population distribution, density and temporal changes in size and characteristics of urban population in E. C. A. F. E. Countries.

The Gokhale Institute of Politics and Economics Poona has studied over urbanisation in India, as well as urbanisation and housing and urban social situation in India.

3.7. Manpower:

Planning of Manpower is not only an important aspect of development planning but closely connected with the demographic structure of the population. With a view to study the availability of various technical personnel, in India and the States the Institute of Applied Manpower Research has conducted several studies.

The D. R. C. Lucknow has studied the employment aspect of technological change and returns approach to educational planning.

3.8. Other Studies.

Apart from the above major categorisations. other studies can be summed up under such headings as Evaluation of Census data. population projections, Regional and country studies, population growth and economic development and on techniques of demographic analysis.

Some of the studies by D. T. R. C. Bombay have brought out the nature and extent of errors in census data and the means of adjusting such errors. Population projections for states and smaller regions, the number of School going Children have been useful for purpose of planning. The study of the characteristics of the population of different regions such as states, districts and towns, has helped to highlight the demographic peculiarities of the regions concerned. A few studies have also attempted to unravel the interrelationship between population growth and economic development. Theoretical studies on methodology and techniques of analysis have been undertaken by some of the centres. These include, the development of models in assessing the impact of sterilisation, abortion etc. on birth rate, the use of stable population for estimating birth and death rate, methods of target setting etc.

3.9. Conclusion:-

In the foregoing paragraphs, the research done so far has been summarised. New vistas of research have been opened and the need for more and more research on the dynamics of population has been evident. The official attention received at the various contres of research activity has not been uniform. The various aspects of family planning have received greater stress, as it is considered the need of the hour. Some areas like migration, morbidity, interrelationship of population growth and economic development have not attracted enough attention.

Some of the general findings of the studies are that the median age of sterilised males is above 35 while that of females is between 30-35, that the majority of the sterilised males belong to 35-39,as against 30-34 for females. The ratio of female to male sterilisation is declining. The number of living children to sterilised males is more than 3. The percentage having complaints is small and in the absence of premedical check ups, the extent of complaints cannot be reliably assessed.

The majority of women accepting I. U. C. D. are in the 20-29 age group. They are having 3 or less than 3 children- A substantial portion has reported bleeding as a complaint. The rates of expulsion, and removal vary between regions and among different groups.

Oral Pills are still in the experimental stage. In cases where this has been discontinued conception has taken place after 3 months indicating thereby that the fertility or fecundity has not been impaired.

Some of the new fields of research thrown up by the present programme, and which require more intensive research are, the effect of the programme on birth rate, problems of target setting, several problems in the field of communi ation etc.

Just like other fields of knowledge, the problems of population change-especially the effects of large scale Family Planning adoption by couples-are innumerable in number and variety. They offer a never ending challenge for extending the frontiers of knowledge about this complex and dynamic phenomenon of population growth.

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PART II

THE POPULATION PROBLEM OF KERALA

Dr. R. S. Kurup, P. S. G. Nair and N. V. George

Introduction:

It is often said that Kerala is a problem State for the planners and administrators. It seems that this is a problem State for the demographers also as the problems faced by the demographers in regard to the population of the State defy easy solutions. The nature and intensity of the problems are more serious than of other States and they are set against a social and economic background, whose pattern and web are quite different from the rest of India. The State poses a dilemma because the State's economy is typical of a developing nation, but some of the demographic characteristics are similar to those of the developed countries of the West. It may not be far from correct to suggest that all the difficult economic and social problems of the State emanate from one Central problem-namely that of population.

II. Characteristics of the Population:

The population problem of the State has a long history. It has been growing steadily from just 64 lakhs in 1901 to 169 lakhs in 1961, with an estimated 202 lakhs at present. The rate of growth of the population has been higher than that of India, and that rate itself has been growing. This continued growth has resulted in the State having the highest density (of 1127 persons per sq. mile) in 1961 among the Indian States. The density will further increase in future, due to population increase. Besides the very high density and the higher growth rate, the unique characteristics of the population as compared to the All India pattern are, the excess of females over males, the much higher level of literacy, higher proportion of workers in non-agricultural categories, higher mean age at marriage and lower mortality level. The percentage of population in the ages is very high -41%.- though this is in keeping with the All India pattern. All the above characteristics of the population have created problems in the different sectors of the economy, of which the more important ones are discussed in the following paragraphs.

III. Food and Agriculture:

The economy of the State is mainly agricultural-considered both from the point of its large share in the State's income and dependence of the majority of the population on this sector. Under the existing cropping pattern of the State only a low proportion of land is devoted to food grains-60% of the cropped area being under cash crops. In view of this important factor on one side and the need to feed the growing number of people, the state has always been facing food shortage-almost to the tune of 54%. To attempt diversion of lands under cash crops for increasing food production would be suicidal, as it would adversely affect the foreign exchange earnings, as well as the industries of the State. At the same time, to continue with the wide food deficit may not be wise, considering the precarious position of food supply and the huge amounts that have to be spent every year. The only alternative is to increase substantially the yield per acre, from the land already under paddy cultivation.

Considering the world standards of rice production and the break-through in agriculture that is expected by the experts following the introduction of improved seeds there is no doubt regarding the possibility of success. The majority of the holdings are small in size and they are getting smaller due to population increase and fragmentation resorted to. This is a major hurdle in attaining the break-through in agriculture. The per capita availability of cultivatad land is as low as 27 cents in 1961. Besides, the extent of cultivable land will further decrease over the years, due to increased demands for housing and such other non-agricultural uses, made by the increasing population on the limited land that is available.

The past experience has shown that even when food production has increased over a period of time, the extent of deficit has remained as such or widened due to population increase during the same period. Further, it is estimated that since our population is growing at 25% even if our rice output increases by 5% per annum the rate of deficit would continue for twenty years. If the optimistic hopes, of achieving a relative self sufficiency in rice production, by a technological escalation in agriculture, are not to be defeated, it is essential that along with the increased rice production, a frontal attack on controlling the population growth is also launched.

IV. Employment:-

Large number of unemployed persons has been a chronic feature of the State's economy, just like the food shortage. The chronic malady has escaped solution, because of continued high rate of growth of population, which brings in large number of new entrants to the labour force every year. In fact, the rate of growth of the labour force is greater than the rate of population growth-an annual average growth of 2.68%

as against 2.47% population growth, between 1951-61. The estimated labour force for 1966 is 63 lakhs and for 1971, 71 lakhs.

The number of new entrants to labour force every year is much more than the number of jobs that could be additionally created. For example, during the first two Five Year Plans, the labour force increased by 11.62 lakhs, as against 6.47 lakhs of new jobs created. Again, during the third plan period, an estimated 6.5 lakhs of new jobs were created; but at the end of the 3rd of the place there were several lakhs unemployed the estimates varying from 5.5 to 8.45 lakhs.

In spite of differing estimates and dearth of reliable data one thing is evident from the above that the problem has remained unsolved because every year more persons are seeking jobs than could be newly created. Even if the lower estimate of the unemployment survey of the Bureau of Economics and statistics namely 5.5 lakhs is taken as the number unemployed in 1966, and estimating that 9.5 lakhs will be added to the labour force, 1.5 million new jobs have to be additionaly created to wipe out unemployment by 1971. This is an impossible task for the State's economy to achieve. The problem is made much worse, by the fact that a very large number of the unemployed are educated - 26.5% of the unemployed are matriculate and above. Another feature of great magnitude and significance is the prevailing underemployment among the employed persons- nearly 30% of them working only for less than 28 hours per week.

V. Dearth of Capital for Industrialisation:-

It may be argued, that the problem of unemployment has remained unsolved, because planning efforts have failed to create enough new jobs, to provide for all the new entrants to the labour force every year. New jobs can be created mainly by starting new industries, as the agricultural sector in the State is already very much over-crowded. A large scale programme of industrialisation, which alone can create sufficiently large number of new employments, is handicapped by severe inadequacy of capital, though other factors like, lack of enterpreneurship, low level of technology etc. are not to be ignored.

The scope for formation of capital, by savings from current income of the people, (which could be invested in industries) is seriously limited by an important factor which has at its root the demographic characteristic of the population, and this works in two ways. With 41% of the population below 15 years of age, the dependency load is very high. This is accentuated by those in the working age group who have no employment. The number of dependents per worker on an average is two. Due to the use of resources to bring up dependent children, who do not contribute to production, very little is left for savings. Secondly, because of the high proportion of persons in young age-groups, even a large part of the State's resources has to be spent on educational and health services. Thus very little capital is made available for investment in industries. This major hurdle to industrialisation can be overcome only by a drastic reduction in birth rate so as to reduce the wide base of the age structure of our population. This will reduce the dependency load and the need for diversion of available resources for more and more educational and health services; thereby making more capital available for industrialisation which will create more employment opportunities-

IV. Regional and Per Capita Incomes:

An examination of the regional and per capita income figures for any two time periods, will reveal that rise in regional income is not reflected to the same extent, in per capita income-the difference being accounted for by the rise in population. Between 1950-51 and 1963-64, while the net output of economic goods and services (at 1960-61 prices) registered an annual increase of 4.15% the per capita output increased only by 1. 15%-the remaining 3% being eaten away by the increase in population. Similar difference in the rates of increase in income could be seen for other time periods too. It is obvious that the advantages gained in raising the State Income could be more fully realised if only the growth of population is arrested. It may be noted here that the perca pita income of the State in 1964-65 at 60-61 prices was only Rs. 290/-

VII. Housing:-

The very high density of the population and its continued high growth rate, have their impact on housing. There is increasing need for more and more houses, as a result of new family formations and partition of joint house-holds, which is necessitated by increase in numbers. While the number of additional houses required every year is large, the availability of space for housing is meagre. The number of occupied residential houses has increased considerably during all decades from 1901-61, with the highest increase (27.4%) between 1951-61. The available housing conditions for the large majority are very poor and below the minimum requirements. Attempts to improve the situation are handicapped by increasing requirement, lack of space and lack of capital.

VIII. Social Services:

The expansion of the services sector consisting of education and health during the last one decade clearly shows the increasing need for such services, arising from continued population growth. The number of schools has been increasing every year, while very little could be done to improve the lack of facilities in existing schools. In spite of spending 38.6% of the States Revenue (67-68) for education and the per capita expenditure in Kerala being the highest (Rs. 18.48 in 1966-67), shift system had to be introduced in the first 3 standards of primary schools, thereby lowering the quality of education. This is so, because the enrolment of students for general education has been steadily rising every year from 28.42 lakhs in 1957-58 to 44.05 lakhs in 1966-67. This continuous increase in the enrolment of children, is evidently due to the high birth rate and low mortality-especially of very fast declining infant mortality-in the preceding years. It is also interesting to note that 90% of the total Government expenditure on education is spent on general education-because the rush of numbers is felt in the lower classes, at the primary and secondary stage.

The provision of adequate health services for a growing population is another major item of expenditure for the State Government. The estimated per capita expenditure of Rs. 5 28 in Kerala during 1966-67, exceeds the per capita expenditure of most other states (except Jammu and Kashmir).

The expenditure on this head as on other public health measures like provision of protected water supply, is bound to increase, with increase in population.

IX. Effect of Family Planning Efforts.

The gravity of the problem has been recognised by the Government and family planning has been given priority in the Five Year Plans. The programme gained momentum during the IIIrd Plan period. Sterilisation has been given top priority. Up to the end 1968, 2.84 lakh sterilisations have been conducted in the State. From July 1965 onwards facilities for IUCD insertion are also provided in the hospitals of the State. 1.43 lakhs IUCD insertions have been made in the State upto the end of 1968. At the rate of 1.5 births per sterilisation and 0.5 births per loop, about 4.98 lakhs births have been prevented so far. These achievements though impressive in terms of absolute numbers are not significant when the total number of females in the State are considered. According to 1961 census, there are 24.82 lakh married females in the 15-44 age group in Kerala. The total coverage by sterilisation and IUCD is only 15.3%. The reduction in birth rate brought out by the family planning programme is very little. According to estimates of birth rate based on sample registration which is in progress in 150 rural samples in Kerala, the birth rate estimated from the study is 38 for 1965-66 and 37.2 for 1966-67. The Registrar Generals estimate of birth rate for 1951-60 decade was 38.9. Thus the reduction brought about by the programme is very nominal. Intensive efforts are to be made to achieve the target of 50% reduction in birth rate.

Even if the present rate, of sterilisation and IUCD achievement continues, the birth rate will come down to 27 only in 1986; but by then, the population of the State will be 300 lakhs.

The Demographic Research Centre has conducted studies on the Socio-Economic characteristics of sterilised persons. These have revealed that sterilisation has not become popular among muslims as in the case of other religious groups. It is also seen that comparatively large proportion of persons from the lower income groups adopt sterilisation. Intensive efforts are therefore necessary to propagate the method among all sectins of the population.

X. Conclusion:

Besides the chronic food shortage, largescale un-employment, lack of capital lagging increase in per capita income, acute housing shortage, and huge expenditure on education and health, the social tensions resulting from increasingly large numbers of population create costly problems. The overcrowding resulting from large numbers is felt in towns and villages, in schools, hospitals, and everywhere. Much of the unrest for which the society has to pay dearly, by way of loss of public property and maintenace of a large police force, is due to increasing population. The frustrated idle hands in their prime of life, turn out to be satans, at the least provocation. The 41% of the population who are below 15 years is not only a heavy burden economically, but they also prove to be a social liability, as the society is not adequately and properly equipped to bring them up in a healthy and congenial atmosphere. To sum up, the problems thrown up by the alarming growth of population are so complex and manifold that they can be solved only by a bold, vigorous and comprehensive developmental effort on one side and a simultaneous effort at a drastic reduction in the birth rate for stabilising the population. Without success in the latter, the fruits of developmental efforts will vanish into thin air. Considering the small reduction achieved in birth rate, much more intensive work remains to be done.

ECONOMIC PROBLEMS OF POPULATION EXPLOSION A LESSON FROM THE EXPERIENCE OF KERALA STATE

By O· Ayyappan

I. Introduction.

The gravest economic problems of poverty and unemployment of Kerala raise two important questions (1) what is the basic cause of these problems and (2) how can these problems be solved. Judging from my own observation and understanding, I am definitely of the opinion that the mounting growth of population is the sole cause of these economic evils and control of population consistent with the possible rate of economic growth will be the lasting solution. That the excessive population increase is the villan of the tale can be well understood from an examination of the generalisation that overpopulation seriously hampers economic growth depresses per capita income, creates food scarcity and leads to wide spread unemployment and under employment. The purpose of this paper is to identify the inevitable economic problems of population explosion in Kerala. It is not a general survey of all the problems. but a mere examination of the above generalisations in the peculiar context of Kerala.

Although the population problem is a part of the nation-wide phenomenon that can be seen in other States also, it is peculiar in Kerala in many ways. Kerala is characterised by (1) high rate of population growth, (2) highest density of population, (3) heaviest dependency burden, (4) higher rate of literacy but lower rate of technical skill. All these factors are operating to retard economic growth in Kerala. These obstructions to economic development are amenable to control. In order to remove these impediments, it is necessary to comprehend the ways in which they hamper efforts to raise the standard of living of the people.

II. Crowded Picture:

Kerala with its already crowded condition is, in recent years, experiencing so alarming acceleration of population that it is impossible for it to bear the burden. The reasons for the excessive rate of population growth are increase in birth rate and decrease in death rate. The birth rate in 1966, according to the estimates of sample registration is 38 as against 38.9 in 1961. The death rate has decreased from 16 in 1961 to 10 in 1966. The increase in birth rate noticed during 1951-61 registered a slight decrease ie, 2.5% in 1966 which is so negligible as compared to the substantial decrease in death rate during the same period. The steep fall in death rate raised the average expectation of life at birth from 48 years in 1951-60 to 56.7 years in 1966, and resulted in the rapid population increase by more than offseting the insignificant decrease in birth rate.

The average annual rate of growth of population in Kerala in 1961 was 2.2% which increased to 2.51% in 1968 while the corresponding figures for all India were 2% and 2.46% respectively. This rate of growth as reflected in the density of population presents a disquieting picture. The density of population in Kerala in 1951 per sq.mile was 903 persons which increased to 1127 persons in 1961 and 1334 persons in 1968. From the point of view of density of population, Kerala can rightly be considerd as the most intensive demographic pressure spot which has, perhaps no parallel in the world.

In the predominantly agrarian economy of Kerala, the higher the density of population, the lesser the land per man, greater the degree of fragmentation of holdings and the smaller the output per man. The per capita cultivable land in Kerala was 27 cents in 1961. In 1956 more than half of the holdings were less than one acre. (2) The disastrous effect of sub-division and fragmentation of holdings on agricultural production especially food production will be dealt with in a separate paragraph.

1- Kerala-1967-An Economic Review P.14 State Planning Board.

III. Burden of Dependency:

Age structure of the population is of enormous importance for two reasons, (1)labour force participation is highly correlated with age and (2) consumption pattern will vary with variation in age "The effect of a steep decine in the general level of mortality without decline in fertility in accelerating the rate of population growth may be reinforced by the persistence of youthful age structure 3' This fact is illustrated by the age structure of Kerala.

4 Age Distribution of the population of Kerala.

Age group	% to total population
0— 4	15.8
5— 9	13.4
10--14	11.3
15--19	10.3
20--54	40.8
55 and above	7.9
All	100.00

A glance at the above table will show that as much as 41% of the population in 1961 was under age 15. Planning commission, Govt. of India- Revised population projection for the period up to 1981-prepared in 1964

This "inefficient and unfavourable age structure adversely affects economic growth in two ways (1) the relatively high proportion of young persons below working age tends to reduce labour, force participation and increase the burden of dependency (2) the population with higher burden of dependence exerts a constant pressure to divert investment to less productive or at least to less immediately productive uses. That is to say the more youthful the population the greater is the proportion of total savings that must be devoted to the rearing of the young and the smaller is the proportion available for productive investments.

Evidence for the above statement may be derived from an examination of the trend of expenditure on education and related activities for the young in Kerala.

IV. EXPENDITURE ON EDUCATION.

As a result of enormous increase in the enrolment in schools the number of schools (L. P. S., U. P. S. and H. S.) has increased from 9542 in 1958-59 to 10511 in 1967-68[5]. Similarly the number of teachers for these schools has also increased from 84185 in 1957-58 to 124822 in 1965-66.

The increase in the number of schools and teachers has led to the immediate increase in the expenditure on education and other social services.

About 38.6%[6] of the State expenditure under Revenue Account was on education in 1967-68. The per capita expenditure on education in Kerala increased from Rs. 6. 30 in 1957-58 to Rs. 18. 48[7] as against Rs. 7. 98 in Andhra Pradesh Rs. 11. 97 in Madras Rs. 10. 60 in Mysore Rs. 9. 01 in Maharashtra and Rs.9. 14 in West Bengal. This comparison shows that the per capita expenditure on education is highest in Kerala.

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2 - K. A. George- Population Growth in Kerala- Its implications P. 259- Demographic Research Centre, Bureau of Economics & Statistics, Trivandrum-1966.

3 - Frank Lorimer- Demographic Analysis- selected Readings P. 463 Free Press, Glencoe, Illinois- 1956.

It becomes increasingly clear from the above paragraphs that the multiplication of population below working age causes diversion of funds to social investment rather than economic investment.

V. Rate of Economic Growth:

The central problem of the effect of population increase on the standard of living should be studied with reference to the rate of economic growth in relation to the rate of population growth. The rate of economic growth is mainly a function of investment and capital output ratio. Investment depends upon the savings which, in turn, will be dependent upon the level of consumption. Higher rate of population increase necessitates a higher proportion of States income for consumption to keep per capita consumption from falling Higher propensity to consume characteristic of under-developed economy is an additional inducement for increased consumption. When consumption increases the proportion of saving and investment decreases.

Investment in Kerala in 1961 was only 8%[5] as against 11%[6] for all India. It is not possible here to show the change in the rate of investment during the Third Plan period in Kerala due to the lack of investment figures. Same is the case with capital output ratio. But the trend of change in State income in comparison with that of National income will help to arrive at certain conclusions.

Total state income of Kerala in 1964-65 registered an increase of only 15% over 1960-61 while the corresponding increase for all India is 17%. The average annual rate of growth of State income is only 3.75% as against 2.5% rate of population growth in Kerala.

In order to double the per capita income in 15 years ie. during three Five Year Plan periods, with a compound rate of 2.5% annual population increase, 12% average annual increase in State income will be required.

Alternatively to achieve the target of doubling the per capita income in 15 years with a constant population, a 7% average annual rate of increase in state income will be necessary. In the face of 2.5% annual rate of population increase an average annual rate of economic growth not less than 7% cannot be considered as a rapid rate. To achieve this rate of economic growth with a capital output ratio of 3:1* an investment of the order of 21% of the State income will be needed. This is all the more difficult in view of the rate of investment that could be made in 1961 with all efforts as well as in the light of the resource position of the State. It was the lack of investment for accelerated economic growth in the face of unprecedented and abnormal population increase that brought about the myriads of economic problems which we are suffering at present.

VI. Effect on Per Capita Income:

Increase in State income achieved has not been reflected in tact in per capita income. The increases in State income and per capita income during 1956-57-1965-66 is presented in the following table.

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5 -Kerala 1967- An Economic Review- P. 134-State Planning Board, Trivandrum.

6 -Ibid- P. 58

7 -Ibid-P. 132

Table II**

	At Constant (1960-61 prices) Prices		% increase
	1956-57	1965-66	
State income (Rs. in lakhs)	402.70	540.53	34
Per Capita income (Rs.)	262.69	288.95	10

This table reveals that during the period between 1956-57-1965-66 state income increased by 34% while the increase in per capita income during the same period is only 10%. What is the cause of this wide divergence between the state income and per capita income? The answer to this question will show the villian of the tale. The increase in State income has been swallowed up by the rapid increase of population with the result that the increase in per capita income has lamentably lagged behind. The inescapable conclusion is that the mounting growth of population must be checked to enjoy the increase in State income fully. This fact must not be lost sight of in fixing the target of doubling the per capita income in 15 years.

VII. Food Problem:

Another serious problem in the context of over population is the chronic food shortage in Kerala. As stated at the out set that the highest density of population has reduced the extent of per capita cultivable land in Kerala. The lowest per capita land, smallest size of holdings and the lack of modern techniques of production have militated against the efforts to increase agricultural production particularly food production.

The production of rice in the State in 1966-67 was only 10.84[10] lakh tonnes as against the requirement of 24.60* lakh tonnes for consumption at the rate of 14 oz. per adult per day. This shows that only 42% of the total requirement of food materials could be produced in the State in 1966-67. With food supply failing to keep pace with the growing demand, huge food imports became essential. During 1967 as much as 5.41[11] lakh tonnes of rice was imported to the State. Despite this imports the food deficit could not be made good. This gap between the supply and demand for food tends to increase in future.

The increase in food production, on the average, from 1955-56 onwards is estimated at 2% per annum which is less than even the rate of growth of population. The per capita consumption of food grains in Kerala is only 8 oz. as against 16 oz. in All India. The introduction of new methods of cultivation and improved varieties of seeds may increase production. But if the population increases at the present rate without any effective control the food problem cannot be solved satisfactorily however great may be the improvement made in food production. This is because over population in Kerala besides being an inhibiting factor to economic development is one of the main causes of acute food scarcity that increases the depth of poverty.

8- K. Narayanan Nair Influence of the population of Kerala on its Economic Development in population Growth in Kerala-its Implications- Edited by Dr. R. S. Kurup and K. A. George, Demographic Research Centre Bureau of Economics and statistics, Trivandrum. 1966.

9- Kerala 1967-An Economic Review- P. 15-State Planning Board, Trivandrum.

* Capital output ratio worked out for All India during the Third Plan period. This rate is taken for Kerala for a rough estimate of investment required for achieving the target rate of econmic growth.

**Basic Statistics relating to Kerala Economy -P. 69- Bureau of Economics and Statistics, Trivandrum-1968.

VIII. Unemployment:

It is this rapid multiplication of population that creates the widespread unemployment and under employment in the State. The complexity of tne problem can be understood from the rapidly multiplying number of unemployed persons.

According to an Employment survey conducted by the Bureau of Economics and Statistics, Kerala in 1965 there were about 5.5[12] lakh unemployed persons in Kerala by the end of 1965. They constituted 9% in the labour force. The break up of these unemployed persons on the basis of their educational standard shows that the matriculates constituted as much as 42% of those who sought for employment. This is an ample proof of the seriousness of educated unemployment in the State.

In addition to this, as much as 9.5 lakh persons will be added to the existing labour force by the end of 1971. This means that nearly 15 lakh persons will have to be given employment by the end of 1971 to eradicate the unemployment problem. The creation of employment opportunities for 15 lakh persons is overwhelmingly difficult in view of the miserably slow pace of industrialisation and economic development of the State.

IX. Conclusion:

From the demographic and economic picture depicted in the foregoing paragraphs it is clear that the cardinal problems of economic development of Kerala are two fold: (1) To increase economic growth faster and at a sufficiently higher rate than the rate of population growth. (2) To reduce population increase to such a rate as to enable people to lead a tolerably good standard of living with the possible rate of economic growth. These lines of approach are inter related.

There is a number of serious limitations to the rapid rate of economic growth to improve the standard of living of the increasing population due to the scarcity of investment resources and other development potentials in the state at present. This is corroborated by the fact that despite all efforts, the average annual rate of economic growth achieved in the State from 1956-57 to 1965-66 was only below 4%. This will prove that the increase in the rate and tempo of economic growth to improve the standard of living of the rapidly multiplying masses will only be a palliative. That is the reason why that, at present, economic growth is not winning the race between the rate of economic growth and rate of population increase. The inescapable conclusion is that a check on the rapid population increase consistent with the possible rate of economic growth will be the lasting solution.

Therefore, plan for economic development must be formulated in two perspectives, the short term and long term. The short term measures will urgently deal with the necessity of higher rate of economic growth and creation of employment opportunities. In the face of shortage of investment resources and plentiful supply of labour it is necessary to apply appropriate investment criteria to produce more goods and provide more employment to the unemployed. Industrialisation especially the development of small and medium industries with advanced technology along with intensification in agriculture will be the appropriate solution to theproblems.

10-Kerala 1967- An Economic Review P.25-State Planning Board-Trivandrum.

* Ibid P. 25

11.- Ibid P. 24.

12- A sample survey on Employment and unemployment in Kerala,
P.2- Bureau of Economics and Statistics, Trivandrum- 1966

The long term measures should reduce the population growth by birth control measures. Unless this unprecedented population growth is checked the problem of poverty and unemployment will become all the more complex and aggravated however great may be the rate of economic growth that can be achieved within the limitations explained above. The complexity of the problems emphasises the need for an integrated approach both demographic and economic to alleviate the economic problems of population explosion in Kerala.

PART III

Technical Session· 1· The population problems of Kerala·

THE DISTINCTIVE CHARACTERISTICS OF POPULATION GROWTH OF KERALA SOME SIDE LIGHTS FROM THE SOCIO-CULTURAL PERSPECTIVES.

BY

G. Surendranathan Nair

1. Introduction:-

Kerala, the malayalam speaking area of the Indian Union, is the most densely populated State of India. It has a very high population growth potential. The population has increased at an average rate of 16% per decade during the last six decades. It was only 12% rate of increase during 1901-1911 but it had doubled by the end of 60 years period. (1). While Kerala makes an increase of 164% during 1901-1961, the all India increase was only 83% for the same period. Even at the beginning of this century Kerala recorded a density of 426 (2) persons per square mile which is higher than the density of population in the whole of India at present.

Population growth may come about in several ways. Natural increase as the excess of births over deaths, is the fundamental growth process. The second means of growth is through net migration (the excess of inmigrants over outmigrants). Therefore the factors contributing to the growth of population of an area are fertility, mortality and migration of that area. The whole gamut of factors of population growth of Kerala can be well understood if we analyse it on a social and cultural background of the State.

1.1. An attempt has been made in this paper to locate the basic factors contributing to the rapid growth of population. A population strategy to check it is also suggested.

TABLE I

Population growth in Kerala, 1901-1961.

Year	1901	1911	1921	1931	1941	1951	1961
Percentage increase	....	+11.75	+9.16	+21.85	+16.04	+22.82	+24.76

SOURCE : Census of India 1961, Vol. I, Part II (A)
(i) General Population Tables. Table A 11, pp. 181-182.

2. Social and Cultural Complex of Kerala's population:-

Kerala, a land of heterogeneous culture, has its traditions that find a place in the Epics and Puranas. The ethnological heterogeneity with various religions and communities, forms the population complex of Kerala. According to Nagam Aiya, Kerala is at least 6000 years old. However, we have the glimpses of Kerala's history only from the first century A. D. During the period it was more or less a virgin land with meagre population.

2. 1. Role of migration in the ages past.

The major communities such as Brahmins, Nairs, Ezhavas, Christians and Muslims form more than 80% of the present population. Nairs were believed to be earliest inhabitants. Some attribute them a seythic

(Naga) origin and others a dravidian descent. They might have reached before Namboodiris had entered Kerala. Namboodiris who were admittedly in migrants must have entered Malabar not later than first century A. D. Sri K. P. Padmanabha Menon holds that they might have entered Kerala earlier (3). The Ezhavas were believed to have come from Ceylon. They could not have arrived before 1st century A. D. (4). Christians and Jews came to Malabar in the first century A. D. St. Thomas is believed to have come to Malabar in 58 A. D. (5). The advent of Mohammadans dates from the 8th century A. D. Therefore it is evident that the major communities which form 80% of the present population are the descendants of the immigrants of the ages past. The Scheduled Castes and tribes of today who form less than 10% of the present population are believed to be the descendants of the earlier inhabitants of Kerala. As a matter of fact Kerala had been peopled mostly by the immigrants from the various parts of India and outside. This flow of immigration continued for centuries till the whole land came under population pressure. The paucity data on the flow of immigration in the early periods of history is indeed a limitation. The flow of immigration seems to be stronger in the early periods than in this century. In this context an examination of the recent trend in migration is worth mentioning.

On an analysis of the population growth of Travancore - Cochin from 1901 to 1951 and Kerala from 1951 to 1961 it is seen that in certain decades, the net migration to Kerala re-inforced the natural increase in the State and as a result the total growth was more than the natural increase (Table II).

TABLE II

Components of population growth, Travancore-Cochin 1901-1951 and Kerala 1951- 1961.

Age and period	Males			Females		
	Total	Natural increase	Net migrants	Total	Natural increase	Net migrants
1	2	3	4	5	6	7
Travancore- Cochin:						
1901 - 1911	293711	290559	3152	289947	282557	7390
1911 - 1921	326940	319829	7111	311463	299700	11763
1921 - 1931	639742	606532	33210	676953	642206	34747
1931 - 1941	587340	594762	-8422	601962	601567	3395
1941 - 1951	875386	935477	-60091	904982	935632	-30650
Kerala:						
1951 - 1961	1680026	1879562	-199536	1674571	1760088	-85517

Source:-

Zacharia K. C.- Migration and population growth in Kerala. In population growth in Kerala, and its implications by Dr. R. S. Kurup, K. A. George (Editors), Bureau of Economics and Statistics, Trivandrum- 1965. P. 111.

Table II brings to light that Kerala had been a gainer till 1931 and excess flow of out migration was only a recent phenomenon. It is true that the gains of population through migration till 1931 in the

present century was not much. In the first three decades of this century the gain was only 97000. More females than males were perceived among them. The reverse process in migration started only from 1931. The total loss during 1931 to 1961 was more among males than females. 1961 census (6) brings to light that a total of 624444 persons who were born in Kerala, were enumerated in the various parts of India and 233416 persons who were enumerated in Kerala were born outside the State. Thus the net loss to Kerala's population was 391028 persons or 2.3% of the 1961 population. A point of significance to be noted here is that Kerala had been gaining her population in the ages past through migration and this process of immigration continued incessantly and the immigration in the distant past was a factor which contributed and accelerated the growth of population.

2.2. The Immigrants and the Social Structure:-

Each of these immigrant groups who entered Kerala at different periods had tried to preserve the homogeneity of the group as far as practicable and they followed the cultural pattern of their original home land from where they migrated. This eventually paved way to the development of the present community structure. While caste endogamy tends to preserve the homogeneity of the genetic combination of the various ethnic and religious groups of the State, the process of societalization tends to evolve harmony among these groups by way of cultural assimilation.

In the preceding paragraphs we have seen the role of migration in the growth of the population and the community structure of State. In what follows, the role of mortality and fertility in the population growth is discussed.

3. Mortality:

Health and long life tend to be universal goals both for individual and for social groups (7). The expectation of life at birth which is an index of the mortality condition of the State has increased from 25 in 1911-20 period to 46 in 1951-1960 period for males. In the case of females also it has increased from 27 in 1911-20 period to 50 in the 1951-60 decade (Table III).

TABLE III

Expectation of life at selected ages for Kerala.

Age	1911-1920		1921-1930		1931-1940		1941-1950		1951-1960	
	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female
0	25.49	27.41	29.54	32.70	33.19	35 00	39.89	42.34	46.17	50.00
1	32.63	34.98	38.40	39.82	39.62	40.72	46.44	48.49	51.43	55.78
5	33.91	35.20	38.58	40.76	40.76	41.43	47.51	49.98	50.80	55.33
15	29.64	28.87	33.83	33.74	35.84	35.50	40.47	42.71	43 01	47.11
20	26.66	25.68	30.21	29.71	32.14	32.15	36.31	38.29	36.85	42.41
25	23.21	22-97	26.21	26.10	28.43	29.13	32.32	33.99	33.28	38.11
35	17.28	18.79	19.67	20.49	22.03	23.48	25.05	26.33	26.22	30.03
45	12.56	14.20	14.53	15.16	15.82	17.39	18 58	19.53	19.08	22.94
55	8.51	10.05	10.32	10.82	10.49	11.69	13.15	13.55	13.26	16.97
60	6.91	8.42	8.59	9.03	8.78	9.47	10.87	11.12	10.95	14.34

SOURCE: R. Ramalingam - Recent trends in mortality in Kerala in population growth in Kerala - Edited by R.S. Kurup & K.A. George.

The healthy habits and the high sense of civic responsibility of Keralites coupled with the comparatively efficient health Services of the State led to the higher longevity of life.

Expectation of life at birth

Periods	Males	Females
1911-1920	25	27
1921-1930	30	33
1931-1940	33	35
1941-1950	40	42
1951-1960	46	50

In all the decades expectation of life at birth is higher for males. This is a characteristic noticed in advanced countries only. A sharp increase in the longevity of life for males and females is to be noted in the decades 1941-50 and 1951-60. It is more in females than in males. This may be due to the fall in the maternal mortality in recent decades. As years pass by, the longevity of life gets lengthened and the mortality falls short of. This results in a net increase in population. By the improved living conditions of the people and medical facilities offered by the State Health Services, the death rate is fast falling and this accelerates the growth rate.

One of the reasons for the rapid growth of population in the State is the phenomenal decrease in the death rate.

4. Fertility components:

The most important factor in the population growth of Kerala is the fertility rate. Fertility has been defined "as the actual reproductive performance of the persons exposed to the risk of having children and it is a function of biological capacity (fecundity) the existence of mate and human behaviour' (8). The factors that affect human fertility are numerous and are highly complex in their relations and interrelations. we generally measure fertility by counting the number of children who were born in relation to some base population. In fact the fecundity is the maximum fertility that could be attained and of course, it is estimated by ascertaining the reproductive limits of human beings. So an analysis of both fecundity and fertility becomes necessary in the Kerala context of population growth.

4.1. Raymond Pearl in Natural History of population arrived at a conclusion based on a world wide sample that the average age at menarche is fifteen (9) (with a range of group means extending from 13 to 17 years) The same study found that cessation of fecundity in females occurred at a mean of 46 years (with group averages extending as low as 44 and as high as 49) (10) The average age at which the puberty occurs in India is around ages 13 or 14. The reproductive span ranges between 15 to 44 years for Kerala as well as for India.

4.2. Age at marriage:

The age at which girls are married varies from State to State. Kerala has the highest age at marriage among the States of India. It is around 20 years. In the neighbouring States of Kerala, namely Madras and Mysore the average age at marriage is just above 16 years.

Mean age at marriage of females

Decades	India (11)	Kerala (12)
1901-1910	13	17.13
1911-1920	13 5	17.35
1921-1930	12.5	17.80
1931-1940	14.9	19.66
1941-1950	15 4	19.33
1951-1960	16.1	19.85

The table above gives the mean age at marriage of females for Kerala and India for the past six decades. The average age at marriage of Kerala women for 1901 to 1910 decade was as high as 17 while it was only 13 for all India. Kerala makes a difference of 4 years in the age at marriage and maintains this difference in the age at marriage even today. The marriage age has increased by three years for all India in 60 years and Kerala also shows the same rate of increase in marriage age for the same period. Compared to other States of India Kerala, indicates a higher age at marriage in the past as at present. Lower age at marriage is associated with higher proportion of women married in 15-19 age-groups.

4. 3. Marital status:-

The age and marital status of females for Kerala, Madras and Mysore compared with all India will explain the proportion of women engaged in the reproductive fold of the population. 99% of the female in Kerala are single in 0-14 age group. While it is only 92% for all India and 98.84% for Madras and 94.03% for Mysore. In the 15-24 age group, 43% are single in Kerala while only 10% are single in all India and 26% in Madras and 8% in Mysore State. Fairly a large proportion of females are unmarried in earlier ages in Kerala. On all ages only 39% are married in Kerala. While 48% are seen married in all India. Madras and Mysore show 43% and 54% respectively as married (Table IV).

TABLE IV

Percentage distribution of females by age and marital status for Kerala, Madras & Mysore (Rural).

	Age group							
	0 - 14				15 - 24			
	S	M	W	A	S	M	W	A
India	91.56	8.37	0.56	100.00	10.30	86.94	1.39	100.00
Kerala	99.41	0.56	0.01	100.00	42.83	53.77	0.22	100.00
Madras	98.84	1.15	0.01	100.00	26.37	71.09	1.01	100.00
Mysore	94.03	5.88	0.09	100.00	7.52	88.29	1.93	100.00

Contd.....

Age group (Contd.....)

	25 - 44				45 and above			
	S	M	W	A	S	M	W	A
India	0.45	87.09	11.18	100.00	0.40	43.01	56.03	100.00
Kerala	4.22	83.41	6.96	100.00	1.06	57.93	37.55	100.00
Madras	0.88	82.22	13.62	100.00	0 21	36.89	61.84	100 00
Mysore	1·45	81·91	14.72	100·00	1·03	34.40	64.01	100.00

Contd.....

Age group (Contd.....)

	All			
	S	M	W	A
India	38.80	48.06	12·48	100.00
Kerala	50.42	39.31	7.83	100.00
Madras	40.09	42.83	15.70	100·00
Mysore	41.37	53.38	14.30	100.00

SOURCE:- National Sample Survey (1963) Fertility and Mortality rates in India (Fourteenth round), Number 76, The Cabinet Secretariat, Government of India.

S - Single
M - Married
W - Widowed
A - All marital status

4. 4. Sex ratio.

There are more females than males in Kerala (1022 females per 1000 males) This is favourable for a high birth-rate. Birth-rate of Kerala is 38.9 (13) and for all India it is 41.7. The birth rate of Kerala would have been lower than the observed level by about another 2 points if it had the same sex ratio as that of the Indian Population (14)

TABLE V

Computed Birth and Death rates in States-1951-1960-

	States	Birth rate	Death rate
1	Andra Pradesh	39.7	25.2
2	Madras	34.9	22.5
3	Uttar Pradesh	41.5	24.9
4	Assam	49.3	26.9
5	Bihar	43.4	26.1
6	Madhya Pradesh	43.2	23.2
7	Orissa	40.4	22.9
8	Gujarat	45.7	23.5
9	Kerala	38.9	16.1
10	Rajasthan	42.7	19.4
11	Maharashtra	41.2	19.8
12	Mysore	41.6	22.2
13	Punjab	44.7	18.9
14	West Bengal	42.9	20.5
	ALL INDIA	41.7	22.8

SOURCE: S. P. Jain, State Growth Rates and their components a paper submitted in All India Seminar on Population, 12-14 March 1964.
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5. Fertility performance of women in Kerala.

Now Kerala is facing a period of demographic transition. a rapid growth brought out by a high birth rate and a declining death rate. Fertility pattern of Kerala can well bl understood if we compare it with her neighbouring States and India. Birth rate (39 per 1000) is lower in Kerala. A study of the general fertility rate, nuptial fertility rate, marital fertility rate and age specific fertility rates of Kerala with her neighbours and All India will high light the pattern of fertility which Kerala holds at present.

Annual general, nuptial and marital fertility rates for Kerala, Madras and Mysore (Rural) and India are given in table VI.

TABLE VI (15)

State	General fertility rate	Nuptial fertility rate	Marital fertility rate
Kerala	171.90	216.36	242.38
Madras	152.17	169.54	194-35
Mysore	190.29	204.99	232.52
ALL INDIA	177.87	192.26	211.36

5.1. The annual general fertility rate for Kerala is only 172 while it is 152, 190 and 178 for Madras, Mysore and India respectively. The lower level of annual general fertility rate for Kerala is associated with the higher proportion of unmarried women in 15-19 age-group.

5.2. Nuptial fertility is higher in Kerala than in her neighbours and all India. It may be pointed out that only 8% of the females are widows in Kerala while it is 13% for India and 16% for Madras and 14% for Mysore. The higher nuptial fertility rate is thus associated with lower percentage of widows and married females

5.3. The marital fertility rate of Kerala is higher than her neighbours and India (Table VI). While Kerala shows 242 as its marital fertility rate, the rates of Madras, Mysore are 233 and 211 respectively. The marital fertility trend will be more clear if we examine age-specific fertility rate (Refer Table VII).

TABLE VII

Annual age specific fertility rate per 1000 females from two inter penetrating samples-first and second sub-rounds combined. N. S. S. 14th round (rural) Gvernment of India.

State	Annual age specific fertility rate age-groups					
	15-19	20-24	25-29	30-34	35-39	40-44
Kerala	83	227	278	195	154	45
Madras	144	246	208	128	80	21
Mysore	205	274	257	160	109	32

The above table brings to light that the reproductivity starts in Kerala relatively at a higher age levels of 20 to 24 years and reaches to maximum in the ages 25-29 and continues upto ages 35-39 years at higher level. In Madras, the reproductivity starts early in the ages 15-19 and reaches its peak at ages 20-24 and continues upto ages 25-29 and then declines. In Mysore the reproductivity starts at early ages of 15-19 and reaches its peak period like Madras at ages 20-24 and continues fairly well upto ages 35-39 and then declines sharply. In Madras and Mysore reproductivity starts at ages 15-19 years while in Kerala it starts favourably only at ages 20-24. The peak period of reproductivity for Kerala women is between ages 25-29. But Madras and Mysore it is between 20-24. Kerala is unique with her higher sex ratio, age at marriage of females, nuptial fertility rate, marital fertility rate and also with lower percentage of married females, widowed and general fertility rate (16). Further in age specific fertility rate also marks her difference by starting the reproductivity at a higher age level. All these uphold that Kerala has a high fecundity which lasts only for 20 years. Almost all the States of India shows a reproductive period for 25 years except Andhra, Madras and Kerala. In Madras and Andhra reproductivity starts earlier than that of Kerala (Refer Table VIII below)

TABLE VIII

Age-specific fertility rates in India by State.

States	Age						
	15-19	20-24	25-29	30-34	35-39	40-44	45-49
All-India	155.5	284.9	264.1	203.6	138.2	53.6	19.0
Andhra	206.9	256.8	261.3	154.8	86.2	32.4	7.7
Assam	205.0	370.0	343.8	232.8	130.0	73.6	21.7
Bihar	137.5	281.1	267.1	228.1	142.7	81.7	28.4
Gujarat	114.1	304.4	316.1	258.7	175.8	62.2	22.0
Kerala	87.5	237.9	291.8	205.0	161.8	46.8	1.5
Madhya Pradesh	116.9	288.4	263.5	187.0	165.4	44.7	19.3
Madras	145 5	248.5	210.7	129.2	81.2	21.4	0.6
Maharashtra	150 0	298.9	248.3	206.5	113.7	37.9	17.4
Mysore	215.3	287.3	270.1	168.8	115.2	33.9	16.6
Orissa	151.5	275.1	261.9	164.2	117.8	34.1	22.7
Punjab	124 0	337.5	300.4	286.7	184.8	111.1	28.9
Rajasthan	175.2	287.7	268.8	175.5	194.2	60.1	37.6
U. P.	129.1	278.8	262 2	236.1	161.7	69.4	23.4
West Bengal	231.1	293.6	262.1	219.2	117.8	37.4	12.2

SOURCE N. S. S. Report No.89.

5.4. A woman who survives to the age 45 in the currently married status will on an average give birth to 7.45 children under the Kerala pattern of fertility where as under the Indian pattern the average is reduced by about one child (14).

6. Population growth potential:

We have seen in the preceeding pages the role of migration, mortality and fertility in the growth of population. The present growth rate of Kerala's population is the result of the immigrations in the ages past which form the base of the population upon which the fertility and mortality conditions interacted. The cultural factors are as important as others in shaping the size and pattern of population. The social and cultural factors condition the level of fertility. The non-economic practices of our culture influence the number of births. Mating and marital practices, the relative ages of spouses at marriage, the degree to which celibacy is encouraged or condemned. the practice of polygamy and polyandry, the custom regarding the marriage, divorces and remarriage of widowed, divorced, the dowry system etc. the institutional frame work for mating (casual visiting Vs. prolonged cohabitation) the forms and the prevalence of contraceptives, the relative values of male as opposed to female offsprings, the specified seasons of indulgence in or abstention from sexual intercourse, the socially ideal number and spacing of children, etc. are the determinents of fertility which in turn help to mould the fertility pattern. Kerala is land of numerous communities and castes. The fertility patterns of each of these communities are different. So what we see in Kerala is the combination of the ramified social traits of all these castes and communities, reflected in fertility, mortality and migration.

7. An efficient population strategy-We need:-

Kerala is at the verge of a population explosion. Let us consider a few population policies.

7. 1. Legislative measures:-

A few demographers are of opinion that the birth rate can be substantially reduced if the age at marriage is raised to 20. A legislation on this regard is under consideration of the Government of India. With regard to Kerala, this legislative measure will be ineffective. The average age at marriage of females in Kerala is around 20 years. Further the peak reproductivity of Kerala women ranges from 20-29. For all other States this legislation may bring some effect, for, the reproductivity of women begins at ages 15-19 years and the average age at marriage ranges from 16-17 years. It is doubtful whether this legislation will contribute much in preventing the population growth because of the incidence of adolescent sterility which is found to be very high at the younger ages and extends even upto age 19 (17). So raising the age at marriage to 20 will in no way affect the fertility pattern of Kerala. A few population experts recommended legalization of abortion to prevent births. The impact of the legalization of abortion on the social life of the country is to be studied carefully before legalizing abortion.

7.2. Industrialization:

To mitigate the hardship generated by the fast growing population and also to provide the comforts of civilization, rapid industrialization can be regarded as a solution and as a population policy to accommodate the ever increasing labour force of the population. Rapid industrialisation requires heavy capital investment. The capacity of the State to raise investible fund to the extent that is required to meet the growing unemployment of the State is rather limited. A combined effort of the State and Central Government in this direction will be fruitful. The existing industries have to be rejuvenated technologically and heavy capital investment is to be raised for starting new industries.

7.3. Birth Control:

Birth control is the best policy to check the population growth. The target set by the Government of India early in 1965 was to bring down the birth rate from 41 per 1000 to 25 per 1000 within as short a time as possible. This target is to be achieved by adopting all known methods of contraception and by motivating the people to adopt these methods.

Let us work out roughly a target for Kerala to bring down the birth rate from 39 to 25 in five years (Birth rate of Kerala is 39). To achieve the target we have to prevent the birth of 8 lakhs of women in 5 years ie. 160000 annually.

TABLE IX

Age groups	Married females (1961 census)
15-19	211722
20-24	545281
25-29	578064
30-34	463839
35-39	409433
40-44	273535

Every year women having 45 years will go out of the reproductive fold. Similarly a few women enter in to the reproductive period. In Kerala the outgoing females will out number the incoming females. 273535 females will go out of the reproduction fold in five years but only 211722 females will come in to reproductive fold in five years. If we can arrange to stop the births of 160000 females annually by family Planning methods we can bring down the birth rate to 25 per 1000 women. This target seem not over ambitious to kerala. The progress that is being achieved by kerala in family planning is encouraging.

TABLE X

Year	Total I. U. C. D. insertions
1965	23062
1966	43517
1967	36887
Upto 1968 July	23139
Total I. U. C. D.	126905
Total Sterilization	251537

The table X hig-lights the progress in this regard and indicates. that the social attitude towards birth control is fast changing, and it is encouraging also. The programme gets more and more of social acceptance. When at last it reaches the take-off stage the programme will capture sole acceptance of the public. This will yield best results if family Planning programme is directed towards married women in the age-group 20-29.

Sterilisation may be the best substitute for unsuccessful use of contraception. But the use of contraceptives or oral pills etc. requires a minimum privacy and other aminities in the household which ordinarily is lacking in our villages. So sterillzation is the best permanent form which people generally accept with pleasure. I. U. C. D. gets acceptance more easily than contraceptives. It is because of the fact that the I. U. C. D. once inserted needs no further attention. By a combined effort by contraception, I. U. C. D. and Sterilisation the birth rate can be brought down to desired size.

7.4. Outmigration is to be considered as an immediate measure to relieve the State from population pressure. Kerala, being peopled by the immigrants in the ages past, can naturally expect to relieve her population pressure by encouraging out-migration in larger numbers. There is justification for awell thoughtout migration policy. Firstly, Kerala as a part and parcel of India, the pressure on this part is to be distributed to other areas of low density to maintain a uniform growth and to wipe off the difference in the natural rates of growth among the States of India.

Secondly the geographical distribution of natural resources in the country could well be exploited if migration from the areas of high density to low density is encouraged.

Thirdly Kerala could be made to serve as a potential producer of technical or skilled personels. The existing quality in educational standards will serve as a base for imparting higher technical education.

Above all it helps national integration, strengthen the unity of India and will create a feeling of oneness among all Indians, no matter he belongs to this State or that State. A concerted effort in this direction is warranted from planners and administers of both State and Central Governments.

8. Summary and Conclusions:-

Population increase in Kerala is rapid and it has been more rapid in recent decades. Natural increase or the excess of births over deaths, is the fundamental growth process. The second means of growth is through net migration, the excess of immigrants over outmigrants. The available data indicate that Kerala had been peopled mostly by the immigrants from the various parts of India and outside. The major communities which form 80% of the present population are the descendants of the immigrants of the ages past. Till 1931, Kerala had been gaining her population and the excess flow of out migration was a recnt phenomenon. The immigration in the early centuries was a factor which contributed to and accelerated the growth of population of the State. Secondly, the phenomenal decrease in the death rate in recent decades has resulted in a speedy natural growth of population. The third factor relates to the intrinsic quality of the population which has very high sex-ratio, age at marriage of females, nuptial fertility rate and marital fertility rate; it has a low percentage of married females (for all ages) and a low general fertility rate. The reproductivity of women in Kerala ranges prominently between ages 20-39, for all India it ranges prominently between ages 15-39. Though the women of Kerala, compared to all India possess a lower reproductivity period, they have a higher marital fertility rate. This evidently indicates the potentiality of women in their fertility performance and this has also promoted the fast growth of population.

A population policy is inevitable for the proper enjoyment of our economic growth and should be attempted at many angles.

1. by legislative measures (by raising the age at marriage and legalizing abortion)
2. by rapid industrialization to absorb the growing unemployed;
3. by popularising famiiy planning methods and practices and by fixing a realistic target for achievement.
4. by encouraging out-migration as a temporary and immediate measure to relieve the state from population explosion.

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ESTIMATION OF VITAL RATES TO MEASURE POPULATION CHANGES IN DEVELOPING COUNTRIES WITH SPECIAL REFERENCE TO WEST BENGAL

By

P. N. Bhattacharyya

The problem of rapid and uncontrolled population growth in the developing countries emerges as one of the most critical issues of the present time. The current population of the world, now somewhat in excess of three billion, is estimated likely to be doubled in the next 35 years, providing a population of about six billion by the year 2000 A. D. Such a tremendous population growth, which is out of proportion to the present rate of increase in economic development, imposes a heavy burden on all efforts to augment human welfare and happiness. Study of the dynamics of population growth, especially in the developing or under developed countries, is now, therefore attracting greater atten ion than ever before. The administrators of action programmes now feel that all their efforts to raise the living standard of the people are being hampered by the rapid growth of population and for this reason the problem of population explosion commands the highest attention of the planners and the administrators of the developing countries.

Changes in population size and structure of a country mainly depend on three variables viz. birth, death and migration. Accurate and reliable birth, death and rates of an area provide essential information for many purposes, including the analysis of factors affecting population growth and the estimation of future population trends. But accurate vital rates cannot be obtained from the registration statistics in our country because a large number of births and deaths usually escape registration.

In the developed countries where censuses and registration of birth, death and migration statistics are dependable, study of population growth on a year to year basis can be made directly from the data on the components of population. In most countries of the world such a study of population changes from national censuses and registration statistics is not feasible for lack of reliable statistical data.

It is generally agreed that the best technique for providing information on vital statistics is an official registration system which is designed to maintain a continuous statistical record of events as and when they occur. But these systems in the developing countries are generally incomlpete and are not, therefore, capable of producing reliable vital statistics for the measurement of components of population growth. The administrators and research workers must, therefore, turn to other sources of data such as censuses and sample surveys to have reliable estimates of statistics on population growth.

The complete, population census is one of the two fundamental instruments for measuring population distribution and change. Although it gives detailed data for a number of demographic variables for small as well as large geographic units, it is not adequate for all measurement purposes and has several potential and actual limitations. A census provides data to compute an average rate of population growth but the rate of growth is an average for the intercensal period and may sometimes be substantially different from the current rate of growth. Due to improvement in public health practices and modern treatment facilities, mortality is declining in almost all the developing countries, though fertility remains constant without any effective family planning programme. In such a situation the average rate of growth derived from the decennial censuses may not depict the current picture for the purpose of evaluating and appraising the current programmes in the country.

Experts, however, strongly recommend the use of sampling method for the registration or enumeration of vital events in the countries where registration systems are either non-existent or are only beginning to develop. Reliable estimates of birth and death rates can be obtained by means of the National Sample Survey before the official registration system is in a position to provide such information correctly. The use of sampling technique in obtaining reliable estimates of vital rates either by means of sampling household surveys or sample registration is, therefore, now becoming common in some countries.

2. Sampling in the field of vital statistics:-

The experience of western countries has shown that the development of an adequate vital statistics system takes a considerable time. In our country the Bengal Birth and Death Registration Act was promulgated in 1873. In other words, the areas comprising West Bengal has had a tradition of registration of vital events for about a century but the official statistics still suffer from major defects in quality and quantity for any effective use in national planning and international comparability.

In the "Principles for a Vital Statistics System" the United Nations made the following recommendation for the use of sampling for obtaining vital statistics.

"Where a complete registration system is not practicable or sufficiently reliable, the possibility of applying sampling methods to the reporting, collection and compilation phases should be explored, keeping in mind its limitations in providing the desired detail, and the requirement that sampling be carried out only under rigorous scientific specifications".

Hauser rightly pointed out that the use of sampling for registration of vital events in the underdeveloped countries, where there is hardly any registration system, can ultimately lead to the development of a complete and well-organised system of registration.

In recent years the use of sampling technique in obtaining vital statistics has become very common. In "The Mysore Population Study" under the auspices of the United Nations and the Govt. of India, an experiment was carried out by the use of a sampling for a survey of the households to measure the trends and characteristics of the population of the area. Under the study the survey data on births and deaths for the past year were matched with the official registers of vital statistics in rural areas and omissions were corrected to arrive at reliable vital rates. In 1964 a continuous survey of population change was undertaken in Thailand on a national sample of rural and urban areas. The main objective of the survey was to estimate birth and death rates and to measure under-registration of births and deaths under the Official Registration System.

In 1965 Turkey also started a continuous annual household sampling programme designed mainly to provide estimates of births, deaths and population movements separately for rural and urban populations in each of the five major geographical areas.

The population Growth Experiment Study in Pakistan which is similar to the Thai Study also deserves mention in this Connection. The population Growth Experiment Study which was started in 1962 in twenty-four Population Growth Experiment areas of both East and West Pakistan gave very satisfactory results for estimating the rates of population growth in the country. Sample surveys have also been adopted to derive estimates of vital rates in many other countries like India (National Sample Survey), U.A.R., and also in some South American Countries where adequate system of vital registration is lacking.

3. Official Registration System:

It is well known that the present system of registration in the country is quite defective in both quality and quantity and is not yet in a position to provide any useful vital rates for undertaking any scientific research or any effective health planning. The official vital rates are much lower than what one would expect for West Bengal. as revealed from the Pilot Survey conducted on incompleteness of birth and death registration in

urban and rural areas in the State during 1948 and as corroborated by the results of the special projects since undertaken in this State.

The development Plans should not, however, wait for an indefinite period till the official registration system develops and produces acceptable vital rates of the country. Sample registration and other household surveys seem, therefore, to be the only promising course of action, which provides vital rates on current basis and also proves helpful towards development of the official registration system in the State.

4. Estimation of accurate vital rates in West Bengal:

As stated previously, the vital statistics of West Bengal, like those of many other developing countries, are deficient to meet the growing needs of the social, economic and family planning programmes of the State. In order to over-come these difficulties, special projects which could estimate population size and other demographic characteristics on a current basis, were undertaken by the State Bureau of Health Intelligence, as given below:

(i) Half-Yearly Census of births and deaths.

(ii) Pilot Sample Census on population as well as births and deaths (subsequently renamed Model Health and Ideal Registration Unit project)

(iii) Sample Registration Scheme (Pilot)

The procedures together with the results of operation in respect of each of the above-mentioned three projects in the State have been set forth in the following paragraphs:

(1) Half-yearly Census of births and deaths:

This project is being carried out by the existing local Registrars of Births and Deaths under the offical registration system in the State since 1962 without any financial involvement. Under the scheme a village or a group of villages comprising a total population of about 1000 has been selected by the Registrars of Births and Deaths near their Headquarters to suit operational convenience. Vital events in the selected areas are collected by house to house survey at half-yearly intervals each year and the findings are matched with official registration records of those specified areas with a view to ensuring complete registration of vital events as well as deriving estimates of vital indices for the rural areas of the State.

As the object of this study is purely experimental and to train the local Registrars of Births and Deaths, the selection of Sample Units under this project is not based on probability sampling. The following table gives annual estimates of rates of vital events as detected and registered in the rural areas of West Bengal during 1966.

TABLE I

Birth and death rates as detected and registered under the Half-yearly Census Project

Estimated rural population of West Bengal, 1966 = 31,457,041

Birth				Death			
Detected events		Registered events		Detected events		Registered events	
Rate per 1000 population.	Standard error as percent of estimated birth rate.	Rate per 1000 population.	Percentage omissions.	Rate per 1000 population.	Standard error as percent of estimated death rate.	Rate per 1000 population.	Percentage of omissions.
37.6	0.1	27.2	27.6	12.2	0.2	9.4	22.9

(ii) Model Health and Ideal Registration Unit Project:

Under this project one union of each of the 5 districts of the State has been taken as the survey area. The unions provided with Health Centres were purposely chosen under the pilot study. The total area of the Union was further subdivided into several Basic Public Health units comprising of about 5000 people and a whole-time trained Investigator was appointed as Official Registrar of Births and Deaths for each of the Basic Public Health Units.

The working procedure comprises (a) normal registration, (b) survey and (c) assessment of health care activities in respect of each Basic Public Health Unit under the scheme.

(a) Birth and death registers for each Basic Public Health Unit are maintained after collection of information from Village Health Reporters and verification of the events personally by visiting the houses concerned during the first three days of the week for registering the events.

(b) Household schedules are made upto-date in respect of the houses under the Basic Public Health Unit by visiting the houses during the last three days of the week. Each Basic public Health Unit has again been subdivided into three groups so that the houses under Group 'A' of the Basic Public Health Unit are covered during one month and groups 'B' & 'C' are covered during subsequent two months so that the houses under the area are visited four times a year. The survey work under (b) for one Basic Public Health Unit is done by the Investigator of anothor Basic Public Health Unit so that the records maintained under normal registration by one Investigator are checked independently by another during the survey. This process of operation is carried out in a cyclical ordet for testing completeness in the normal registration as a routine procedure.

(c) Information regarding the presence of any unprotected person relating to Smallpox, expectant mother requiring ante-natal care and bed-ridden cases requiring domiciliary treatment is collected during house to house survey and reported to the Medical Officer-in-Charge of the Health Centre concerned in specially-designed requisition slips for prompt action.

The following table gives the crude birth and death rates and their standard errors and rates of natural increase for different units under the project during 1966.

TABLE II

Birth and death rates with their Standard Errors for different units under 'Model Health &Idle Registration Unit' Project. 1966, West Bengal.

UNIT	Estimated mid-year popuIn., 1966	Birth rate per 1000 popuIn.	Standard error as percent of esti-mated birth rate.	Death Rate per 1000 popuIn.	Standard error as percent of esti-mated death rate.	Rate of natural increase per 1000 dopuIn.
Mathurapur	18613	38.5	3.7	9.7	7.4	28.8
Luttapulia	9776	46.3	4.6	14.0	8.5	32.3
Bandipur	15557	38.7	4.0	9.1	8.2	29.6
Balarampur	12990	36.2	4.5	9.9	8.8	26.3
Barsul	12776	37.0	4.5	11.0	8-3	26.0
TOTAL:	69712	38.9	1.9	10.5	3.7	28.4

(iii) Sample Registration Scheme:

The sample registration scheme was implemented in rural areas of West Bengal as a pilot study in July 1966 in collaboration with the Registrar General, of India. The objective of the scheme is to obtain quick and reliable estimates of components of population growth at the State as well as at the national level. The method of stratified random sampling was adopted in selecting 150 units from rural areas of the State which was divided into two geographical sub-divisions viz. Stratum I (Himalayan) and Stratum II (Plains) for the purpose. Each of the above natural divisions was further sub-divided into substrata based on four population groups viz. Below 500, 500-999, 1000-1999, 2000 and above. The sampling unit was a village for each of the first three sub-strata and the segment of a village in the fourth substratum. The procedures of operation of the scheme may be summarised as (i) concentration of effort in a representative sample of relatively small areas such that a high level of quality in the collection of information on vital events and population can be maintained. (ii) Preparation of houselists and household schedules in respect of sample areas at the onset of operation by a part-time local resident enumerator and active search for information about vital events by personally contacting a fixed set of local informants regularly at prefixed intervals.

(iii) Supervision of the work of the enumerators as well as half-yearly revision by house to house survey to detect the vital events occuring during the past six months and to note any changes in the household composition by part-time Supervisor of the Units independently.

(iv) Matching the discrepancies between the enumerators, records and results of half-yearly survey operations of Supervisors by actual verification in the field.

(v) Systematic supervision, inspection and control over the above operations for obtaining satisfactory estimates of vital events in the country.

The sample registration scheme was carried out in this State as a pilot study to find out practical problems in organising it on a full scale basis. The sample registration scheme in 150 rural units was implemented with effect from January, 1968. The results of operation of the pilot scheme after satisfactory completion of the two successive half-yearly survey operations in the rural areas of the State are shown hereunder:

The following table gives the estimated annual rates of vital events by different strata under the Sample Registration Scheme (Pilot) on the basis of the results obtained after the second half-yearly survey operations.

TABLE III

Annual rates of vital events under Sample Registration Scheme (Pilot), West Bengal (July, 1966 to June, 1967

Stratum	Birth rate per 1000 population.	Death rate per 1000 population.
I (Himalayan)	43.5	15 8
II (Plains)	39 2	13.6
State:	40.02	14.03

5. Population and rates of natural increase:-

The schemes discussed above not only help to study the structure of population but also give an idea as to how much of the growth rate was accounted for by the rate of natural increase. The age and sex composition of the population as obtained under the different projects are given below:

TABLE IV

Percentage distribution of population by age and sex for rural West Bengal, 1966.

Age Group	Percentage distribution			
	Model Health & Ideal Registration Unit Project		Sample Registration Scheme.	
	Male	Female	Male	Female
Under 1 yr.	3.6	3.7	3.8	3.8
1-4 yrs.	11.5	10.9	10.9	11.3
5-14 yrs.	29.3	29.0	31.2	31.8
15-44 yrs.	40.4	41.2	39.6	39.2
45-64 yrs.	12.0	11.6	11.6	10.8
64+	3.2	3.6	2.8	3.1
Age not stated	....	....	0.1	...
State Total:	100.0	100.0	100.0	100.0

The age and sex distribution of population under the special projects seems to be fairly in accordance with that for rural West Bengal, estimated on the basis of 1961 census figures. The natural increase measured by the excess of the birth rate over the death rate, as revealed under the different operations in the rural areas of this State, was found to be very high, which gives an idea of the rate of growth of population in the country as shown in the table below:

TABTE V

Annual rate of natural increase per 1000 population under different projects in rural areas of West Bengal.

Project	Year	Annual rate of natural increase per 1000 population
Model Health & Ideal Registration Unit Project	1966	28.4
Half-yearly Census of Birth and death	1966	25.4
Sample Registration Scheme (Pilot)	July 1966 to June 1967	26.0

It has been observed that the rates agree well with the average annual rate of growth of population of rural West Bengal as obtained from the census during 1951-1961.

6. Conclusion:-

Achievements of the national plans including effective evaluation of family planning programme in the country must be measured quantitatively on the basis of reliable and accurate birth and death rates and rates of population growth on a current basis. The existing official registration system is hardly capable of producing any reliable data for measurement of rates of population growth. The sampling technique has, therefore, been advocated by the experts for arriving at reliable estimates of components of population growth at relatively low cost as also for exploring ways and means for improving the official registration system.

It is hoped that surveys of a similiar nature if not already started in Kerala will help to generate reliable rates for use in demographic research.

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ON AN APPRAISAL OF THE POPULATION PROBLEM OF KERALA AND PROSPECTIVE GROWTH

By

R. Ramalingom,

1. Introduction:

Kerala State can be said to be the 'crowded corner' of India. As per 1961 census the State has 435 persons per Sq. Km. If all the parts of India were as densely settled there would have been 133 crores of people instead of 44 crores as enumerated in the 1961 census. The State's present 'crowded' condition is the result of the rapid population growth during the last few decades. Much interest has been aroused over this spectacular increase in the population and the Demographic Research Centre, Trivandrum has undertaken several studies to analyse the socio-economic factors which contribute to this rapid increase. If there is no migration, then the population increase takes place by an excess of births over deaths. A study of the course of birth and death rates during the past few decades will throw much light on the factors responsible for the tremendous increase in the population. The direct source which supply data on vital rates is statutory registration. The registration of births and deaths is so seriously incomplete that almost no reliance can be placed on the registered figures. The next available evidence concerning the level of births and deaths is to be found in the series of decennial censuses. Using the census data, life tables have already been constructed for Kerala for the decades 1911 to 1960. The values of expectation of life at birth already compiled will be utilised in this paper to estimate the crude birth and death rates for the period 1911 to 1960. An attempt will also be made to estimate the district-wise birth and death rates as in 1961 using the age distribution of the population obtained from the 1961 census. The population projections upto 1981 recommended by the Planning Commission will be revised on the basis of the birth rate estimated for 1951-60.

2. Method:

It has been established that variations in mortality conditions have only a minor effect on the age distribution of a population and the principal determinant of the age distribution is the course of fertility[2]. The age distributions of the population of Kerala obtained from the censuses 1911, 21, 31, 41, 51, and 61 clearly indicate that its general form is a broad-based pyramid that tapers rapidly with age. The fraction of the population under 15 years of age varies between 39% and 42% in the interval 1911-61. It can therefore be said that persistent high levels of fertility during this period has produced an age distribution that has remained relatively constant during past 50 years.

In the book "Regional Model life tables and stable populations" by Ansley J. Coale and Paul Demeny[3] nearly 5000 model life tables and stable population models have been provided which help to determine the intrinsic birth rate and death rate implied by the current experience of the population. The calculations are based on the following equations.

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1. Ramalingom- "Recent trends in mortality in Kerala" Population Growth in Kerala, Demographic Research Centre, Bureau of Economics and Statistics, Trivandrum, 1965.

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$$c(a) = b\, e^{-ra}\, p(a)$$

$$\frac{1}{b} = \int_0^{\infty} e^{-ra}\, p(a)\, da$$

$$1 = \int_0^{\infty} e^{-ra}\, p(a)\, m(a)\, da \quad \text{where}$$

C (a) is the population at age a, b is the birth rate, 'r' the annual rate of increase and P (a) the proportion surviving from birth to age a. m (a) is the maternity frequency per annum of females of age (a). For different mortality and fertility levels stable age-distributions are presented in the book. In the first set of tables the basic index of variation for a given mortality schedule is the rate of increase (ie. natural growth rate) and in the second set the basic index of variation is the gross reproduction rate. In this paper the first set of tables has been used. Altogether 326 life tables covering different countries of the world are used in the construction of the Models. Based on the values of life expectancy the world populations have been divided into four groups. For each group Model Life tables and stable age distributions are built up for diffrerent combinations of mortality and fertility levels. Out of these four families of life tables the authors have recommended the 'West' family for use in the usual circumstances of underdeveloped countries. The stable age distribution corresponding to the e_o^o value of 1951-60 decade for Kerala obtained from the 'West' family stable populntion models compares well with the age distribution obtained from the 1961 census Hence for the present study the 'West' family tables have been used, The following are the values of expectation of life at birth of males and females of Kerala for the five decades.

TABLE 1

Values of expectation of life at birth

Period	Values of expectation of life at birth (e_o^o)	
	Males	Females
1911-20	25.49	27.41
1921-30	29.54	32.70
1931-40	33.19	35.00
1941-50	39.89	42.34
1951-60	46.17	50.00

Corresponding to the e_o^o value of each sex and the natural growth rate 'r' of this decade, from the 'west' family tables the stable age distribution was first identified, Re-peated linear interpolations were carried out to locate the exact stable age distribution. The tables provide the corresponding birth rate and death rate. For every decade, the values of e_o^o of each sex will give a birth rate and a death rate. The simple average of the two birth rates of the decade has been taken as the birth rate of the population for that decade. The same procedure has been followed for the death rates also.

3. Ansley J. Coale & Paul Demeny- "Regional Model Life tables and stable populations", Princeton University Press Princeton - 1966.

3. Results.

The values of birth and death rates thus obtained are presented below:

Table 2

Estimated birth and death rates

Beriod	Birth rate per 1000 population	Death rate per 1000 population
1911-20	47.88	38.68
1921-30	55.65	33.76
1931-40	45.07	29.07
1941-50	45.07	22.27
1951-60	41.69	16.89

The birth rate which was 47.88 per 1000 persons in 1911-20 increased to 55.66 in the decade 1921-30 It may be pointed out that the growth of population was only 0.9% per annum in the decade 1911-20 and it increased to 2.2% in 1921-30. It again decreased to 1.6% in 1931-40. Afterwards it is increasing steadily during the last two decades. The smaller growth during 1911-20 may be the result of the great influenza pandemic of 1918-19. This feature is also noticed in the trend of All India Population. After 1921 the rate of natural growth for the All India Population records a gradual increase upto 1961. In contrast to this, Keralas population has registered a lower rate of growth in 1931-40 decade. It may be due to the fact that after the Influeuza epidemic, there was a spectacular increase in the number of births and the birth rate reached the record level of 55.66 per 1000 persons in 1921-30 decade. In the next decade it gets more or less stabilised to 45.07. The same rate continues in the subsequent decade also. A slight decrease is noticed in the decade 1951-60.

The death rate was relatively very much higher in the decade 1911-20- It came down to 33.76 per 1000 persons in 1921-30. After that a steep fall is noticed in the trend of ihe death rate. In 1951-60 the death rate estimated is 16.89 per 1000 persons. It can be said that the course of birth and death rates in Kerala conforms closely to the course that the theory of demographic transition ascribes to a country in the ncipient stages of economic development.

It may be pointed out that according to the Registrar General of India the average annual birth and death rates for the decade 1951-60 for Kerala are 38.9 aad 16.1 per 1000 persons respectively. The basis for these calculations is the values of life expectancy obtained from the life tables of South zone comprising all the southern States of India. In the case of south zone the expectation of life at birth of males is higher than that of females. Kerala stands unique among the southern States of India in respect of sex composition. In this State the females outnumber males while the reverse is the case in the other States. In the life table for Kerala the e_0° value of females is higher than that of males. Since the Registrar General's estimate of birth and death rates are based on the e_0° values of the south zone life table it may not be appropriate for Kerala population. The difference observed in the two rates may be possibly due to the reason pointed out above.

Limitation of the results:

For the above calculations stable population models have been used. If we examine the values of expectation of life at birth for Kerala for the last two decades we find that there is an annual increase of nearly 0.7 years. This is a rapid change and a quasi stable population model would have yielded better results. Since the quasi-stable population is not exactly identical with the stable population. while for all analytical purposes we have taken it to be identical to stable population to some extent it affects the estimated vita rates.

4. District-wise birth and death rates:

Age-wise distribution of population is obtained for each district from the 1961 census. As pointed out earlier the age distribution of Kerala's population has attained a more or less stable level. The proportion of persons below 15 years of age varies between 41 to 44% among the districts which means that the district-wise population also follows a more or less stable age distribution. It is assumed that the district-wise population also follows a stable age distribution. Starting with the proportion of males in the age group 0-5 and the growth rate the stable age distribution which bears these characteristics is located and the corresponding birth and death rates obtained. Similarly using the proportion of males in the age groups 0-10, 0-15, 0-20, 0-25 and 0-35 series of birth and death rates implied in the stable age distribution are obtained. In the same manner the age-wise female population is used to obtain a series of birth and death rates. The simple average of these rates has been considered as the respective rate of the district. The estimates of birth and death rates thus obtained are presented in the following table.

Table 3

District-wise estimates of birth and death rates

Name of District	Natural growth rate (1951-60)	Birth rate	Death rate
Trivandrum	31.38	37.81	6.43
Quilon	31.70	38.43	6.73
Alleppey	19.06	39.16	20.10
Kottayam	30.52	36.82	5.30
Ernakulam	21.55	44.44	22.89
Trichur	20.34	44.62	24.28
Palghat	13.51	48.20	34.69
Kozhikode	26.72	37.66	10.94
Cannanore	29.47	36.63	7.16

The death rates in Trivandrum, Quilou and Kottayam Districts are found to be very low. Death rate cannot drop to such a low level by 1961. It may be pointed out that the inter-district migration will have a substantial effect on the natural growth rate of the districts. At the same time when we examine the growth rates for the periods 1941-50 and 1951-60 much variation is not noticed between the two rates in the case of all the Districts. If inter district migration is considered to be the main reason for the wide variation in the growth rates between the districts then it folllows that the migration rate is more or less constant after 1941. Is it reasonable to make such an assumption?. Another aspect of this problem is that if there is lrage scale

inter district migration then is it not necessary that it should reflect in the age distribution of the population. In that case why such a wide variation in the birth and death rates among the districts is a question which needs further research.

5. Effect of the revised birth rate on the future popula tion:

The Expert Committee of the planning Commission has assumed a birth rate of 38.9 per 1000 persons in 1951-60 decade and adopted the life expectancy values derived for Kerala on the basis of the south zone life table in projecting the population of Kerala. What is implied in the latter assumption is that the ratio of e_o o values of males and females in Kerala is same as in south zone. As pointed out earlier the life table for Kerala has clearly shown this assumption is not correct, According to the present study the birth rate in Kerala during 1951-60 decade is 41.69 per 1000 persons, The life table for Kerala population is also now available. By making use of these, an attempt has been made in the foregoing paragraphs to revise the projecttions of the Planning Commission at the same time accepting the remaining assumptions of the Planning Commission with regard to the trend in the future growth of population. The following table gives the two sets of assumptions one used by the Planning Commission and the other used in the present paper.

TABLE 4

Value of expectation of life at birth

Year	Expectation of life at birth used by the Planning Commission		Expectation of life at birth used in the present paper	
	Male	Females	Male	Females
1956	59.4	47.1	46.17	50.00
1963	55.5	53.1	52·17	56.00
1968	59.5	57.1	56.17	60.00
1973	63.1	60·7	59.23	63.60
1978	66.4	64 0	62.53	66.90

TABLE 5

General fertility rates

Year	Used by the Planning Commission	Used in the present paper
1961-65	173	185
1966-70	164	176
1971-75	148	158
1976-80	118	126

Regarding mortality the assumption is that the expectation of life at birth of males and females increases at the rate of 0. 8 years upto 1970 and 0.65 years from 1971 to 80. As for fertility it is assumed

that there will be a reduction of 5% in the General fertility rate during 1966-70, 10% during 1971-75 and 20% during 1976-80. The Expert Committee has used the U.N. Model life tables for obtaining the survival rate (Pn) corresponding to the life expectancy values. In "Recent Trends in world Mortality and their implications for a revised system of Model life tables" Dr. R.S. Kurup[4] has presented a system of revised model life tables for each stratum after stratifying the countries of the world into 5 groups according to socio-economic and health condition. Based on the socio-economic conditions of each country all the countries in the world have been allocated to the different strata. Developing countries like India fall in the Vth stratum. Since it is an improvement on the U.N Model Tables, it has been used for deriving the survival ratios (Pn) in the present paper.

The results obtained are presented in table 6. According to the Planning Commission's Projection the total population in 1971 will be 217.0 lakhs and it will increase to 268.3 lakhs in 1981. The present projection shows that the population will be 224.0 lakhs in 1971 and 282.2 lakhs in 1981. The population will be higher by 13.9 lakhs in 1981 according to the present projection. It is also worth pointing out that in the Projections of the Planning Commissions the sex ratio gets reversed in 1971 and afterwards, thereby the males are in excess of females. In 1961 the sex ratio was 1022 females per 1000 males and in a period of 10 years there is no reason to believe that the sex ratio will be reversed. According to the present projections the sex ratio in 1971 will be 1016 females per 1000 males. This is in tune with the gradual swing in the sex ratio in favour of males observed from 1951 to 1961.

In this context it may be pointed out that some of the studies conducted by the Demographic Research Centre, Trivandrum have shown that there may be a reduction of 10% in the birth rate by 1971 if the family planning programmes continue in the present tempo. If the family planning activities can be intensified then we can expect further reductions in the birth rate after 1971. Assuming that there will be a reduction of 10% in the G.F.R. during the period 1967-70, and 20% during 1971-75 and 30% during 1976-80 the population has been projected and the results are given as projection II in table 6. According to this projection the population in 1971 will be 221.9 lakhs (4.9 lakhs higher than the Planning Commission Projections) and in 1981 it increases to 265.3 lakhs less than the Planning Commissions Projections).

The family planning activities in the State will have to be geared up to achieve the target of bringing down the general fertility rate by 20% in 1971-75 and 30% in 1976-80. The growth of population can be checked to a considerable extent if a concerted effort in this direction is made.

Summary:

Based on the life expectancy values already worked out for Kerala for the 5 decades from 1911 to 1960 and using Model Life Tables and stable population models given by Coale & Paul Demeny the birth and death rates for Kerala for the decades from 1911-1960 have been compiled. The results have shown that the birth rate was 47.88 in 1911 41.69 in 1951-60. The death rate which stood at 38.68 in 1911-20 steadily decreased to 16.89 in 1951-60. The birth rate worked out by the Registrar General of India is 38.9 for the decade 1951-60: The reason for the difference between the two rates is that the Registrar General has used the life expectancy values of south zone to derive e_0° values for Kerala based on which he has estimated the birth rates. An attempt has also been made in this paper to estimate the district-wise birth and death rates of Kerala as in 1961 using 1951-60 growth rate of population and the district-wise age distribution from 1961 census. The estimated death rate in Trivandrum, Quilon, Kottayam and Cannanore Districts are found to be too low. It appears that inter district migration might have influenced the observed growth rate. This by itself is a problem which calls for detailed study.

Using the birth rate obtained and the life expectancy values already compiled for Kerala for 1951-60 an attempt has been made to project the population of Kerala so as to compare the results with the projected population of Kerala recommended by the Planning Commission. Instead of the U.N. Model Life Table used

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[4]Dr. R.S. Kurup- "Recent trends in world mortality and their implications for a revised system of Model Life tables". Ph.D. Dissertation-November 1963.

by the Planning Commission for projections, the revised Model Life Tables prepared by Dr. R.S. Kurup have been used in the present paper. On the basis of some of the studies conducted in the Demographic Research Centre, Trivandrum the assumptions regarding changes in the General Fertility Rate are revised and a second projection of population is carried out. This is referred to as the projection II in this paper. The projected population figures obtained from these three approaches are presented. The present study indicates also that if the targets of reducing the general fertility rate by 20% in 1971-76 and by 30% in 1976-81 can be set in our family planning programmes, a substantial reduction in the growth rate of the population is possible by 1981.

Table 6

Projectoin I

Projected Population (in 00's) of Kerala.

AGE	1966			1971			1976			1981		
	Male	Female	Total	Male	Female	Total	Male	Female	Total	Male	Female	Total
0-4	16006	16280	33086	18476	18338	36813	18966	18360	37326	17644	17050	34694
5-9	13007	12649	25656	16198	15876	32074	17812	18020	35832	18387	18090	37477
10-14	11308	11136	22444	12869	12555	25424	16046	15785	31831	17669	17934	35603
15-19	9686	9956	19642	11187	11052	22239	12766	12473	25239	15937	15698	31635
20-24	8273	8803	17076	9539	9344	19883	11060	10934	21994	12642	12361	25003
25-29	7123	7661	14784	8116	8671	16787	9399	9708	19107	10921	10808	21729
30-34	6110	6674	12684	6963	7530	14493	7971	8544	16515	9256	9588	18844
35-39	5270	5583	10853	5942	[6441	12383	6815	7411	14226	7826	8429	16255
40-44	4575	4645	9220	5087	5435	10522	5787	6324	12111	6663	7266	13959
45-49	3828	3790	7618	4368	4459	8827	4916	5313	10229	5621	6203	11824
50-54	3134	3126	6260	3603	3571	7174	4175	4326	8501	4730	5176	9906
55-59	2500	2582	5082	2894	2885	5779	3393	3422	6815	3967	4169	8136
60-64	1893	2040	3933	2250	2295	4545	2663	2707	5370	3161	3238	6399
65-69	1344	1508	2852	1627	1711	3338	1993	2079	5072	2403	2484	4887
70-74	930	1036	1966	1065	1169	2234	1359	1467	2826	1712	1817	3529
75 and above	738	849	1587	951	1058	2009	1189	1325	2514	1568	1723	3291
TOTAL	96525	98218	194743	111134	112890	224024	126310	128198	254508	140107	142064	282171

TABLE 6 (Contd)

Projection II

Projected Population (00's) of Kerala-

AGE	1971			1976			1981		
	Male	Female	Total	Male	Female	Total	Male	Female	Total
0- 4	17426	17296	34722	15966	15455	31421	13024	12584	25608
5- 9	16198	15876	32074	16800	16996	33798	15479	15228	30707
10-14	12869	12555	25424	16046	15785	31831	166 5	16914	33579
15-19	11187	11052	22259	12766	12473	25239	15937	85698	31635
20-24	9539	9844	19383	11060	10934	21994	12642	12361	25003
25-29	8116	8671	16787	9399	9708	19107	10921	10808	21729
30-34	6963	7530	14493	7971	8544	16515	9256	9588	18844
35-39	5942	6441	12383	6815	7411	14226	7826	8429	16255
40-44	5087	5435	10522	5787	6324	12111	6663	7296	13959
45-49	4368	4459	8827	4916	5313	10229	5621	6203	11824
50-54	3603	3571	7174	4175	4326	8501	4730	5176	9906
55-59	2894	2885	5779	3393	3422	6815	3967	4169	8136
60-64	2250	2295	4545	2663	2707	5370	3161	3238	6399
65-69	1627	1711	3338	1993	2079	5072	2403	2484	4887
70-74	1065	1169	2234	1359	1467	2826	1712	1817	3529
75 and above	951	1058	2009	1189	1325	2514	1568	1723	3291
TOTAL	110085	111848	221933	122298	124269	246567	131575	133716	265291

Table 7

Projected Population (in 00's)

Year		Planning Commission's Projections	Projection I	Projection II
1966	Male	95419	96525	....
	Female	95949	98218	....
	Total	191368	194743	....
1971	Male	108980	111134	110085
	Female	108032	112890	111848
	Total	217012	224024	221933
1976	Male	123407	126310	122298
	Female	120812	128198	124269
	Total	244219	254508	246567
1981	Male	136222	140107	131575
	Female	132067	142064	133716
	Total	268289	282171	265291

PART IV

Technical Session. 2. Needed Researches on Population Problems of Kerala.

3. Birth Control as an emotional barrier:

Forced by circumstances, carried away by the current of propaganda, many a man and woman, use artificial methods of birth control. Frustration, sexual inadequacy, loss of libido and every impotence result some real, but mostly fanciful.

The separation of the fanciful from the realistic should form a subject of study. This requires intimate contact with the people who have submitted to procedures. Technical knowledge, familiarity of psychological methods and more than these, human sympathy, are the necessary requisites for worker in this field.

4. Effectiveness of propaganda methods:

Crores of rupees are being spent on education and propaganda. And do all these pay dividends? 80% of our population are scattered in the far flung 5 lakhs of villages. Many of these are still sleeping in virgin purity, unsoiled by the red triangle. Even the few villages where the distant echoes have reached, the knowledge of the common man is vague, hazy and incomplete. Incomplete knowledge is more dangerous than no knowledge. This is another angle for demographers to work on - how far the common rustic knows, understands and assimilates this new religion of family planning. Random sample surveys or mass surveys may be made in villages and urban areas.

5. Reaction of the people:

Acceptors
Non-acceptors
potential acceptors.

The key stone of any new ideology is its acceptability to the masses. And this is all the more true in our country where literacy runs high; and freedom of speech is predominant. Acceptors play a vital role since they are the best motivators.

In any area of contemplated intensive family planning drive, this preliminary survey is essential. This is also indispensable in every annual assessment and statistical returns.

The natural sequel of such a study will reveal "resistance pockets". These are the dangerous rocks against which even the most well-organised campaign can crash.

Advance localisation of such pockets and a rational enquiry into causative factors will prove very valuable to planners embarking on intensive campaign and mass camps. It would also help in directing the proper machinery and personnel to break local resistence, through conversion mass media.

6. Influence of Religion and other social factors;

Religion being based on faith, forms a strong rival to family planning which is yet another modern faith So also are superstitions, local customs and conventions. And when super-added to ignorance can become a very dangerous antagonist to family planning propaganda. But "religious opposition" in this field is more sinned against than sinning. Often are the religions blamed, to explain away human failures.

(a) Are the religions against voluntery, well-meant birth control ?
(b) Which are the religions so disposed?
(c) How deep or involved are the religious taboos?
(d) How far do people really believe in such episcopal commands?
(e) Do the "so called" religious people stay pious all the time, or do they indulge in back-door activities regarding birth control?

Very tricky points to explore. But a diplomatic omgrapher can get valnable data on these touchy problems-which are real nightmares to the present day family planning worker.

7. Inter-communal and Inter-religious balance-after 10 years of intensive family planning activity:

The percentage of people of various religions and communities in India is variable as a whole. There is also a regional variation. An aggragate total of people in each community to religion is thus calculable.

There is an obvious difference between the rates of acceptors in various groups above mentioned. The religious break up of the persons sterilised and that of the general population of Kerala is shown in the following table.

TABLE I

Religious break up of the sterilised persons in Kerala as percenage of total

RELIGION	Year					Percentage in General Population 1961
	1956-61	1961-62	1962-63	1963-64	1964-65	
Hinduism	74.4	74.6	74.6	72.1	72.94	60.8
Christianity	20.2	20.2	19.4	22.3	19.50	21.2
Islam	5.0	5.2	5.8	5.4	7.52	17.9
Others	0.4	....	0.2	0.2	0.04	0.1
Total	100.00	100.00	100.00	100.00	100.00	100.00

It is seen that Hindus are proportionately more and Muslims less among the sterilised persons as compared to the religious breakup of the general population according to 1961 census.

Our aim today is to reduce the birth rate roughly by half in the next 10-15 years. If we succeed in our attempt, what would be the texture of the resulting population with reference to a communal and religious classification. Parliamentary democracy being essentially based on numbers, the implications of this break-up would be of a far reaching and serious nature. Careful computations, on the basis of percentage data already established would certainly prove an eye-opener.

Methodology and technology:

The back bone of family planning programme is the effectiveness of methodology medical and paramedical.

At the two extremes we find these modern inventions while at times they are hailed as heaven's blessings to humanity, they are at other times condemned as the worst curse on mankind.

This is but natural because for anything man-made there are merits and defects. So also to every modern amenity there is a use and mis-use. The lethal "atom" can be harnessed to most creative energy. So also are the methods employed to effect birth control. Alleged complications mar the effect of the tremendous success achieved.

A rational, scientific and unprejudiced evaluation would prove helpful to the workers, as well as the people. Medical workers should be co-opted in all arrays on the effect of methodology. Clarification on the various "allegations" should be made available through the local dailies. This will clear away the mists of

misunderstanding and would certainly provide great momentum to the family planning drive, which at present shows a faint tendency to slow down; and may eventually grind itself to a stop.

Need for research:

This is not strictly within the province of the demographer. However, the world is advancing. Man is at the threshold of the move itself. Newer and easier methods should naturally replace the old and the obsolete. "Painless labour" has made child bearing easy. So a "painless" or "tedious less' method could be evolved to prevent unwanted child birth. The "Pill" is one step ahead in this direction. Still it has to go on for 21 days. May be a "One pill a month" or "one shot (injection) a year" could give an easier access to planned parenthood. The demographer, the scientist, the sociologist have to work hand in glove to evolve a formula which would prove, easy, effective and acceptable. In doing so the mortality of the people has also to be safeguarded. After all if active population control at the cost of immorality and licentiousness, that would be like locking the cage when the bird is out. This is the challenge of today, a challenge which is both moral and technical. And on the outcome of this great "fete" depends the future of modern India and the teeming millions.

FAMILY PLANNING AND MOTIVATIONAL BASIS FOR COMMUNICATION

By

Dr. George Varghese

1. Introduction:

There is no doubt that problems of human population are among the most important things that is facing mankind today. The world to-day is far from a happy place. Hunger and poverty run riot in a large number of countries. The echoes of war are reverberating across nations. Man and woman stand on the brink of despair. Children cheaper by dozens, grow up neglected and forlorn turning out to be moral wrecks or delinquents. Why all this is happening ? What has come of all man's endeavours to create and foster welfare States. Certainly technology and invention have taken tremendous strides. Agriculture and industry have grown phenominally. But all this time population too has been growing tremendously in geometrical proportion. In India and elsewhere population explosion threatens the very foundation of the national and the international economy. The ways in which we resolve these problems will affect the well-being and happiness of all of us for generations to come. Hence we should keep in mind not only the numbers but the magnitude of the rate of increase also. No one with knowledge in the population field can deny that we have come to a time for decision. Unquestionably the problem has urgency but the delicacy and complexity call for calm and reasoned consideration.The population problem involves more than a balance between the number of people and food supply. Man cannot be equated wth fodder. Man is more than an animal. The need of his life are more than bread alone. Highest of all creatures man has mental, emotional and spiritual needs that arises from the very fact of his humanness. Every man deserves at least the opportunity to lead a life of satisfaction and purpose, at least a chance to achieve more than a mere existence. And every child born, will be born wanted and with a deserved opportunity to live and not merely to survive. There will be no real solution until society can offer every individual an opportunity to live in the fullest sense. Thus the World today newly aware of the quantity of life, is beginning to show concern over its quality, beginning to appreciate that Family Planning is not only for the poor but for all whose lives are made poorer by its lack and beginning to recognise that the true aim of Family Planning is not only to restrict but to enrich human life also. The dawn of this realisation could be one of the brightest in the history of civilisation. Where population is greatest there are real and pressing needs for more food, for better health, education, clothing and accomodation and for relief from gross poverty, for economic betterment and for some effective and acceptable means of population control which must be met together, as elements of a single historic challenge and with vigour and imagination. In this World-wide effort there is a constructive role for us all to play as citizens of a civilised world and I believe it is an obligation upon us if we are to fulfil our citizens responsibility. In a developing country like India where 82% of the people live in rural areas, one should develop an awareness as to how best one could serve the population, in the matter of population explosion and to build a welfare state. The low per capita income combined with low literacy, tradition, superstition and lack of appreciation of scientific advancements that exists in rural areas produces a vicious cycle and leads on to perpetuation of disease and poverty resulting in what is called spiralling of population or population explosion.

2 Reasons for population Explosion:

From the dawn of creation nature has had her own methods to check this uncontrolled increase of numbers. This was achieved through natural causes of annihilation drought, war, and epidemics. Of these global war is a far cry by any standard of World politics. Famine and epidemics have been controlled to-day by science. The major communicable diseases in this country such as Plague, Malaria, Smallpox and Cholera

have either been eradicated or brought under control. Malaria which was considered as the number one enemy and which used to carry away thousands of lives has been brought under control. As a result of the multifarious activities of the Polyvalent comprehensive Health Organisation the standard of health of the population has also been improved considerably. Consequently people are not dying as it used to be. The modern medicine has advanced to such an extent that people who are destined to die even from incurable Heart Diseases are also not being allowed to die nowadays. In this context it would be worth mentioning the revolutionary progress achieved in modern surgery by which Dr.Philip Blaiberg, the Dental Surgeon who was suffering from an incurable heart disease was saved miraculously by a Heart Transplantation operation, in the history of the modern surgery at the Cape Town Hospital in South Africa. And many more of such Heart Transplantation operations are also being done now a days. In this conext there poses a question "Do we have the right to Die"- a question to be answered? With every breakthrough in modern medicine and surgery, death is snatched away from a number of the dying and their lives are being extended, as a result of which the death rate has fallen and the expectation of life has increased. Hence the combined effect is an excessive increase in population heading for a veritable population explosion.

3. Characteristics of Indian Population:

Now India ranks 2nd in the World from the point of view of population and has now crossed the 530 million mark. With a 2.4% of the total lands area of the World, India has to support about 14% of the World's population. It will be surprising to see that 55·000 babies are born every day that is one baby for every 1½ seconds or in other words 21 million every year. As nearly 8 million people die annually there is an addition of 13 million or 2.5% to our population or the total population of Australia or Ceylon every year.

In Kerala the population has now crossed the 20 million mark. With 1.2% of the total land area of India, Kerala has to support 3.8% of Indian population. Hence if population continues to grow at this rate, our efforts to progress will be of no avail and it is presumed that by 1976, we will face the worst of famines inspite of additional resources or help. So a national disaster is in the offing. The peculiarity of India's demographic trend is that the population has to be brought down to ensure economic growth, whereas in Western countries the population came down with economic growth. During the last 2 decades the country has endeavoured to accelerate the pace of Industrial and agricultural development hoping that the population curve will decline. Great success in the development field has been achieved, but it is being neutralised by the increasing population. Family Planning is therefore a national imperative and has been taken up as a national programme. This programme for family planning seeking to bring about social changes expeditiously and consciously should have an organisation both task and human oriented because it deals with human beings, their beliefs norms and values.

4. Basic assumptions of the National Family Planning Programme:-

Hence the basic assumptions underlying this National Programme must be on the following lines:-

1. Motivational approach of the population problem, through the media they respect and through their recognised and trusted leaders without offending in any way their religious feelings, sense of morality and consciousness of family responsibility.

2. There must be a keen felt need for services in order that they may be accepted by the masses.

3. Parents alone must decide on the number of their children taking into account their responsibilities towards one another and the community to which they belong as also their obligations towards their children.

4. Services must be made available to the people in the villages nearest to their door steps.

5. "Family life Education" though this sounds somewhat undefined, but a more apt and suitable expression than "sex education" covers a wide range of subjects concerned with various aspects of youth, adulthood, marriage, family and parenthood, can be very slowly and judiciously taught to the rural population in a phased programme.

5. Objectives of the National Family Planning Programme:-

Now the main objective of the F. P. Programme is to bring down the birth rate from 41 to 25 per 1000 population in the shortest possible time. It can be ensured by the direct and indirect participation in the programme of the target 90 million eligible couples in the reproductive age-group. It is an almost universal truth that the lower, the socio-economic status of the people, the higher the fertility rate and slower the rate of contraception adoption. But the F. P. Programme is only a part of the sum-total of efforts directed towards improving the socio-economic status of the people. Hence the programme emphasis must be on educating the people, particularly towards limiting the size of their families ie., "a small family norm", as without population control, all our efforts at raising the standard of living of our people has become like writing on sand-endlessly washed away by the waves of human tides. So it will be a tremendous task in the face of limitations imposed by low literacy rate, resistance to changes, diversity of languages, customs and the sheer size of the country. But the increased emphasis in population programme is indispensable and the problems of acceptance of Family Planning has to be dealt with at the Community level. The mass education and services which have multiplied many fold now have to be further strengthened to reach the target population to achieve the goal. Mass education must be based upon a sound understanding of the reasons for non-acceptance of Family Planning as well as a drop out after initial acceptance. Since the reasons for acceptance and non-acceptance may vary from people to people and community to community, scientific depth studies and researches are necessary to evolve a strategy of education for persuading the couples to accept sustained Family Planning.

6. Motivational basis for communications:

There is also a significant need in analysing the field experience and making the findings available to various programme administrators so that they can develop their educational and service programme to suit local conditions. A reference source which may pool the field experiences and make these findings available to the programme executives would also be very helpful in this regard. In addition data must be collected on the dynamics of acceptance as well as discontinuation of contraception by studies with a few carefully selected cases so that the findings may be generalised.

A field educational methodology may also be developed by research studies in the utilisation of Mass Media and interpersonal approach, so that the message of Family Planning may effectively reach the target population by means of the indigenous system of communication. Thus to popularise the Family Planning educational approach a research study may be conducted on:-

1: The pooling of field experience in order to draw conclusions about educational strategies of various categories of target groups.

2. Depth studies to determine dynamics of non-acceptance and discontinuation.

3. Utilisation of indigenous system of communication systems to effectively launch the educational programme among the vast number of target couples.

4. Knowledge-attitude-practice (KAP) study.

5. A study into the failure of achieving the programme target.

The mass media approach like radio, press, films and other measures, have been able to motivate only about 20% of the total population in the country. But unless awareness motivates the individual towards the desired goal, its usefulness will be limited. Awareness is the minimum primary function of any communication.

However mere awareness, at best can be only of some vague and uncertain value for the programme. Moreover with passage of time the individual may lapse to his pre-awareness stage, resulting in the wastage of efforts made by the communication programme in producing awareness. As against this, the individual, as a result of awareness, may become more interested in it. It may also help him to evolve some useful relationship between his highly cherished goals and values and the proposed change. This awareness may help him to take a decision which he might have postponed for want of accurate information. When one or more of these things happen the initial awareness must be deemed to have crossed into the realm of motivation. The basis of motivation is used in its very broad sense to include the stages of interest, evaluation and decision making and it happens to be the largest and serious problem in the programme to-day. Lack of adequate motivation partly explains the great awareness-back-log seen in the country to-day. Thus, most people know about one or other of the Family Planning methods but all of them do not practise it regularly. Few only realise that communication has an important role in providing motivation. Some aspects of the communication process like, the contents of the message, the way in which they are presented, the characteristics of communication and the channels of communication, all of them may affect motivation. A Research study on this aspect will be of great help to programme workers on the general problem of the motivational basis for communication. This is supported by the low achievement figures in the various Districts as regards vasectomy, P. P. S. and I. U. C. D. during 1967-68 and 1968-69 (Upto December 1968)

Table showing No. of persons who accepted sterilisation & IUCD (per 1000 population).

District	Vasectomy		P. P. S.		IUCD	
	1967-68	1968-69	1967-68	1968-69	1967-68	1968-69
Trivandrum	3.5	3.3	1.3	1.3	3.2	3.5
Quilon	2.8	2.7	0.7	0.6	2.3	1.7
Alleppey	3.5	3.1	0.5	0.4	2.9	1.7
Kottayam	2.2	2.7	0.5	0.5	1.8	1.3
Ernakulam	2.8	3.5	0.7	0.7	1.8	1.5
Trichur	3.0	2.1	0.5	0.4	1.7	1.1
Palghat	1.9	1.4	0.2	0.2	2.1	1.9
Kozhikode	2.6	2.1	0.3	0.4	0.7	0.4
Cannanore	1.7	2.4	0.5	0.4	0.6	0.5
STATE	2.7	2.6	0.6	0.5	1.9	1.5

However during intensive fortnight the achievements are noteworthy as detailed in the section that follows:-

7. Intensive Motivational work during family Planning fortnight and correspondingly high achievements during these periods can be analysed as follows:

Six Family Planning Fortnights have been conducted in this state so far and the achievements during the periods are detailed below:-

Sl, No.	Date	Sterilisation	IUCD
		Vasectomy & P. P. S.	
1st	12/66	6767	5838
2nd	18-9-67 to 1-10-67	7140	4883
3rd	1-2-68 to 14-2-68	4598	3696
4th	15-7-68 to 30-7-68	14514	5844
5th	3-10-68 to 17-10-68	5947	3538
6th	8-12-68 to 22-12-68	4929	4143
Total lst to 6th		43895	27542

The achievements during the fortnight and other periods can be compared as follows:-

	Total achievements of the state including Family Planning Fortnight periods.	Total achievements excluding the period of Family plng. fortnight	Total achievements during 6 Family Planning fortnights.
Sterilisation 1957-1968	2,84,156	2,40,261 (11¾ years) @ 52 per day.	43,895 (¼ year) @ 488 per day.
IUCD July-December 1965-1968	1,43,381	1,15,766 (3¼ years) @ 99 per day	27,542 (¼ year) @ 306 per day.

The above figures show that during Family planning fortnights when there is intensive motivational work, the rate of progress of the Family Planning programme is comparatively very high is, more than a times achievement in respect of sterilisation and more than 3 times achievements in respect of IUCD insertion, when compared to the work in the remaining period. The expenditure incurred by this State on Family Planning Activities for the last 3 years is given below, from which the proportionate share for publicity and propaganda can be known.

	Publicity and propaganda.	Total on Family Planning schemes.	Percentage of proportionate share. $\frac{A \times 100}{B}$
	A	B	
1966-67	4, 59, 972	86, 58, 439	5.3%
1967-68	4, 40, 071	13, 183, 850	3.4%
1968-69 (Budget)	4 lakhs	186 lakhs	2.2%

8. Now the ultimate goal of communication is to bring about a change in the existing situation. The change may be in terms of quantity and quality of information. It may be motivational when attempt is to modify existing attitudes, norms, values and goals of the people. The communication effects can also be instrumental in facilitating the proposed change in behaviour, by informing people of the available facilities or by educating them in certain behavioural skills. Another approach to the analysis of effects of communication is to consider a change in behaviour as process of evolving the stages of awareness, interest, evaluation, trial and acceptance. In this sense, communication is supposed to help the individual in passing from one stage to another by the creation of facilitating impacts on him. On this basis the 3 main categories of change which may result from Family Planning communication areawarenessmotivation-and action. Hence research studies on these may help the programme in its successful implementation.

By and large Family Planning is a multidisciplinary project and therefore, needs the able and expert advice and collaboration of experts well versed in the different disciplines of medicine and public health, demography, sociology and economics.

POPULATION PROBLEMS OF KERALA — NEEDED RESEARCH

By

K. V. Ramachandran and G. Somasekharan Nair

1. Introduction:

Kerala, the second smallest among the States in India with an area of 38855 sq. km. has a population of 16903715 according to the 1961 Census. Even though the area of Kerala is only 1.27 percent of that of the Indian Union, it has 3.85 percent of its population. Kerala State formed in 1956 on the basis of linguistic reorganisation, with the merger of the former Princely States of Cochin and Travancore (less 5 taluks) and the Malabar region of the erstwhile Madras State and Kasargod taluk of south Canara District of Mysore state has a number of specialities and demographic peculiarities which need to be studied and analysed.

The state holds the proud place in India with the highest rate of literacy over the past several decades. It has the highest density of population (435 persons per Sq. km. in the State as against the second 398 for West Bengal and the All India average of 144 persons per Sq. km.). It had a higher rate of growth of population during 1951-61 compared to India (Kerala's 2.24% per year as against the Indian 1.98%). It had the highest sex ratio (females per 1000 males) of 1022 in contradistinction with India's 941, the highest age at marriage of females (20.7 years for urban and 19.9 years for rural as against India's 17.8 and 15.4 respectively) and the lowest proportion of married males and females. A high marital and nuptial fertility rate when compared to neighbouring States of Madras and Mysore and even several other States as estimated by surveys even in spite of the high literacy rate is something special. It is second only to Assam. The existence of the matriarchal society which is unique in India excepting certain tribal areas is another speciality of Kerala[2]. A sizeable proportion of Christians and Muslims among its population is yet another phenomenon and so on one can go on enumerating the specialities and peculiarities of Kerala.

These facets of the population of Kerala are of interest not only to the planners and administrators but also to the social scientists and demographers in their efforts at unravelling the population problem of Kerala is concerned so much so that this small strip of land on the south-western most corner of the Indian subcontinent stretching for 366 miles along the coast may be considered as a "demographic laboratory" in a developing country like India.

The Demographic Research Centre, Trivandrum during the last ten years since its inception in 1158, has done much work on the population field, but has devoted more attention to collect information on attitude to family planning, investigating socio-economic factors affecting of family planning programme on attitude and birth rates. A review of the Publications of the Centre during this period reveals that nearly 71 percent of them relates to family planning and sterilization, 14 percent on fertility and its differentials, 6 percent on mortality and the remaining 9 percent on vital statistics, morbidity etc. 3.

This paper attempts to bring out the necessity of undertaking more research studies on the different aspects of population and its socio-economic diversifications especially at the time of the commencement of the Fourth Five Year Plan and on the eve of the next decennial census in 1971 in view of some of the peculiarities of Kerala as mentioned earlier. We shall indicate where more data are needed as also where further analytical studies on the available data are to be carried out. We shall delineate the broad areas with a few specific examples where study and research are needed on the population and population data of Kerala.

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2. Areas for study and Research:

(1) Evaluation and Adjustment of Demographic Data:

It is a common experience that demographic data in many countries of the world are subject to several types of errors like mis-reporting or non-reporting of age, selective under-or over-enumeration or reporting of persons or events and so on. Even though Kerala has the highest literacy rate in India, it had quite poor age data as measured by indices of concentration and digit preference. Moreover, it is observed that the age data have deteriorated over time as measured by higher indices of concentration and digit preference in 1961 as compared with that of 1951[4]. Even though the same trend has been observed in India as a whole and in most of the States in the country it is a problem which requires thorough study especially in the case of Kerala with its increased literacy rate from 41 to 47 percent during the decade. Incidentally it has been noticed that the age data in urban areas of Maharashtra with higher literacy is poorer than that in rural areas. For example, whereas the Myer's Index for males and females respectively are 48 and 52[5] in the State they are 52 each in Greater Bombay[6]. It is possible that the rural data may have been improved by the fact that in these areas that enumerators are the ones who estimate the ages whereas in urban areas the respondents themselves give the ages. Perhaps it may be the case in Kerala as elsewhere that the literate groups give the age returns themselves whereas for the illiterates the enumerators estimate the ages of the respondents and the others in the household. Incidentally it may be kept in mind that the enumerators had been instructed to be aware of digit preference and other age errors in reporting Such instructions in a low literacy country like Guinea in Africa had produced an age distribution markedly deficient in ages ending in digits 0 and 5 and with surpluses at ages 1 and 9[7]. There are other errors as well in demographic data such as omission of infants and young children from census enumeration which even though not peculiar to Kerala is still important when we consider the high literacy of its population and comparatively no prejudices against females and even perhaps higher values for females. The registration of births and deaths are also deficient and needs toning up in order to be able to get at useful vital rates for the State.

(2) Sex Ratio:

It is a strange fact that in India there has been almost a consistent fall in the sex ratio of general population. In the case of Kerala an opposite trend has been noticed except during the last decade. The high sex ratio of the population of Kerala requires an investigation into the various factors which may have gone into it. For example, it could be due to age sex selective migration, mortality or better enumeration.

(3) Fertility:

Even though the literacy level is the highest in Kerala it has been observed that marital and nuptial fertility in the State are much higher than those in most of the States in the country. It is desirable to investigate whether this phenomena is due to physiological factors like (1) post-portum amenorrhea period being short, (2) low foetal wastage, (3) short interval between post-portum amenorrhea and next conception, (4) duration of lactation or (5) effect of nutrition on fertility or whether it is just due to better reporting on births due to higher literacy. In this connection it is noticed that Assam and Punjab are the two States which also have high marital fertility rates. Their literacy rates even though higher than that of India are not anywhere near that of Kerala. It looks as if literacy may not be the only factor. In any case, it is suggested that a stndy on fertility by marital status on the three religious communities may be carried out which may explain the anomaly if our conjecture that there is differentials in literacy rates among the three groups is true. Another factor may be the low economic status of the people even with their high literacy.

(4) Mortality:

According to the 1961 census of India the expectation of life at birth for both sexes in Kerala is the highest (48.3) as compared with India's 41.2. Punjab has the next highest value of 47.5. This figure of

48. 3 for Kerala is quite reasonable when we consider the high literacy and general health conditions of the people of this State. But whereas in 1951, according to the Census Actuary, the Southern Zone comprising Kerala had higher expectation of life at birth for females than males, in 1961 the trend has been reversed[8]. Some studies have shown that the female expectation for Kerala has been consistently higher than that of the males by 2 to 4 years, whereas in India excepting during 1911-20 the male expectation has been higher. It will be an interesting study to find out whether the Pattern of expectation of life at birth in Kerala is such that the female expectation of life at birth is really higher than that of males. If so, one should go into the causes for the differentials in the expectation of life at birth for the two sexes in Kerala and isolate factors responsible for this. Incidentally it may be mentioned that in the advanced countries of the world the female expectation of life at birth is consistently higher than that for the male. But it could be that in Kerala with its high out-migration of males that the expectation for males may be shown to be lower than the actual value due to out-migration if the life tables so constructed had not taken proper account of it. Incidentally it is observed that out-migration is not only large in number as compared with in-migration it is also age and sex selective.

(5) Migration:

Migration both internal and external is a field in which practically no work has been done so far at the State level. The data on place of birth which has been collected in 1961 Census in India shows that 616 thousands of persons born in Kerala were enumerated in other parts of India and 232 thousands of persons born in other parts of India were enumerated in Kerala[9]. Zachariah and Seetharam in their study 'Internal Migration in India by States' estimated that about 161 thousand persons born in Kerala were lost during the decade 1951-61 in the net to the State of which 157 thousand were males and 4 thousand were females. Another estimate by them for the same period finds that 284 thousands have been lost of which 197 were males and 87 thousands were females[10] The characteristics of the migrants from and to Kerala needs a thorogh study to find whether the essentially needed skills and talents are being exported and not made available to the State. Also studies on possible utilisation of these talents of the migrants who are going out will be worthwhile. Moreover, the demographic impact of the migrants on the population of Kerala needs a thorough study. It is wellknown that the migration from Kerala is of non-permanent type in the sense that most of the people who go out not only visit their native places often but they return back to their home after retirement. The fertility of these migrant persons needs a study to unravell the fact that even though the families are remaining in Kerala the male earning member Who is a migrant outside Kerala since he visits the family once in a year or so his fertility may not be affected by his absence. Since the migration is large in number this may be factor contributing to high fertility in the State.

(6) Other Areas:

Not much attention has been paid so far in knowing the impact of population growth on socio-economic aspects like availability and demand for labour force needed in skilled, unskilled and semi-skilled categories, technical manpower of the State, forecasts of the school-going children in the next few decades and the estimation of extent of additional facilities required in the different regions of the State, the problem of food, housing, jobs and urbanisation etc. Not only do we need more and detailed data on these aspects, we also need more analytical on the available data on some of these aspects.

3. Conclusion:

It is ofcourse true that the non-availability of data may be a major handicap in the proper demographic study of the Problems of the State. It is, therefore, desirable that there should be a two-fold approach for the activities of the demographic Centre of Kerala State. The first one should aim at focussing attention to the collection and compilation of more and better data on the demographic variables esepcially on statistics on cause of death, marriage statistics and vital rates. The second approach should be to conduct special types of surveys and studies to understand more and get insight into the peculiar demographic characteristics of the State as enunciated in this paper.

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COMMUNICATION MATERIALS ON FAMILY PLANNING

By

Vrindavanam G. Venugopalan.

I. Introduction:

Birth Control is essential for the welfare of the family and the nation. Since this is not a felt need at the domestic level, it is to be taken to the people by the Government through education and propaganda. Unless the entire population is made aware of the growing necessity, the programme is not likely to have any impact on society and hence the necessity of communication.

Interview, discussion, camps, film shows, entertainments, radio and the printed page are the various communication materials that are used nowadays. Under the existing conditions, the separate use of each material, has comparatively less effect, for each material has its own limitations. A package form of different communication tools is found to be the most suitable and effective form of communication and persuasion and is therefore, advocated.

II. Population growth an obstacle:

India has the largest population in the world, next only to China. Like other developing countries, India too is experiencing pressure of population explosion. She has only 2·4% of world's land but 14% of worlds population.[1] This is to say that one of every seven persons is an Indian.

Indian population comes to more than 500 million. Our birth rate is 41 per mille. A baby is born every 1½ seconds. This means we are having more than 55,000 births a day. Since the death rate is 16 per mille, annual addition to our population comes to 13 million[2].

It is essential that the national birth rate should be reduced concurrently with the national death rate until the population is stabilised at a level consistent with the capacity of the national economy.

Both at the national and the domestic levels, birth control is a necessity. Need for family limitation or population control in a wider sense is to be accepted universally.

III Programmes of Birth Control

New methods and programmes unheard of hitherto will have to be introduced for getting birth control accepted universally. The introduction of these methods will unleash mixed feeling of acceptance and rejection especially, in a society where, heterogeniety in caste, religion, education, language, customs, manners, beliefs, convictions etc. prevails.

VI. Communication.

Communication is the fundamental social process without which there can not be a society. Conditions basic to change are often deeply interwoven into the life patterns of a society and the culture of which they are a part[3]. Religion, communities, social status, professional status, educational level, social and political

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1 & 2 Facts about population and family planning in India Department of Family Planning, Government of India 1967.

3. Mass communication study-Ministry of information and Broadcasting, Government of India.

relations, etc, are some of the basic factors that are often standing in the way towards change in any progr amme like family planning. The message is, therefore, to be transmitted to remove these obstacles to desirable changes. At the same time if the message is directly opposed to deep rooted values, if the action is not feasible under the existing social and cultural conditions, if the facilities for carrying out the recommended action are not physically and psychologically available, or if the message is hard to conceive, then manipulation of communication media is not likely to produce the desired effect.

V. Communicative Act.

As a minimum scheme for examining the communicative act, it is necessary to consider the communicator, the message, the target individual, the social context in which communication occurs and the media. 4

VI Communicator.

Who does the speaking or what the source of information is, the communicator. Any official agency, field worker or educator is the communicator. People in captive audience may learn as much from "low prestige" sources as from "high prestige" ones when the so-called "sleeper-effect" is added; but most audience are not "captive". Under conditions of free choice, people tend to choose persons respected for their good judgement and advice.

To be sure, something can be done to enhance the prestige of an information, source, medium, or change-agent; but this takes time. Probably, it is best in most cases to recognise and take advantage of existing conditions of prestige as they relate to these elements of communication. Working with "Local leaders" is the surest way to overcome this. Of course, acceptability of the worker who must work directly with a clientele can not be escaped. In order to solve problems of low prestige and high prestige issues, high officials and V. I. P. S. should accompany the field workers frequently.

VII Message content.

Content is the essence of message and is the key element in the communicative act. It is this aspect of communication that communicators are perhaps most conscious of and to which most thought is probably given. Nevertheless onething forgotton is that the same message may mean differently to different people, and sometimes something entirely different that the designer intended. An interesting event often cited is that of a farmer, upon seeing the greatly enlarged mechanisms of a mosquito displayed for demonstration purposes in connection with a seminar on Malaria Eradication programme, remarked. "Thank God! we don't have mosquitoes like that around here."

The point here is that meaning and message content must be judged from the vantage point of those who are to be impressed and not solely from the vantage point of the communicator.

The message of family planning can be broadly grouped into two (1) open message, dealing with general lines on the nature and extent of population explosion and the immediate need for population control for the welfare of the nation, and (2) closed (Restricted) message, dealing with family limitation with proper spacing to safeguard the health of mothers and children, and the detailed information regarding birth control techniques. The open message is for the general public without any restriction of age or marital status, whereas the restricted message is only to couples in the child bearing age.

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4. The Role of communication Media–Bubert F. Lionberger.

The communicator or the family planning educator should be more careful in the exercise of the closed message. He should be watchful in the correct recordings, and should be patient in givingt he correct and precise information. He should avail of the most opportune time of the clientele to have this.

(VIII) Target Individual:

Any action programme on Family Planning should be confined to married couples having females in the procreative age-group (15-45). Indian marital age comes to 14.5 for women and 20.0 for men.[5] If any of the programmes is directed towards children, unmarried, separated, divorced, or widow/widower it will not serve the purpose on the one hand. and it will tend to demoralise the society on the other. If it is focussed on those who are above of the aforesaid age-group. it will end in sheer waste of energy and money.

(IX) Social context

Ours is a secular, democratic country, and hence no programme can be implemented by imposisons on the people when there is opposition from them. Hence it is not possible to dictate things under the authority of legislation, discarding the religious beliefs and sentiments of the people. Every citizen is free to choose his own way of living, subject to the constitution. As such family planning is purely a choice of individual couples.

X Media.

The most important element involved in the communicative act is the media or the tool used for transmitting the message. This include the interview, discussion, film shows, camps, radio and the printed page.

People who form habits of depending on different media of information sources for special kinds of information, may be inclined to attach varying degrees of reliability to them. For example some may place more reliance on the written than on the spoken messages. The degree of impact produced on different people by the same medium may be different. Moreover. the impact of the same medium on the same person may also vary from time to time with the variation in age and knowledge. So the task of the communicator is to design different media for open messages and closed ones. Generally personal talks (interviews), group talks (discussions) camps and seminars are found to be better media for closed messages.

XI Cinema shows, Entertainments, etc.

Programmes of cinema shows, variety entertainments, exhibitions etc. can be conducted for the general public to give an awareness of family planning. They are effective to draw the attention of the general public. These entertainments may stimulate the interest of even the uneducated.

Lack of recreational facilities in the rural areas is an important factor leading to monotony of life. So any form of entertainments may be pleasing to them. The open messages can be easily and effectively disseminated through cinema shows, entertainments, exhibition, or any other display materials like posters, charts etc.

The communicator should be cautious to prevent entertainments, shows or other display forms in local colour. He should not attempt for closed messages, unless the admittance is restricted to the target population. Usually this is not practicable. The figures furnished in the Report of the F. P. C. R. Kerala presented at the second All India F. P. C. R. Workshop held at Gandhigram (1-8-1964 to 8-8-1964)[6], will shed light on this.

5. Facts about population and family planning in India-Department of family planning, Government of India 1967.
6. Progress report upto 30-6-1964 F. P. C. R. Kerala

Family Planning communication Research Project, Kerala conducted 30 cinema shows (upto 30-6-1964)t wherein 10500 attendance was estimated roughly. And rougly 35% of this attendance was found to have been children, 20% unmarried grown ups, 5% overaged, and 5 to 10% of "others" consisting of those who have undergone sterilisation or those who are practising contraception, separated, divorced or widow/widower, there by giving an attendance of 30-35% of the target population.

The communicative process of encoding, decoding and interpretation of signalled messages can be easily made by this.

XII Public Meetings.

Public meetings are also to be arranged for the general public. Local influential leaders can be invited so as to establish a rapport with the common public. The prestige problem can be easily solved by this.

XIII Radio.

The Radio has the charm of the spoken word. It's victory over distance and other barriers is even more decisive than than that of the film. However, the educational possibilities of the Radio are limited. It can not serves as a vehicle of instruction. Still, we could use Radio and Television for family planning programme. The decoding and interpretation are also limited, and the communicator should have a know of this.

XIV Printed page (Literature, newspaper articles, circular Bulletins ete.).

According to the preliminary survey of the family planning communication research programme, Trivandrum, 66% of the total population is either illiterate, or only with primary school standards[7]. So it may not be possible for them to follow literature of a higher standard. Since the majority of our population can not afford to keep pace with the avalible literature which maintains a higher standaad most of them have little impact on the target individual.

School going boys and girls are often seen reading literature of any kind loudly, and parents sitting around them listening. Or, local loaders are seen reading newspapers loudly at the tea shops and villagers gather around them for hearing.

The official pamphlets giving detailed information about contraceptives distributed without any restriction, or illustrated and detailed articies published in newspapers have made awkward situations, as pointed out above, and have created many problems in the household. This will usually tend to demoralisation of the society. In order to avoid this evil, the literature fo Family Planning be categorised into three: viz. (1) for general public, (2) for local leaders and voluonteer workers and (3) for target married couples. The communicator should see that the circulation of the printed material under (3) is confined strictly to target married individuals who are literate,

However, mnny identical messages can be made possible by printed material, especially by newspaper articles. The influential field-back is easy in this way. The process of encoding, interpretation and decoding is possible at the input and re-interpretation is done at groups of receivers of the message[8].

XV Personal talk (Interview):

Personal talk is highly effective te a number of target individuals. Many of the target individuals want privacy in interview and as such personal talk holds a high position among the various materials. The

7. Report on preliminary survey F. P. C. R. programme, University of Kerala, Trivandrum 1964.
8. Procedures and effects of Mass communication Wilbur Shramm.

communicator should be of a high status so that he can influence the receiver much. Even if the communication comes from a high position the receiver may not often be able to understand the communicator because of the lack of acquaintance. The communicator should therefore establish personal relationship with the clients through a local leader and the relationship can be further strengthened by frequent visits. He should, then make use of his visits at an opportune time of the clientele to have a discussion leading to a favourable decision on the matter.

XVI Group Discussion:

Group discussions will always yield certain acceptable conclusions; since the individual wants social acceptance, group discussions are often considered as one of the most effective ways of communication. A properly organised group will be able to show readiness, enthusiasm and exchange of ideas.

Group discussion for men and women should be arranged separately at the same day and at the same locality as far as possible. The Communicator, with the help of some influential local leaders, should personally invite couples of a good number of households. He should arrange a centre for discussion-a convenient house for women, and a public place (library, reading room, vacant house, etc., as the case may be) for men. Group discussion for men is to be conducted after 6 P. M. when the participants will be free from work from factory field or office; and for women is to be held in the after-noon, when they are free from their domestic work. Both husbands and wives are to participate in the two groups (men's group and women's group) and case cards are to be maintained so as to assess clear picture of their married life. The meetings should be in the most informal way. Flash cards, pamphlets, etc. are to be used at the time of the discussion, and demonstration of contraceptives are also arranged, There should be free discussion to facilitate not only the communication of all the relevant information, but also to elicit questions from them so as to provide an opportunity to give such explanation or advice as may be required on the points raised. Those who have already undergone sterilisation may explain their experiences so that it will have a sympathetic hearing.

Interpretation of experiences, encoding and decoding must be done in the simplest and clearest way. Change agents are within the group itself, so much so that the communicator will be free at the most. Each one will be a communicator and a receiver according to the nature of the discussion. The message will be thoroughly explained. A further house visit will definitely improve the programme.

Age group of participants is a major factor so far as the men's meeting is concerned. Greater disparity in ages and close relationship often end in 'sleeper effect'. Women with babies also create problems in their meeting. Of course, communal barriers and financial conditions are also influencing the group, but their impact is considerably less, when the worker establishes real relationship with the community.

(XVII) Camps:

Camps and Seminars are of immense use even though they involve a lot of expenditure. They are direct tools to educate the villagers. But there are a number of difficulties to overcome. There is a trend in most of the community development blocks to provide a set of campers for all camps. Usually this type of camp programme won't result in fruitful end.

The camp programme is to impart orientation training to the leaders or volunteers of an N. E. S. Block. Each ward of the Panchayats in a Block should be equally represented at the camp. The campers should be within the age group defined for target individuals. The selection of campers should be made sufficiently early so that they can prepare for the camp. Selection of campers in most of our camps are usually done in haste. Once the selection is over, the campers should be given prior instructions in line with the subjects to be taken up in the classes at the Orientation Training Camp. They should be given all literature available so that they can go through them in advance. The classes at the camps should be arranged in such a way that there should be correct sequence in the various topics under discussion from the very beginning to the

very end. And the subjects should be dealt with by authorities on the particular topics. An exhibition of contraceptives is to be arranged to familiarise the campers with these devices: Cinema shows, variety entertainments of local colour, etc. may also be arranged. A local leader should be entrusted with the responsibilities of the camp.

The communicator should see that there is no room for political bias at the camp. There should not be any chance for sectarianism or communalism.

Arrangements for services, and supplies towards the end of the camp is highly useful. The nature and extent to which each one has been motivated can be traced from this service/supplies registers.

XVIII Package Programme.

Frequent house visits of the field worker will strengthen the familiarity of the villagers with the field worker, and as a result of this he could win the friendship of the villagers. He can arrange a public meeting and a cinema show. He can point out some articles in a newspaper and he can give pamphlets on general lines also. After having done the preliminary steps like this he can arrange a group discussion for males and females, thereby he can educate both the husband and wife. He can make use of closed printed page and other material of detailed information. He can arrange a second group meeting or a camp or a seminar for them. He can, thus make them attend and understand the different types of programmes in a package form. Meanwhile, he can make them practise some temporary methods or dermanent methods of contraception that suit them most.

XIX Conclusion:

Having worked in the F. P. C. R. Project, Trivandrum as Health Educator for over a period of three years, and gained experience in the working of Action Communication Research Projects, Gandhigram and New Delhi, I would like to stress that generally one particular method of education may not motivate a common man. He may see cinema shows, read pamphlets or articles in newspapers, attend group discussions, visit clinics, see posters or photographs, talk with his friends/relatives or personnel of the official agencies engaged in Family Planning Work. Sometimes, he may hear articles read by others at the tea shops or hear a corner lecture at a market or at a religious fair. He may hear Radio programmes and so on. Hence a package form of educational programmes is often influencing him.

It is interesting to note that he may be thinking of one particular programme at a particular time. That is to say, the shape of his answer to the question relating to family planning usually depends on the time and his attitude. And the comparison that he may make use of is of little value. This too substantiates that a package programme is the most suitable form of education under the existing conditions in Kerala.

MIGRATION—THE UNDERDEVELOPED AREA OF POPULATION RESEARCH IN INDIA

By

P.S. Gopinathan Nair

1. Introduction:

While births and deaths are considered as important events in every society, the movements from one place to another, of those already born, are not considered as so important. This is especially so, when the movements are within the boundaries of the same nation State, as there is no need to comply with any formal Immigration or Emigration laws. The result is the lack of any reliable data on internal migration even in countries where data on births and death are fairly good and reliable. In our country where birth and death statistics are far from complete or accurate, the data on internal migration is practically nil. Being handicapped by data, this branch of population studies has proved to be rather sterile, from the point of research output and hence could really be termed as an underdeveloped area of population research, though as a component of population change, migration occupies a central place in demorgraphic analysis.

In a vast country like ours. because of considerable diversity or place variance, even within the same State, migration may be considered as a necessary element of population adjustment. Due to differences in respect of population growth rates, economic opportunities and level of living, migration acts as a necessary device for maintaining some sort of social and economic balance between people of different area units. Due to the uneven tempo of economic development among the States during the last 15 or 20 years-that is after the independence and unification of the country-large inter-State and intra-State shiftings of people have taken place. This, of course, is to be welcomed as an element fostering cultural diffussion and social integration, as well as making maximum use of persons with special qualifications. But what do we know about these movements-the magnitude and direction of migration, the composition migrants, the factors affecting such movements, the reasons for selectivity, changes over time in the factors which stimulate migration, problems in the process of assimilation of migrants at the destination etc. The answer is that we know very little. We have neither the machinery for collecting migration data, nor have we applied the tools already developed to analyse the problems of migration, nor given due importance to the study of the social and economic consequences of migration within our country. This is not to belittle some important and useful work already done; but compared to the large field yet unexplored, the work so far done is meagre.

II. Areas of research covered:

Before indicating the broad fields for research in migration that could usefully taken up, a brief resume of the areas covered in the studies so far undertaken, will not be out of place. What is attempted is not an exhaustive list of all the papers and books published, but to the broad areas covered.

Most of the studies have attempted the measurement of migration rates. Of the two conventional methods of measuring migration rates, the Vital Statistics Method, cannot be relied upon in our country, as their deficiency is well known. They are not only deficient due to under-registration, but the degree of under-registration itself varies over time and place. In the absence of any sysytem of residential registration or special Sample Surveys, the only alternative is the "Survival Ratio Method", based on census. Here again, due to "differences in the mode of census enumeration before and after 1941 and the unavailability of some of the necessary data for 1941, it would not be possible to obtain comparable migration estimates for the entire period for which census data migration estimates for the entire period for which census data exist." The situation is made worse by the several boundary changes as a result of integration of princely States and

linguistic reorganisation of States. As pointed out by K. C. Zachariah "previous studies on internal migration in India are mostly limited to the period after 1941".[2] For the period before 1931, there is broad discussion aboutt he problem by Kingsley Davis in "The population of India and Pakistan". However as a result of the interest shown by the Planning authorities, a question on internal migration was included in the 1961 census and later in the N. S. S.

Apart from the use of "Survival Ratio Method" based on census age data "the place of birth data" gathered during census also provide some index of migration though this has got very serious limitations-such as, the coincidence of the place of birth with the place of enumeration, the number of moves of the individual will not be available, and that the census figures do not provide migration during any period other than intercensal decade and that break ups by age and sex are not available. Inspite of these limitations some work has been done in the use of these data for estimating internal migration, in some of the studies. But as pointed out by Kingsley Davis, "It is to be regretted that almost the only data on internal migration are derived from birth place statistics which give at best only an oblique and distorted picture of actual movements". 3

The pattern of migration-say from rural to urban or rural to rural, urban to rural, or systematic migration to big cities or to new townships-has been covered in some of the studies. The great metropolises have been covered in special studies like "The city of Calcutta" by S. N. Sen or "Calcutta, India's City" by Asok Mitra and so on. Here again there is complete dependence on census data and hence, the period covered is always the intercensal decade. Due to non-availability of data the pattern of changes within the decade is hardly discernible.

The Demographic Research Centre, Trivandrum has collected some data, along with the 'Sample Survey on attitude to Family Planning during 1958-59 and 1959-60. The data contain, reasons for migration, duration of migration and place from which migrated. Based on these, estimates of migrants to the District Headquarters towns and Attingal towns, where the Survey was conducted, have been worked out.

Again along with the one percent Sample Census conducted in Kerala State in 1963 migration data were collected. In the report of the Survey, the analysis of data has been made, in respect of sex-ratio and age composition of migrants, the nature of migration (whether rural-urban, within the District and so on), religion and occupation of migrants, and reasons for migration.

While characteristics of migrants like age and sex are considered in most of the studies, information on other characteristics like marital status distribution, educational attainments, occupation and religion of migrants are studied only in very few cases. For example, the educational and occupational characteristics of Kerala migrants in Bombay City, have been dealt with by K. C. Zachariah in "Migration and population growth in Kerala"[4]

Apart from the volume, direction and pattern of migration and characteristics of migrants, some studies on selected groups of migrants have been done like the "Juvenile Working Migrants in Greater Bombay"[7] or the Maharashtrian or Gujarati migrants in greater Bombay" by K. C. Zachariah[5].

In any study on migration, the process of urbanisation with its push "and pull" effects is of much

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1: K. C. Zachariah - "Historical Study of Internal Migration in the Indian subcontinent 1901-1931" - Asia publishing House, Bombay-1964.

2. Ibid

3. Kingsley Davis-The population of India & Pakistan-Princeton University Press-1957

significance in modern times. This phenomenon, involving urban ward migration and concentration of people, has been dealt with in some studies by N. V. Sovani, 9 and Ashish Bose. 10 Though, in India, urbanisation has not gained as much importance as in the West, the process is gaining momentum. The distribution of population resulting from migration, has not deserved any attention, except for isolated studies, like "population redistribution in India-inter state and rural-urban 11 and "Redistribution of population in Punjab during 1951-61" 12.

III. Possible areas of Migration Research:

(1) As already indicated, research in the field of migration has been handicapped by non-availability of data. Apart from the decennial censuses which give some indiation about migration between two censuses, no information is available about the migration within the State, every year, even though such movements are taking place off and on. A systematic, annual sample survey for estimating the volume and direction of internal migration (as well as out-migration from the State or immigration to the State) will go a long way in overcoming the present paucity of data for further research. This will give annual rates of flow, instead of the intercensal estimates from census data, which often camouflages the return and circulatory migrations, as well as the differences in migration during the years.

To minimise the effect of memory lapse, it is certainly better to have this survey annually. Incidentally the estimates of migration thus obtained will be useful in population projections, which is so essential for purposes of planning.

(2) Since migration is the result of a multiplicity of socio-economic factors, and also brings in a chain of economic and social consequences, both at the place of origin and destination, studies about the socio-economic causes of migration between and within units of area, deserve attention. For example, the outmigration from an area may be due to the availability of excess skilled labour of a particular kind, or may be due to lack of facilities in the area to absorb, even the limited supply of skilled labour. Knowledge about causes of movements could be the basis for policy making. Selected areas or pockets which are known to be either sending out people in large numbers or receiving large numbers, could be selected for such studies. Along with the systematic collection of other data detailed studies based on the causes data, could be enducted usefully. It is heartening to know that the 1971 census envisages the collection of detailed data on migration.

(3) Migration being selective with respect to age and sex, inevitably changes the composition of population at the place of origin and destination. This will necessarily affect the course of fertility and mortality and thus the trend of population growth at both ends. Microdemographic studies of selected areas-developing townships around new factories, project areas or new colonies to study the effect of migration on fertility and mortality will yield valuable information about the probable population trends in such areas.

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8. -do- " " Sociological Bulletin - Vol. 15, No. 2, September 1966
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10. Urbanization in the face of rapid population growth and surplus labour the case of India-Indian population Bulletin No.3 (New Delhi, Office of the R. G. - 1964) 11. & 12 next page.

(4) The flow of several migration streams in various directions at different rates, will naturally result in a redistribution of population. Such redistributions may be taking place imperceptibly sometimes or may be violently in a short period. The effect of all such migration flows may not always be conducive to the maintenance of a proper adjustment between human numbers and environment. Short term studies on areas of concentration of mobile labour may reveal the demand and supply aspects of econmic goods and services, the generation of health and educational facilities and the augumentation of the standard living of the people. While these will help in economic planning, shortages and pitfalls in planning will also be revealed. These studies may have built in hypothesis, based on the developed economies with special reference to specific projects like the Tennese Valley Project., the Bakra Nangal Project etc. which might inter alia give an evaluation of the planning operations.

(5) Since migration is affected by a large number of factors and the degree of influence of each factor is different, it is necessary that the factors affecting migration are listed, and the rate of migration associated with each of these factors measured. Such measurements could be studied for the different subgroups of the community yielding useful insight into the pattern of migration differentials and the factors responsible for such difference. Methodological studies to isolate the extent of influence of each factor, will further help migration research.

(6) Migration causes changes in the occupational structure of the population both at the origin and the destination. These shifts are of far-reaching significance. Studies about the changes thus brought about are necesary for overall manpower planning and ensuring proper distribution of available skilled personnel. Studies with particular reference to changes in occupational structure, will thus prove to be useful.

The areas of research indicated above are not exhaustive of precise in some cases. The object of this paper is to point out that, of the components or population change, migration is a comparatively neglected field in India. This field requires more attention from demographers, in view of its important role in effecting, social, economic and demographic changes.

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ON CERTAIN AREAS OF RESEARCH INTEREST IN SUBSTANTIVE DEMOGRAPHY AND FAMILY PLANNING

By

Dr. R. S. Kurup and K. M. P. Pillai

Introduction:

Research in demography assumes great importance with unprecedented rates of population growth. This historical truth is having its sway in the developing countries of the world today, inspite of debates on the status of demographic research as antecedent to development planning or as its consequence. Population plays the role of a fundamental variable in economic planning and family planning which has been accepted as a state policy. It is therefore appropriate to concentrate on the fields of substantive demography and family planning and suggest ways and means of improving our knowledge of demographic problems through policy oriented research. While suggesting areas of research, it is thought better to utilise the available data so that the expenditure for amassing the necessary information can be minimised. But essential types of data collection cannot however be avoided especially in the field of family planning in India as this is a new field.

This paper intends to present two main sources of data in India at present. A discussion of certain problems which are known to most demographers but which have not been solved yet, at least as far as the authors are aware, follows. Finally some topics for survey in the field of family planning are suggested. It may be remarked that a search of the relevant materials will reveal the problems and a research will give clues for solution of the problems except in certain areas where field surveys are necessary to supplement the information available. Also a large mass of data that remain unanalysed and unutilised has to be properly processed so as to enable the formulation and testing of hypotheses on the inter relations of demographic and socio-economic variables.

2. Census data and sample registration data:

A major source of data in this country is the decennial census. The fact that the data collected through Indian censuses can still be used for demographic research is unbelievable as it is known that they have some imperfection and also because of the thought that whatever can be done might have been done by this time. The available data in this regard upto 1961 census on age, sex, relation to head, marital status, place of birth and last residence, duration of residence at the place of enumeration, nationality, religion, literacy, educational standard, languages known and details of economic activity pursued have already been processed into table and some preliminary analyses have been done. The data on fertility that has been collected have also been analysed. But there is still scope for analysis here; and there is a need as the comparison of the patterns through time and region reveals certain regularities and irregularities which warrant a closer look, may be through supplementary data, from official statistics.

Another recent source of data is sample registration. This elaborate sample survey under operation throughout India throws out very valuable information on the various population characteristics and the factors that bring about changes in population growth and structure. The possibility of utilising these data for purposes of research on population problems has not been examined till date, though certain essential rates have been worked out annually from the same. In a nutshell, the scheme has been started after a baseline survey of the population in the sample areas broken up into age, sex and marital status mainly followed up regularly and checked twice annually so as to yield reliable estimates of birth rate, death rate and other ancillary rates, besides providing estimates of population changes. The accuracy of the data when compared to census and N. S. S. results is of a very high order. While registering births, all the details of the child and mother which are necessary for a fertility study are collected by spot visits. Similarly the registration of

deaths envisages the gathering of all information which enables a study of mortality patterns. The large mass of data obtained through normal registration suffers from incompleteness and inaccuracy in details, but still certain regularities can be brought out from the same through various types of analysis. As some studies have already been made by properly utilising these data, a discussion on further use of these is not attempted here. Studies on incompleteness of these data have also been conducted and hence they are also not suggested here.

3. Possible areas of research in substantive demography:

This section will deal with only certain specific problems which have some implications, direct or indirect, manifest or latent, in the present context of development planning and family planning but which form part of the field of substantive demography. These are in order, based on the peculiar sex ratio, worker or labour force participation rates, the process of generating unemployment and migration streams and the contradiction of higher age at marriage and literacy against higher fertility in Kerala compared to the other States in India. A discussion on how these problems are important and how they have policy implications is out of place here. A time series analysis of the sample registration data and an analysis of mortality trends in Kerala, which can be taken up without any extra funds or planning, will not be discussed in the following sub-sections.

i. Sex ratio:

In most of the developed countries of the world there are more females than males. Kerala population also shows this characteristic. From 1901 onwards the sex-ratio was increasing from 1004 to 1028 per 1000 males upto 1951. In 1961 this decreased to 1022. This pattern of change in sex-ratio demands some attention as the predominance of females is conducive to higher natality ceteris paribus. In other States in India this pattern is not at all visible. Some possible hypotheses for this problem lie in the fact that most of the Keralites employed outside have left their families here and that female mortality is lower when compared to males. But whether these two alone can account for the difference has to be examined, That males are undercounted does not seem to be a plausible hypothesis in the Indian or Kerala context. But the sudden change in sex ratio in favour of males during 1951-60 warrants a hypothesis different from the above.

There might have been differential under-counting resulting in missing of females during 1961 census. The testing of the above hypothesis requires analysis of the relevant census data collected through the regular censuses as well as the post enumeration checks. Data from sample registration and other sample surveys can be considered for supplementing wherever necessary.

ii. Participation rates in employment and the labour force:

The rates of worker participation and labour force participation are lower in Kerala and West Bengal when compared to other States in India. It is a Known fact that the worker Participation rates obtained through the census suffer from misclassification and inexactness and/or over enumeration at least as regards Kerala. But the consensus established on comparison with labour force participation rates in so far as the Kerala figures are lower than those of other States except West Bengal demands a quick technical treatment of the subject. To clarify the problem it is seen that the worker participation rates in Kerala for males and females are 46.20% and 19.71% with the total for both sexes as 33.31% against the all India rates of 57.12 27.96 and 42,98 percent respectively. The corresponding rates for West Bengal in 1961 are 53.18, 9.43 and 33.16. While the rural-urban differentials are discernible, it can be hypothesised because of the higher literacy levels and educational standards in Kerala, and West Bengal, that the information on number of persons in schools and colleges will throw necessary light into this problem. But as these numbers are not very great and as a standardisation by these enrolment percentages will not be able to explain the difference, another hypothesis like lower mortality in Kerala which means higher outside percentage in groups these labour force and hence out side the category of worker has to be formulated and tested. The specificity of this formulation

demands some other hypothesis also so as to account for the difference. The low percentages in the agricultural categories in Kerala requires an inter-sectoral analysis and the final spotting of the plausible solution can be done only after an inter-regional analysis. The possibility of misclassification of worker in the tertiary sector also demands analysis so that the occupational pattern which puts Kerala among developed countries at least in their rudimentary stages can be established firmly and cases for proper redistribution among the sectors can be built up.

As already pointed out data from official statistics sources have to be utilised for solving the above problem.

iii. Unemployment and migration stream:

Kerala suffers from chronic unemployment which now is rampant among the educated classes. Though the five year and annual plans lay stress on production of technical services like medical, engineering, agricultural, veterinary etc. there is very high unemployment among degree, diploma and certificate holders in these fields. In the pre-matriculate levels and among the illiterate also the unemployment rate is higher in Kerala. Compared to the all India unemployment it is about 10 times as large. As the census figures show lower rates than sample survey figures there is need to have accurate surveys on employment through the official channels supplemented by sample surveys in unorganised sectors and at household levels. A model which can possibly be used for analysis at least in certain regions of the State can be that the agricultural sector has reached saturation point in view of the high man-land ratio which in the process of evolution of migration streams generates under-employment and complete unemployment to the new entrants to the labour force. The push effect of population concentration in such areas has to be compensated by the pull effect of urban areas or industrial areas in the making or under development. The study of these migration streams has also to take into account the factual verification of Stouffer's theory of intervening opportunities. But in a State like Kerala where the secondary sector is stagnant and the tertiary sector is overcrowded in both rural and urban areas the possibility is for outward migration. In recent times this has also proved difficult because of the upsurge of provincial feelings and needs in the face of the limited job opportunities and higher labour force participation rates.

A reclassification of census data into regions and occupations might reveal the regions where further survey has to be made for ascertaining the details of migration and availability of intervening opportunities. The data from sample registration also will be useful in demarcating the regions of unemployment generation and origin and destination of migration with the State boundaries.

iv. Higher fertility inspite of higher literacy and higher age at marriage:

In the face of the convincing factual evidences and the theoretical exercises, the existing higher fertility of Kerala women is a contradiction to the higher age at marriage and literacy level compared to other States in India. The problem though simple attracts the attention of demographers in view of its implications for family planning. An analysis of the fertility, age at marriage and literacy of the various religious groups is necessary as a first step. The percentage of Hindus in Kerala is nearly 60 while those of Christians and Muslims are respectively 21 and 19 as per 1961 census. There are prenatal tendencies among all religious groups so as to keep the balance in the light of the prevailing suspicion that any one minority group may try to outgrow the other or the majority group in the longrun or in the light of historical and sociological back-ground information. Whether the religious group or sub-group can be identified or not an occupational fertility study is also an urgent necessity so as to delineate groups with higher fertility. A survey of workers in industries and plantations will go a long way in providing the necessary baseline data regarding their fertility and the effect of the family planning drives launched or at least planned to be launched in the near future in such establishments. This organised sector will help in revealing certain of the unknown patterns and lags which imperil the family planning programme. Also the incentives and disscentives to the workers

that affect the present antinatalist tendency among the literate working population-who have less span of fertile life when compared to their preceding generation which have to be continued or discontinued can be found out, so that proper future policies can be chalked out. A discussion of this problem can never be complete without having the relevant data in hand.

4. Areas of Research interest in Family Planning:

In the field of family planning, the first and foremost need is to have a propor system of documentation of the valuable information that are collected in the hospitals and clinics as a bye-product of the services rendered. The incompleteness and inaccuracy of the statistics collected can be removed if a little attention is paid by the ancillary staff under the guidance of the Medical Officers. These information when processed will give all possible clues for the improvement of the programme and for identification of areas where more efforts are to be taken.

Apart from reliable fertility data, the programme requires insight into patterns of contraception that is practised by the people at large. While for sterilisation and IUCD these can be known by analysing the hospital statistics, for other methods as sample survey will give the necessary information.

Various techniques are at present tried to motivate the people to accept family planning. A cost-benefit analysis of the various methods will go a long way in deciding upon the best method to be followed. Apart from the cost-benefit analysis the relative merits of using the extension education approach against the piece rate paid workers approach have to be found out. The role of various mass media of communication, the two step flow of communication from the leader to the led and the lag in communication and acceptance should also be studied.

Though attitude studies have been conducted here, they are concentrated in specific towns and some villages only. It is necessary to have a follow up in these areas and to have a study covering the entire State at least now.

As the programme of family planning envisages a change in the behavioural pattern, a social psychological study of the effect of programme has to be conducted. The role of the other forces of development also has to be st udied. A model which can fruitfully measure the effect of these on measurable characteristics like births and deaths is the factorial design in statistics. The activities or forces can be considered as the treatments and the changes in rates as the yields in agricultural experiments. The analysis of variance and testing will reveal the significant effects. The inherent limitations of population in villages or towns like heterogenity, infiltration of ideas disseminated purposely or not or differential changes and difficulty in randomising because of lack of similar areas will be a handicap to planning and operation of such research studies.

(v) Conclusion:

To conclude it may be remarked that though areas of demographic research interest are many and varied. Topics of special interest in the present context and for which at least some data are in hand have been suggested here. It is not claimed that these studies will give the final say in the matter of research but as far as possible specific areas and approaches are suggested. In the present attempt at competition in the field, if at least these studies could be undertaken by getting the necessary financial support and other facilities there will be some gratification.

An analysis of the sample registration data as time series to study the trend, seasonality and cycle of birth and death events will be a fruitful study which will not cost much. This may be taken up as a top priority research study. The other studies suggested require more planning and more supplementary information and have therefore to wait till the advent of the favourable climate. The study of the decline of mortality and gain in expectation of life can also be done with the data already available. This study has to be done on a comparable basis with the patterns obtaining in other States in India projections of population based on the mortality thends established will be necessary for future planning. In this connection, it may be noted that for the population projections attempted by the Expert Committee of the Planning Commission it is assumed that the ratios of expectation of life of malesand females in one State and a zone comprising that Stateu will be equal. This is not true at least when Kerala and South Zone are considered. The projection of male and female populations based on this assump-tion does not seem to be useful for research purposes though these figures are used for planning purposes asdesired. The sex ratio shows a decreasing tendency if these figures are taken as true. But there is no reason for such a declining pattern for the sex ratio. It is herein suggested that a fresh projection of populationmay be undertaken by formulating realistic assumptions of fertility and mortality pattern.

WHAT MIGHT IMPROVE BIRTH CONTROL IN KERALA

By

Dr. G. Velayudhan

Introduction:

As far as birth control is concerned this day is different from what it was about 5 or 6 years back. The days before 1960, when some of us started realising the need for birth control in the society, it was quite difficult for one to put across the idea of birth control to a patient. Many people were not aware of such a possibility. Majority have not thought of this aspect at all. Only a few have appreciated the advantages and need of birth control. Even some of the highly educated and socially well placed people have not thought of birth control. So it was not easy for a doctor to introduce the topic to his patients. Even some of those patients who had the greatest confidence and regard for the doctor used to appear to have got offended on introducing the subject and there were several occasions when the patient closes the discussion with a simple word or sentence and the doctor will not be able to continue the discussion or reintroduce the subject. Some of them will respond and reply so unexpectedly that it will take some time for the doctor to come out of the shock and start talking with his patients again about birth control.

Today the conditions are entirely different. As far as this part of Kerala is concerned more than 90% of the couple feel the need for birth control. Even the most illiterate and the poorest in the society feel the need to control the births. Even those who have strong religious and other sentimental objections are now adopting birth control. Ofcourse, many of them are afraid to discuss the subject in a group or tell their friends and relations what they are practising. This is what is happening with the people in Trivandrum and around. I do not know much about people in other parts of Kerala. It cannot be much different.

Under these circumstances it will appear paradoxical that a good percentage of the eligible couple have not started practising birth control so far. This is because that the common man has not been convinced of the safety and effectiveness of methods available to day. Of the eligible group, the large majority of those who have not adopted birth control methods are those who are suspicious of the safety of the methods available. At the same time a good number of men and women of this group feel the urge to space or limit and when an unwanted pregnancy occur, go about seking abortion even at the risk of complications occurring to the mother. It appears that there is no need to educate the population on the need of birth control but much is required to convince of the people of the safety the modern methods. This can be done effectively only by case demonstration. All those who adopt birth control methods should remain as demonstration cases of the safety of that method to their friends and relatives. This only will convince the suspicious type. Therefore the administration must develop a machinery which will be able to render services which will be as much fool proof as possible. What is now happening is that all those who do well after adopting the birth control methods keep quite and nothing is known about them. But when a complication occurs, however rare it is or trivial it is, the news spread very fast and wide. Therefore, even the rare complication seen, heard or read in the newspapers will make a person afraid of that method.

2. Methods.

Now coming to the methods of birth control, though there are so many methods of birth control, only a few are easy to practise and effective. Of the conventional methods the only method which deserves to be retained is the sheath. All the other methods are in general difficult to practise and often ineffective.

2.1. Abstinence.

There is no doubt that abstinenee is the most effective method. But it is difficult to practise. It is doubtful whether even 1% of the population can practise this method. Even if somebody is able to practise abstinence there is evidence to show that it is not advisable to practise this method, for any appreciable length of time.

2.2. Coitus interruptus:

This is quite an ineffective method and chances of failures are high. Not only it is likely to fail it is not an advisable method to practise from health point of view.

2.3. Diaphragm:

When this is used alone failure rate in a large series may be in the order of 50% or even more. Again it is not an easy method for an average woman to practise.

2.4. Spermicidal agents:

When this is used alone effectivity is only less than 50%. But when combined with diaphragm it may be in the region of 61-70%.

2.5. Safe period:

Actually this is the most unsafe method for the purpose of birth control.

2.6. Sterilisation Operation:

This is the most effective method for birth control. This is the method which should be given the greatest importance in the birth control programme. At the same time this is the method which the population is most suspicious and afraid of. The birth control programme will succeed only if we succeed in getting rid of the fear of people for the operations. Sterilisation operations both salpingectomy and vasectomy are quite simple and proved to be quite safe. But the majority of the eligible couples are not convinced of this, as is shown by the figure given in the following table:-

Table - 1

No. of sterilisation operations in Kerala.

Year	Vasectomy	Salpingectomy	Total
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
1966	33251	6147	39398
1967	49489	10504	59993
1968	64081	14066	78147
Total	228381	55754	284135

There is however an increasing trend in the performance except for 1966 when fhe I. U. C. D. insertions were very popular.

2.7. Salpingectomy:- It is a more major procedure than vasectomy; but at the same time when it is done along with the child birth it will not create any inconvenience for the mother. Normally a mother is hospitalized after child birth for 3-7 days at least. The operation can be done on the same day or the next day and the mother can be discharged on the 5th day of the operation. Once the stitches are taken and the woman is discharged from the hospiral there are no special regtrictions in life because of operation and what restrictions the woman usually observes following child birth are quite enough.

while the operation is so simple and safe people, even educated people, have lots of fears about it. It is commonly believed that there are lots of restrictions following the sterilisation operations. Those who have to do heavy jobs believe that they will not be able to continue their job after the salpingectomy. We have seen several ladies who have not allowed water to come in to contact with the operated area for months together and the result was that the whole part was covered with dirt and ulcerated due to lack of cleaning. There are ladies who have not carried even the new born baby for several months after the sterilisation.

2.8. How salpingectomy can be made more popular:

Salpingectomy operations are now done as a routine only in larger hospitals. In Primary Health Centres these operations are not done. Even in Taluk Hospitals it is not routinely done. So a woman who desires to have sterilisation will have to go to a district hospital for the operation.

In fact this operation can be done even in a Primary Health Centre and to make the operation popular it is essential that it should be made possible to have it done in Primary Health Centres. In most of the Primary Health Centres there are 2 Medical Officers and there are in-patient beds. If some more additional equipments are provided these operations can be done safely in Primary Health Centres.

Between the husband and the wife, it is the wife who feels more often the need for birth control and she is the one who often volunteers for the operation. In many cases the man only agrees with the woman and the man is not willing to under go the operation. In those days when no monetary benefits were given for sterilisation operation more women used to get operated than men. Now more men are getting operated than women because of the incentive available and the man can have the operation done easier than woman. It is possible that if more facilities are provided for salpingectomy the number of salpingectomjes is likely to be atleast as large as that of vasectomies. As it is, for salpingectomy the woman has to wait for child birth; that too she must have her confinement in a hospital where these operations are commonly done. Now it is not easy for all these women desiriug sterilisation to have hospitalisation. This diffiiculty must de done away with to promote salpingectomy. Arrangements must be made to have the operations done at least in all the Taluk hospitals.

Though salpingectomy is most conveniently done during the post partum period it can be done at other times also. There are several women who have as much as or more number of children than they would like to have and they have decided not to have any more. As it is if these women want sterilisation they must become pregnant and deliver and then only they can get the sterilisation done. This is not necessary. Salpingectomy can be done at times other than post partum period also. If the woman has decided not to have any more children and wish to have sterilisation it can be done at any time she wants. The only disadvantage is that she will have to be hospitalized for a total period of 6 days and observe certain restrictions in life for another two more weeks. If this operation is more popular more ladies will come forward for sterilisation.

It is also believed tnat salpingectomy can be done only if the women has delivered in the same institution where sterilisation operation is done. There are several women who ardently desire for sterilisation but had even to deliverat home either because her delivery occurred earlier than they expected, or at that time

they could not go to hospital or could not secure hospitalization due to want of beds. These ladies are denied of sterilization on the ground that they delivered at home or in a smaller hospital. This is again not correct. Those who had normal delivery at home or in a smaller hospital may be transferred to the institution where these operations are done and after keeping the woman under observation for a period of 24 hours-operation can be undertaken. If this procedure is regularly undertaken there is no doubt the number of salpingectomies will increase.

2.9. Vasectomy:

This operation is definitely simpler than salpingectomy and no hospitalisation is necessary. Regarding this operation also there are lots of fears. In fact it is very simple and the man can just walk in to the theatre, have the operation done within 5 or 6 minutes and walk out of the hospital. It has been proved that even if the man engages himself in heavy jobs from the 2 nd or 3 rd day of the operation no complications are likely to occur. There is no harm in doing sexual intercourse after 10 or 15 days; but there are chances of failure.

2.10. Reversibility:

Now sterilisation operations are considered as irreversibie. There are instances where after vasectomy operation fertility was regained. After tubal sterilisation also this is possible, provided the original operation was so planned. It the original operation is planned for this purpose the possibillty for reversal will be better than after vasectomy operation. Once it is proved that there is fair chance of reversal after sterilisation operation more women are likely to come forward for operation.

2.11. Intra-uterine Contraceptive device:

It is one of the best methods for spacing. It has got certain limitations. It is only about 98% effective Some women are not fit for loop insertion and occasional complications are likely.

Unless a Medical Officer with certain amount of experience in gynaecology examines the woman and concludes the conditions contraindicating loop insertion, the incidence of failures and complications will be high. When I. U. C. D. was introduced in India this aspect was overlooked and the incidence of failures and complications was high. This has definitely produced a great set-back in the programme.

If we realise the limitations of I. U. C. D. and it is used carefully it is the best method for spacing particularly for the illiterate and the poorest class of people. Till 1968, 1.43 lakhs of insertions have been made. The break-upfor the years is given in the following table.-

Table-V

No. of I. U. C. D. insertions in Kerala.

1965	....	23062
1966	....	43517
1967	...	36887
1968	...	39742
Total	...	143208

2. 12. Oral Contraceptives:

If we take the world as a whole this is the most popular method. If regularly used it is proved to be 100% effective. This also has got certain contraindications and the drug will have to be administered after a medical check-up and the woman taking the pills should be under medical supervision. We cannot expect a woman to go on swallowing the pills for 15-20 years. So this also is a method for spacing and not limiting.

3. Conclusions:

In conclusion it may be said that it appears that now there is no need to impress on the pepole the advantages and need for birth control. what is required is only to make the people convinced of the safety of the methods available. It is also advisable not to spend money and energy in popularising all the known methods of birth control. There are certain methods which are easy to practise and effective. Sheath, I. U. C. D. and oral Pills are the most suitable for spacing. Sterilistation is the method for limiting the number of children.

NEEDED RESEARCH ON POPULATION PROBLEMS IN KERALA

By
P.M. Abraham

The Central focus of demographic research is man. Demographic research, or for that matter research in any social science, should be purposeful and should be so designed as to subserve the short-term and long term goals ofeconomic and social development. Demography, as a branch of social science, has registered impressive advances in our country. but, as in any other branch of human knowledge, the momentum can be sustained and accelerated only by a series of systematic studies on important problems relevant to the field of study.

2. Despite almost unlimited diversity of conditions obtaining in various parts of the country, there is a common core of problems present in almost all the States which are of interest to demographers. In addition to this, each State is bound to attach special importance to certain problems which may not and perhaps need not, have received the same degree of priority in other States. I believe, it is the endeavour of this Seminar to identify not merely the common problems which are of interest to demographers all over the country but also those problems which Kerala, in view of its particular demographic situation, have special interest. It does not, however, mean that the problems being suggested for study in this paper are by any means unique for Kerala; they appear, however, to be of special relevance to Kerala.

RESEARCHES ON SOCIO-ECONOMIC CHARACTERISTICS:

(1) Population and Labour Force Projections:

Population and labour force projections in the next 5-10 years is a basic information which is indispensible for planning for the future. So far, the population and labour force projections at the State and District levels have not taken into account the impact of migration on future growth of population, size of labour force and the industrial and occupational pattern of the labour force. With the help of information available from the 1961 Census, it should now be possible to project the future size of the population and labour force after taking into account the effect of migration. What is more important than the numerical dimensions of migration is the qualitative aspect of migration. International experience go to show that migration is highly selective in respect of age, sex, occupation and edueation. The trends in this regards will be very useful for making not only over all projections of population and labour force but also for making estimates of availability of selected occupational and educational groups.

(2) Mortality patterns in selected occupations

Mortality patterns in selected occuatiopns's another area in which research could be roganised. This is specially relevant for manpower planning in the country. An important factor which manpower planners have to take into account while projecting future supply of epecific categories of manpower is the rate at which the stock is getting depleted due to death. At present, manpower planners place reliance on mortality rates used by actuaries for want of better data. It is common knowledge that different occupations have different rates of attrition on account of mortality and demographic research will be making a substantial contribution to imparting precision to manpower planning if data on mortality rates by occupations could be made available. To begin with, one or two prominent occupations could be selected for study.

3) Classification of rural population by educational standard

Kerala has high literacy rate in both the urban and rural areas. The data, according to 1961 Census tabulation programme, has been tabulated by education standard for urban areas only. In view of highe literacy prevailing in Kerala State it would be useful to tabulate and interpret data in respect of rual areas b educational standards. It may be possible from this analysis to find out whether mobility or lack of mobility i the rural areas is associated with the extent of education prevailing in particular areas. It may also provide muc

needed information about the number of doctors, nurses, trained agricultural personnel, teachers, etc. wh are working in the rural areas.

(4) Knowledge, Attitudes and Practices relating to Family Planning:

It may be possible to study the impact of education and other socio-economic factors on the size of family achieved and desired. Such information can be gathered by organising field studies to find out the knowledge, attitudes and practices relating to family planning followed by different socio-economic groups.

Research on Demographic Characteristics:

(1) Sex ratio

One of the distinguishing features of demographic situation in Kerala is the sex ratio, namely, 102.2, which is the highest in the country. The smooth age-group sex ratio of poulation of Kerala according to 1961 census was as follows;-

Age-group.	Sex-ratio (females per 100 males)
0 - 4	96 . 91
5 - 9	98 . 36
10 - 14	102 . 81
15 - 24	106 . 80
25 - 34	106 . 72
35 - 44	99 . 81
45 - 59	100 . 04
60 and above	106 . 73
All ages.	102 . 15

It is normally expected and is also supported by the international experience of other developed countries who have reliable age statistics, that unless there are certain unusual circumstances like wars, heavy migration etc., the sex ratio at younger age groups, specially in the child bearing age groups goes in favour of males as they are not affected by maternal mortality. At higher age groups, women live longer than men.

Looking at the sex-ratio in the above table one finds that relative disadvantage of females in age groups 0-9 is made up in subsequent age groups, excepting the age-group 35-44. The net out-migration from Kerala State which was of the order of 309128 may be one of the reasons for the adverse sex-ratio in the younger age groups as migration is both sex-selective and age-selective. It will be necessary to investigate more carefully other factors besides migration which account for adverse sex-ratio for males. The other factors could be: nature of disease peculiar to one particular sex, mortality in occupations in which one sex predominates etc.

(2) Migration:

The 1961 census, by obtaining information about place of birth has provided good opportunity to study migration patterns by geographical areas viz. rural to rural, urban to urban or rural to urban and vice-versa- another classification could be intra-district, inter-district, inter-state, inter-zonal; or by sex; age-groups; educational level; occupation-wise; industry wise and so on.

The analysis of migration will help to explain some of the differences in the sex ratio. Analysis of migration may also enable us to identify some of the push and pull factors which influence the migration streams.

(3) Inter-district variations:

Population research at present is lacking in analysis at the district level. It will be useful to focus attention on the inter-district variations in the demographic and economic characterisics of population, so that manpower and economic programmes could be built around districts as focal points of activity.

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