The Population Of India: Policy, Action And Research

W. PARKER MAULDIN

Mr. Mauldin is Associate Director, Demographic Division, The Population Council, New York.

At the beginning of this decade, there was only one major country—Japan—that might have been said to have a policy designed to limit the rate of growth of population.\(^1\) Prior to 1936, the Soviet Union officially was pro-natalist, but its liberal abortion laws raise a doubt as to the real intent of the Government at that time. Since the beginning of the current decade, India, a country of more than 400 million people, has adopted a policy designed to limit its rate of growth of population. Since that time, several other countries have expressed concern about high rates of population growth, and in varying degrees have taken some steps toward lessening the increasing rate of growth. India’s population policy is a pioneering effort. The processes leading to the adoption of this policy and the subsequent implementation of the policy are of great interest and importance.

It is customary to date the adoption of India’s population policy from April 1951, when the Panel of Health Programmes of the Planning Commission appointed a committee to report on population growth and family planning. A year later, April 1952, a Population Policy Committee was formed, and a sub-committee on Population Growth and Family Planning submitted a report shortly thereafter.\(^2\)

The First Five Year Plan, which was submitted to the Prime Minister on December 7, 1952, contained the following statement:

"Trends in population growth cannot be altered quickly, and any reduction in birth rates may well be neutralised by a corresponding reduction in death rates. On the other hand, with family planning on a nation-wide scale, there is no reason why the rate of growth cannot be brought down to, say, about 1 per cent per annum or even lower. The pressure of population in India is already so high that a reduction in the rate of growth must be regarded as a major desideratum. To some extent, improvement in living standards and more wide-spread education, especially among women, will themselves tend to lower the rate. But positive measures are also necessary for inculcation of the need and techniques of family planning."\(^3\)

This report of the Planning Commission recommended that a program for

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family limitation and population control should:

(a) Obtain an accurate picture of the factors contributing to the rapid population increase in India;
(b) Discover suitable techniques of family planning and devise methods by which knowledge of these techniques can be widely disseminated;
(c) Make advice on family planning an integral part of the services of Government hospitals and public health agencies.

*Family Planning in India* reports that “a sum of Rs. 65 lakhs was provided for the family planning programme. The programme was to include the provision, in Government Hospitals and Health Centres, of advice on methods of family planning for married persons who require such advice for health reasons; field experiments of different methods of family planning for the purpose of determining the suitability, acceptability and effectiveness in different sections of the populations; development of suitable procedures to educate the people on family planning methods; collection, from representative sections of the population, of information on reproductive patterns and attitudes and motivations affecting the size of the family; study of inter-relationship between economic, social and population changes; collection and study of information about different methods of family planning and the making of such information available to professional workers; and research into the physiological and medical aspects of human fertility and its control.”1

“On the 6th of May, 1953 the Family Planning Research and Programmes Committee was appointed to make recommendations to the Government of India regarding research schemes and experimental and other programmes relating to family planning to be adopted and the nature and amount of assistance, if any, to be given to existing voluntary organisations in the field of family planning, after a review of their present activities.”2

The Family Planning Research and Programmes Committee held its first meeting in July, 1953. The Committee stated that the functions of a family planning center should include:

“Sex education, marriage counselling, marriage hygiene, the spacing of children and advice on such other measures as may be necessary to promote the welfare of families. Advice on infertility should also be a part of the family planning programme. The Committee recognized, however, that for the immediate future the essential service was to be largely advice on family limitation through the spacing of children.”3

Before sketching some of the major steps taken under the Family Planning Programme, let us note that in 1930, the Mysore Government issued orders to open the first government birth control clinic in the world.4 In 1932, the Senate of Madras University accepted a proposal to give instruction on contraceptives, and in the following year the Government of Madras agreed to open birth control clinics in the Presidency. The National Planning Committee, set up by the Indian National Congress in 1935, with Mr. Nehru as Chairman, strongly supported family

1. *Family Planning in India*, op. cit., p. 4.

Summer 1960
planning. These are but isolated examples of early attitudes and programs.

In the First Five Year Plan, 65 lakhs of rupees, or about 1.4 million dollars were made available for family planning. Of this amount, about three-quarters was spent by the end of the Plan period, March, 1956. It was not until the beginning of the Second Five Year Plan that a full-time officer of family planning was appointed to the Directorate General of Health Services. In September of the same year, the Central Family Planning Board was formed.

In the Second Five Year Plan, 497 lakhs of rupees, or approximately 10.5 million dollars, were made available for family planning purposes. In terms of the number of persons whose services can be employed, the dollar figure is too low by a factor of perhaps 5 to 10. Of this amount, 75 per cent was allocated to services, 10 per cent to education, 10 per cent to research, 3 per cent to training, with the remaining 2 per cent unallocated (see Table 1).

One of the principal features of the Family Planning Programme is the proposal to open 2,500 clinics, 500 in urban areas and 2,000 in rural areas, by March, 1961. Each clinic normally will serve a population of 50,000 in urban areas and 66,000 in rural areas. Financial assistance is being provided by state governments, by local bodies, and by voluntary organizations. For example, during the First Five Year Plan period, 147 clinics were opened—21 in rural areas and 126 in urban areas. Of these, 86 were sponsored by state governments, 27 by local bodies, and 34 by voluntary organizations.

<table>
<thead>
<tr>
<th>Item</th>
<th>Lakhs of Rupees</th>
<th>Dollar Equivalent</th>
<th>Per Cent</th>
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<tr>
<td>Service</td>
<td>373.25</td>
<td>7,941,000</td>
<td>75</td>
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<tr>
<td>Training</td>
<td>15.75</td>
<td>335,000</td>
<td>3</td>
</tr>
<tr>
<td>Education</td>
<td>50.00</td>
<td>1,064,000</td>
<td>10</td>
</tr>
<tr>
<td>Research</td>
<td>50.00</td>
<td>1,064,000</td>
<td>10</td>
</tr>
<tr>
<td>Unallocated</td>
<td>8.00</td>
<td>170,000</td>
<td>2</td>
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<td><strong>Total</strong></td>
<td><strong>497.00</strong></td>
<td><strong>10,574,000</strong></td>
<td><strong>100</strong></td>
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</tbody>
</table>

*Source: Family Planning in India.*

The provisional phasing of opening clinics during the Second Five Year Plan is as follows:

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<tbody>
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<td>Rural</td>
<td>100</td>
<td>200</td>
<td>300</td>
<td>600</td>
<td>800</td>
<td>2,000</td>
</tr>
<tr>
<td>Urban</td>
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<td>40</td>
<td>80</td>
<td>150</td>
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<tr>
<td>Total</td>
<td>130</td>
<td>240</td>
<td>380</td>
<td>750</td>
<td>1,000</td>
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</tr>
</tbody>
</table>

*Source: Family Planning in India.*


From March, 1956 to March, 1959, four-fifths of the 600 planned rural clinics were opened. The urban target was over-fulfilled by 35 per cent (202/150). Thus, in March of this year, there were approximately 800 family planning clinics in India.

During the early 1950’s, emphasis was placed on rhythm as a method of birth control. After the report of the Ramanagaram-Lodi Colony Study, emphasis shifted to the foam tablet. More recently, widespread interest has been expressed in sterilization as a method of limiting births. In February, 1959, Prime Minister Nehru and Health Minister D. P. Karmarkar announced to the Family Planning Board that the ruling Congress Party unanimously approved a resolution supporting the idea of sterilization. Gopalaswami, former Registrar General, has been an articulate spokesman for sterilization; Madras State, where Gopalaswami now lives and works, has adopted a policy of providing facilities for free sterilization and paying a small sum to each person electing to be sterilized. The sum granted to males electing to be sterilized has been increased from Rs. 15 to Rs. 40, and persons bringing another in to be sterilized are given Rs. 10. In the state of Mysore, the government “proposes to offer a cash grant of Rs. 25 to each person who undergoes such operation.” The annual number of sterilizations reported has been small; informed persons estimated that the annual number of sterilizations is about 15,000. It seems highly likely that the number will increase appreciably.

Training

The training program envisages the development of:

1. A center for training potential instructors.
2. A rural training, demonstration and experimental center.
3. Touring Training Teams.
4. Development of selected clinics into regional training centers.
5. Regional training centers for family welfare workers.
6. Ad hoc training courses of short duration wherever trained personnel and clinical material are available.

5. Information furnished by Dr. Abraham Stone, who attended the March 1959 meeting of the Madras Family Planning Board.
7. Ibid.

“The reported number of male and female sterilization cases (which appears to be an under estimate) from Andhra Pradesh, Kerala, Madhya Pradesh and Mysore, during 1956 and 1957, is 2,790 and 4,590, respectively.” p. 17

“Sterilization operation has been arranged in twenty major hospitals of the State (Kerala) ... The number of operations performed at seven such institutions during the period January to October, 1958 is 300” p. 53.

“During the first ten months of 1958, 545 females and 463 males were sterilized (Madras).” p. 60.
7. Incorporation of family planning into the normal training program in teaching institutions for doctors and medical auxiliaries.1

A Family Planning Training and Research Centre for potential instructors was established in Bombay on March 15, 1957. A Rural Training Demonstration and Experimental Centre was developed at Ramanagaram and the first course of training was started on August 12, 1957. A grant for a pilot Touring Training Team was given to the Family Planning Association of India in Bombay and ten additional teams will be formed soon. Two Regional Training Centres are functioning, one each in Madras and West Bengal, and short-term ad hoc training courses are being conducted wherever facilities exist.

Education

The Ministry of Health states that its education program includes:

1. Schemes to collect detailed information of the factors which are responsible for community attitudes, beliefs and behaviour patterns.

2. Identification of natural groups and natural group leaders and use of these as a channel of communication.

3. Preparation and testing of basic materials and methods for mass communication and community education; and imparting specific technical knowledge and skills.

4. Training a corps of competent workers.

Widespread awareness of family planning has been created. 4,60,000 copies of posters, 80,000 copies of pamphlets and 70,000 folders on family planning have been distributed so far. Films and slides have been provided, and programs on family planning are broadcast over the radio. Grants have been sanctioned for the publishing of a journal on family planning. Family welfare workers contact families individually and in groups and also promote community welfare activities around family planning clinics.

A proposal to hold camps of short duration, during which a selected number of people can be given orientation in family planning methods, is under consideration. The camps are to be conducted by peripatetic education teams, each team consisting of one Doctor (Asstt. Surgeon, Grade I), one Health Educator and one Attendant. The aim is to gradually have a group of persons in each village and town as Voluntary Family Planning Educators (Pracharaks).

It has also been decided to appoint group leaders in different states as Honorary Family Planning Education Leaders for motivating the people and mobilising opinion in favor of family planning.

Population Growth

India has a moderately long history of good population censuses from which it is possible to compute average annual rates of growth, and birth and death rates. Vital statistics in India are too inadequate for one to detect changed trends in rates of growth, or to make reasonably reliable estimates of current rates of

1. Family Planning in India, op. cit.
growth. The most recent vital statistics furnished to the United Nations, for example, give a birth rate of 27 and a death rate of 11—and a rate of natural increase of 1.6.

In recent years there has been much interest in rates of growth in India, but for the most part current estimates have been simple extrapolations of the annual rate of growth shown by the 1941 and 1951 censuses. Current estimates of India's population contained in the United Nations Demographic Yearbooks have been obtained by taking the 1951 census figure, adding the population of Jammu and Kashmir, and adding 1.3 per cent per year. This procedure gives an estimate of 397,540,000 for mid-1958, as reported by ECAFE. This procedure would give us an estimate of 402.7 million for mid-1959.

The absence of reasonably good vital statistics for most areas has resulted in planners and demographers in India taking a relatively conservative position with reference to rates of growth. We do not have enough information to know to what extent India has shared in the nearly world-wide reduction in mortality in recent years. There have been epidemics of cholera and small pox during the 1950's that have taken many lives. Malaria has continued to be widespread. Life expectancy was estimated to be about 32 years for males and slightly less for females on the basis of the 1941-1951 censuses. How much improvement in mortality has there been? What has been the trend in fertility?

Fertility Trends

It is difficult to establish past trends in fertility in India. Davis concludes that "there is some evidence here that after 1921 the birth rate started to decline slightly... It would not do to extrapolate the past trend, partly because of possible errors in the figures and partly because there is hardly any trend observable." Coale comes to the same conclusion, stating, "...fertility declines have been non-existent or only moderate..." S. P. Jain, who prepared the Age Tables and Life Tables for the 1951 Census of India, feels the evidence regarding a decline in fertility is much stronger. He says: "There is fairly clear evidence that the Indian birth rate was about 50 per thousand before 1921, came down to 45 during 1921-40, and decreased further to 40 in 1941-50." Mr. Malaker has made an intensive analysis of fertility data for the most populous state, Uttar Pradesh, and states "There is no evidence of any significant upward or downward trend in fertility of Uttar Pradesh females during the period 1931-51." These analyses do not give us any insight into what future fertility may be, but it seems very likely that Indian fertility is relatively high and that it has not declined appreciably.

1. The rate of growth for 1954 was 1.4 per cent, as reflected by U.N. figures.
Das-Gupta and his colleagues advanced the interesting thesis that fertility is increasing. The results of the 2nd and 4th rounds of the National Sample Survey (data collected in 1951 and 1952) showed that fertility is increasing among groups married in 1930 and after, and at each stage of married duration relative to couples married before 1930. There was also a decrease in the number of children born to couples as the per capita expenditure of the households to which they belong increased. Professor Mahalanobis states that “it is known that in recent years there has been an increase in the average income per person.” The two conclusions just cited seem, therefore, to be contradictory.

Mahalanobis has developed a model that fits in both these findings:

“The number born (or surviving) increases quite rapidly at first with an increase in the level of living up to a peak point at some critical level of living and then gradually decreases as the level of living rises beyond the critical peak value for fertility. On this view, a comparatively small rise in the level of living, especially in the lowest groups, would increase the total number of children born (or surviving) and lead to an increase in the rate of growth of population. As the level of living further rises, and more and more couples pass beyond the critical level of living for fertility, the rate of growth would gradually slow down.”

Mahalanobis’s hypothesis, that levels of consumption are so depressed among a portion of the Indian population that fecundity is impaired, is provocative. A recent paper by Dr. Melba Kamat and R. G. Kamat supports this hypothesis. Kamat conducted a survey in the industrial area of Bombay among 640 couples, each with a total monthly income averaging Rs. 175, or 30 per cent more than the per capita income in India.

“The group chosen seems representative of the great majority of Indians, and it shows diet deficiencies and a nutritional status reported all over India, except in the Punjab. The ages chosen range from 15 to 40 years of age. The average body weight for men is 100 lbs. The investigation concerns Hindus with an insufficient caloric intake and a condition of starvation as regards the consumption of animal protein. Although the majority, 75 per cent, are non-vegetarian, they eat practically no meat or fish... The control group consisted of Hindus with high incomes (mostly over Rs. 500 per month), well nourished and consequently normal.”

The principal finding of the Kamat study was that the average period of the onset of menstruation following delivery was 4-1/2 months among the upper income group, but was 11-1/2 months among the low income group.

“The collected data on the physiology of re-production leads one to conclude that chronic semi-starvation, especially the protein starvation prevalent in India for a century or more and perhaps also other conditions, has brought a decrease in fecundity, which can be reckoned as being about 30 per cent... We can therefore also conclude that, with improvement of the standard of living, there will be, in the first instance, an increase in the already high birth rate...”

2. P. C. Mahalanobis, Foreword to “Couple Fertility”, op. cit.
3. Ibid.
5. Ibid.
The paper does not describe the survey in sufficient detail for one to evaluate the design, and hence the findings. It does, however, set forth an interesting theory.

C. Chandrasekaran has stated:

"In the future, many forces are likely to operate towards increasing fertility. Further improvements in mortality conditions will lessen widowhood rates in the reproductive ages and will tend to increase fertility as in the past. In addition, some liberalisation of the ban on widow remarriage might be expected. Indian fertility, which has been governed by a number of institutional codes affecting sex relations, is likely to take an upward swing when observance of these codes becomes less rigid under the influence of economic and social changes. In particular, the practice of observing prolonged periods of abstinence after each childbirth may become obsolete and may lead to a shortening of the interval between successive children . . . ."

Thus "in the future, India's population growth may be accelerated not only by the decline of mortality but also by an increase of fertility."¹

N. K. Sarkar² has also hypothesized that under some conditions fertility in India may increase. Ansley Coale agrees that there are forces at work in India that tend to raise fertility rates:

"The fact that the Indian birth rate may be no higher than in the low 40's is indeed more puzzling and more in need of explanation than the fact that it appears to be above 40. Higher fertility performance is quite common where effective birth control is not practiced . . . Among the factors which keep marital fertility from being still higher, there are the following possibilities. First, poor health.³ . . . Second, Indian family customs and modes of living, . . . Third, a factor reducing the general level of fertility, though not of marital fertility, is the custom of prohibiting the marriage of widows . . . ."⁴

This distinguished group of demographers and statisticians who speculate that population increase may result not only from mortality improvement but also from fertility increases includes Mahalanobis, Das Gupta, Chandrasekaran, Sarkar, and Coale. Their views are supported by the findings of an M.D., Dr. Kamat. Nor is this theoretical possibility without parallel. Several of the Caribbean island populations have reported substantial increases in fertility.

Trends in Mortality

Coale's⁵ analysis leads him to the conclusion that mortality was relatively

5. Ibid., p. 54.
constant in the 20-25 years preceding 1951. Davis \(^1\) states that the average death rate apparently fell 25 per cent between the second and third decades of this century, and fell about 14 per cent between the third and fourth decades, i.e., from 1921-30 to 1931-40. Jain\(^2\) estimates that the crude death rate fell about 12 per cent, from 31.2 to 27.4, during the next decade. These analyses are based mainly on census data.

A recent working paper of the Indian Central Statistical Office, citing the Davis and Jain figures for birth and death rates, concludes;

"Beyond this, any quantitative estimate of trends in fertility and mortality, at present, have perforce to be based largely on conjectures and intelligent guesses due to lack of sufficient reliable data."\(^3\)

Coale’s projections assume a decline of about one-third of the mortality rate (from 31 to 21) from 1951 to 1961. The rationale underlying these figures is that, in 1951, India was an area of very high death rates which resulted from a combination of primitive environmental sanitation, the widespread endemicity of a large family of infectious diseases, and the absence of facilities for adequate curative medicine. It is assumed that India’s anti-malaria campaign and general efforts to improve public health will be far-reaching and generally successful.

The importance of obtaining appreciably more valid current rates of growth led to much discussion. About a year ago it was decided to incorporate questions about births and deaths in the 14th round of the National Sample Survey, this round to extend from July, 1958 to 1959. A preliminary report, based on the first sub-round, or roughly one-sixth of the total survey, gives a growth rate of 1.94 per cent per year for the reference period August, 1957—July, 1958\(^4\) (a birth rate of 38.7 and a death rate of 19.3). This sub-round consisted of returns from 415 villages, out of a sample of 436, and included 37,533 households and 190,000 persons.

The next five sub-rounds of the 14th round will give independent estimates of population growth. Consideration is being given to duplicating this survey in the 15th round, to be started in the second half of 1959. Also, it is planned to revisit, in 1959, villages included in the first sub-round. In the revisit, total population will be ascertained and compared with figures obtained on the first visit. With appropriate corrections for migration, one can then estimate growth by obtaining the difference in total population from the two visits.

It is of interest to note that this preliminary figure of 1.94 per cent increase is almost identical with that projected by Coale and Hoover. If one wishes to look for small differences, the Coale and Hoover figures would appear to be trivially

1. Davis, op. cit., p. 36.
smaller than the figure obtained by NSS.\textsuperscript{1} The Planning Commission of India is now reported to be using 2 per cent as the rate of natural increase of population for the Third Five Year Plan.\textsuperscript{2} The Coale-Hoover figures average approximately 2.25 per cent for the period of the Third Five Year Plan. Informal reports indicate that the 2 per cent figure is also being used for the current period.

My interest at this point is not to assess mortality and fertility trends, but rather to indicate some of the research that is being undertaken in these fields.

Research Facilities and Studies

Until about two years ago, the principal demographic studies were being carried out by:

1. The Indian Statistical Institute, Calcutta.
2. All-India Institute of Hygiene and Public Health, Calcutta.
4. The J. K. Institute of Sociology and Human Relations, Lucknow.
5. The Government of India, principally the Registrar-General's Office.

Since that time, four demographic centers have been established:

1. The Demographic Training and Research Centre, Bombay. Sponsored jointly by the United Nations, the Government of India, and the Sir Dorabji Trust.
2. The Demographic Research Centre, University of Delhi.
3. The Demographic Research Centre, Calcutta.
4. The Demographic Research Unit, Department of Statistics, State of Kerala.

A fifth demographic center is to be established in the Department of Statistics, University of Kerala. The first four of these newly established centers are supported with funds from the Ministry of Health, the fifth will be financed through the University Grants Commission. One of the functions of these demographic units is to work with the Ministry of Health in evaluating its family planning programs.

Additional facilities have been established by the Indian Council of Medical Research, which has authorized four centers to carry out field studies on contraceptives. These centers are located in Trivandrum, Bombay, Lucknow, and Najafgarh (near Delhi). They will undertake continuing studies of the acceptability and effectiveness of virtually all contraceptives now available. It is also planned to develop a variety of educational materials which may be used in conjunction with these field studies.

A number of important field studies have already been undertaken, and others

\begin{itemize}
  \item Coale and Hoover estimate a natural increase rate of 1.72 per cent in 1956, and 2.09 per cent in 1961.
  \item P. Pant, as reported in *Statesman*, (January, 1959).
\end{itemize}
are being planned. The principal ones completed or now being carried out include:

1. The Ramanagram-Lodi Colony Study.
2. The Harvard-Ludhiana Study.
3. The Rural Field Study of Population Control, Singur.
5. Five Years of Family Planning in the Countryside.

Investigations on contraceptives are being carried out at the Contraceptive Testing Unit, Indian Cancer Research Centre, Bombay; the All-India Institute of Hygiene and Public Health, Calcutta; the Central Drug Research Institute, Lucknow; the Institute of Post-Graduate Medical Education and Research, Calcutta; the Bacteriological Institute, Calcutta; and the Pharmacology Department, Lucknow University.

Some of the field studies, and the clinical evaluation of an oral contraceptive, are described in the appended materials.

Plans for research are far more extensive today than they were two years ago. If those in charge of the research programs show imagination in the approaches to be used, and if the research programs are properly designed, it well may be that within a matter of a few years India will have made substantial progress in her stated goals.

The climate of public opinion is more receptive to family planning today than it was several years ago. The volume of articles in newspapers and magazines relating to the population problem is sizeable. As Gunnar Myrdal said at the inaugural conference of the Demographic Training and Research Centre in Bombay, November, 1957, all of the decrease in the birth rate in the Western world was accomplished in the face of opposition of all the institutionalized forces—the church, the government, the newspapers, the press, the legal system, and the educational structure. "It is a very different situation when, as here in India, birth control is condoned by organized society, has the backing of Government and Parliament and all enlightened citizens, and thus can be promoted as a social reform."

1. Ramanagram-Lodi Colony Study

The first and perhaps best known study of family planning in India was the Ramanagram-Lodi Colony Study. Preliminary work on this study was begun late in 1951, with field work beginning in 1952 and continuing for approximately two years. Ramanagram is an administrative sub-division of Mysore State, and Lodi Colony is a housing project for government personnel in Delhi.

The basic purposes of the study were to determine (1) the acceptability of the rhythm method; (2) the effectiveness of the method in reducing the number of

pregnancies among those who undertook to use it; and (3) the effectiveness of the rhythm method in reducing the birth-rate of the population served at Ramanagram. Experimental populations of approximately 8,000 in each of the two areas were selected, and a control population of about 8,000 in Ramanagram. Ramanagram provided for a household survey, but this step was omitted in Lodi Colony. An attitude survey was made in both the areas—of husbands and wives in Ramanagram, but only of wives in Lodi Colony. The primary purpose of the attitude survey was to ascertain how many couples wanted to postpone or avoid a pregnancy, and whether they would want to learn a method for doing so. Persons expressing a desire to have no more children and those desiring to postpone the next pregnancy for at least two years were asked if they would like to learn a family planning method.

Although 75 per cent of the 2,362 couples in the two experimental populations expressed a desire to learn a family planning method, it was possible to teach the rhythm methods to only 14 per cent of the “want-to-learn” couples in Ramanagram, and to 28 per cent of this group in the Lodi Colony. In Ramanagram, 28 per cent reported that they followed the method for varying periods, and about 17 per cent were reported to have followed the method regularly. In Lodi Colony, about half the women given rhythm method advice (264 of 898) reported that they followed the method; 10 per cent using only this method, 40 per cent using it in combination with other methods.

The conclusions drawn from these studies, as reported in Family Planning in India, were that:

(a) There is considerable readiness for adoption of family planning in both rural and urban areas;

(b) The rhythm method has a definite appeal to people in both areas;

(c) When used regularly, the rhythm method seems to reduce the pregnancy rate by about one half;

(d) The limitations to the practice of rhythm method seem to be mainly due to the inability of couples, especially in rural areas, to abstain for long periods;

(e) The conventional rhythm method was used as a supplement to other methods observed in Lodi Colony.

2 India-Harvard-Ludhiana Population Study

This study is a project of the Department of Epidemiology, Harvard University School of Public Health, and the Christian Medical College, Ludhiana. It is financed by grants from the Rockefeller Foundation and the Government of India. The study is designed to attempt answers to questions in four categories:
1. Effect of contraception on births

(a) Is it possible to reduce the birth rate of the total rural population by offering contraception?

(b) If so, by how much?

(c) What are the groups among which births are especially affected? e.g. better educated, those already having one living boy.

2. Effect of contraception on death

(a) Does a program of contraception affect deaths as well as births? If so, by how much and in what direction?

(b) What are the special groups among which deaths are changed? e.g. infants, mothers.

3. Effect of contraception on health and prosperity

Does a reduced birth rate make people healthier or more prosperous, or the reverse?

4. Factors influencing the birth rate

What are the underlying factors, physical and geographical, biological, psychological, cultural and economic, which determine the birth rate?

Before the main study was begun, exploratory and pilot studies were undertaken. The exploratory study was designed to:

(a) Develop working methods;

(b) Train a senior staff;

(c) Discover if any simple method of contraception is sufficiently acceptable to be likely to affect the birth rate;

(d) Determine the most acceptable of five simple contraceptive methods (rhythm, withdrawal, foam tablet, salt solution and pad, contraceptive paste and pad); and

(e) To gain an impression of ideas and customs surrounding reproduction and to learn the sexual vernacular.
The pilot study was designed to:

(a) Carry out on a small scale in three villages the procedures of the main study. The villages were subject to test control, where foam tablets were offered; working control, where work mirrored that in the test village, but without offer of contraception; and blank control, where only births and deaths were recorded;

(b) Make an estimate of acceptability and effectiveness of the chosen method of contraception (foam tablets);

(c) Calculate the population and time required for the main study, based on observed acceptability and effectiveness of contraception, and average child spacing;

(d) Train more staff for the main study;

(e) Expand knowledge of local ideas and customs relating to reproduction.

The exploratory and pilot studies led to the conclusions that:

(a) Foam tablet is the method of choice;

(b) Acceptability of the foam tablet method is about 25 per cent in all non-sterile couples where the wife is aged 15-44;

(c) The effectiveness of foam tablets as used is 50 per cent;

(d) The time required to carry out the main study is 4 years, assuming 25 per cent acceptability; 50 per cent effectiveness of foam tablet; average spacing between births of 31 months (this figure being determined as a result of observation in the area); and a population of 8,000 in the test area, and 8,000 in the control area.

3. Current Status of Population Study in Khanna

Since 1953, the population study at Khanna, Punjab, India, has been collecting information on the practice of family limitation. Data on which the observations are based come from a population of 1095 fertile married village couples studied for about two years, along with a thousand other couples serving as a control. Each family unit is visited about once each month. The chief method of family limitation offered is foam tablets, supplemented by promotion of withdrawal or abstinence during the period of active ovulation.

Acceptance of family limitation by a population is measured by arranged family units according to a graded scale, starting with those who refuse to accept and ending with those who use the method regularly at each intercourse and without exception.

Summer 1960
The results reported to date are preliminary and incomplete.

**Table:** Pregnancy rates of fertile wives of seven villages, (observations range from 19-28 months, 1956-1958) by regular and irregular contraceptive practice, with controls.

<table>
<thead>
<tr>
<th>Months of exposure</th>
<th>No. of conceptions</th>
<th>Pregnancy rate</th>
<th>Effectiveness as judged by Control 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>I. Test Population</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1. Temporary and irregular use of foam tablets .. ..</td>
<td>4917</td>
<td>213</td>
<td>51.9</td>
</tr>
<tr>
<td>2. Irregular use of other recognised methods .. ..</td>
<td>640</td>
<td>24</td>
<td>45.0</td>
</tr>
<tr>
<td>3. Regular use of foam tablets .. ..</td>
<td>2153</td>
<td>36</td>
<td>20.1</td>
</tr>
<tr>
<td>II. Control Population</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1. Internal control-pregnancy rates of fertile wives, test villages, not practicing contraception .. ..</td>
<td>7641</td>
<td>368</td>
<td>56.2</td>
</tr>
<tr>
<td>2. Pregnancy rates of fertile wives in Manipur village previous to practicing contraception .. ..</td>
<td>7877</td>
<td>391</td>
<td>59.6</td>
</tr>
<tr>
<td>3. Matched control by age and parity of those in Manipur village practicing contraception .. ..</td>
<td>717</td>
<td>31</td>
<td>51.9</td>
</tr>
<tr>
<td>4. Control village-pregnancy rates of fertile wives of a general population .. ..</td>
<td>1146</td>
<td>52</td>
<td>54.5</td>
</tr>
</tbody>
</table>

The preliminary data show that individual villages vary widely in the extent and regularity of foam tablet use. Over an appreciable time, rates of acceptance
follow a typical pattern. An initial satisfactory level is followed by a material rise, and then a decline in the number users. Thereafter the curve rises progressively under the influence of public health education and the force of community example.

Some villages have attained the 25 per cent level of acceptance called for in the experimental design of the study. Others have failed by a considerable margin. The overall acceptance rate for the seven villages is 16.7 per cent. The ultimate result in terms of a decreased birth rate will depend on whether or not the excess efficiency will balance the insufficient acceptance. The best opinion of the moment is that it will not.¹

It should be noted that this study originally was designed to test a single method of contraception, and the choice made was the foam tablet. Very recently this method has been supplemented to some extent by promotion of withdrawal during the period of active ovulation.

4. Rural Field Study of Population Control

Purpose: The basic purpose of this study is to determine whether community birth rates in a given rural area can be reduced in a significant measure by simple, relatively inexpensive and readily available methods.

Locale: The study is being conducted in West Bengal, in the vicinity of Singur. The test village is Mirzapur; the experimental villages Gopaldhara and Daluigacha; and the control village Bandipur. The villages are moderately isolated, although within approximately 25 miles of Calcutta.

Mirzapur, the test village, consists of 109 houses occupied by 171 households with a total population of 1,054. The experimental village of Gopaldhara consists of 605 houses, 866 households, and 5,781 people; the experimental village of Daluigacha consists of 184 houses, 272 households, and 1,642 population. The control villages have a population of approximately 11,000.

Auspices: The study is being carried out by the All-India Institute of Hygiene and Public Health with funds from The Population Council and the Government of India.

Similarity to Harvard-Ludhiana Study: This study differs from the Harvard-Ludhiana study in that it will:

(a) Test a choice of several methods (rhythm, coitus interruptus, and foam tablet) of family limitation, rather than only one (the foam tablet);

(b) Be managed entirely by Indian personnel;

(c) Utilize non-professional village workers;

(d) Be undertaken in a different part of India, where population pressures are

¹. The above summary was taken from documents distributed at the International Planned Parenthood Federation meetings in New Delhi in February, 1959, and from unpublished summaries of the study.
particularly acute;

(e) Give more attention to educational techniques of disseminating information about family planning;

(f) Organize group meetings to discuss reasons for, and techniques of, family planning.

**Status of Study:** The study was authorized early in 1956 but did not get underway until later in the year. Most of the first year and a half were spent in recruiting personnel, developing procedures, etc., in the test village. A household survey was undertaken in the control and experimental villages in the latter part of 1956. By the end of 1958, the villagers had been contacted and questioned regarding their desires to learn about family planning.

Those persons who indicated an interest in learning about family planning were invited to attend a group meeting. At the group meeting the village workers gave a talk, illustrated with appropriate flip charts and flannel graphs to explain the physiology of reproduction and the three methods chosen for teaching. Typically, small groups of 6 to 8 persons were organized, separately for males and females, to teach family planning methods. The subjects usually are discussed in two meetings. At the first meeting the following topics are covered: general remarks on economics and health, desirability of family planning, how a baby is born, simplified rhythm method, withdrawal method, and use of foam tablet. The second meeting is intended mainly for recapitulation. On this occasion one or more of the villagers is encouraged to summarize what has been taught and a general discussion is held. Those unwilling to attend group meetings are taught on an individual basis.

During 1958, the first year of full operation of the study,

(a) Preliminary contact was made with 1,186 men and 1,197 women in the area and their attitude towards family planning was recorded;

(b) 747 men and 859 women were covered by the educational program, either in a group or on an individual basis;

(c) In addition to the family welfare clinic, a sub-clinic was organized in the interior of the village for women to receive the foam tablet. The subject of family planning was discussed with 139 ladies in the clinic, 82 of whom took foam tablets;

(d) Centers for supply of foam tablets to men were opened at the field office as well as in two of the three male workers' homes.

The area has been covered by the educational program, either by group teaching or individual instruction, separately for men and women. It is now intended to follow-up this teaching with an intensive educational campaign using different media. Some of the immediate plans are given below:

- **Pamphlet:** A pamphlet in Bengali has been prepared which explains in print the highlights of what was told during group teaching. This pamphlet will be distributed to every adult married male aged 20-24 years who has completed primary education; any resident male who asks for it and can be expected to make good use of it; literate women leaders, who are expected to read in a group and tell the substance of it to others. Before distribution of the pamphlet, assessment of knowledge of a randomly selected group of persons may be made by simple questionnaire method. A special schedule to be used for this assessment has been prepared. This assess-
ment will have two advantages: to know how far the villagers have retained the knowledge after the teaching program; and the role of pamphlets in supplementing and improving the knowledge imparted by group teaching, which can be determined by making a similar survey after a few months.

Though the pamphlet will be distributed essentially on an individual basis, it will be utilised as a medium for mass communication. The field workers will continue to organise follow-up meetings, where one of the villagers who has been supplied with the pamphlet will be asked to read it and explain it to others. Similar meetings will be encouraged, even without the field worker being present.

The above program calls for the selection of suitable group leaders both among men and women. By now the field workers have sufficiently intimate contact with the community to make this possible.

**Distribution of messages or quotations by leaders emphasizing Family Planning:** The quotation from Rabindranath Tagore

"It is a cruel crime thoughtlessly to bring more children to existence than could properly be taken care of . . ."

will be circulated by printing the Bengali translation on a pictorial calendar bearing Tagore's portrait, which can be hung up by the villagers in their homes. The Bengali New Year begins on April 15th and it is hoped to start the distribution just before the beginning of the next year. While distributing the calendar, and during the follow-up, the meaning of the quotation will be explained to the villagers. If this measure is found useful, similar messages from Pandit Nehru and others will be displayed either as posters or wall-decorations.

**Flip charts:** Two themes have been utilized in the preparation of flip charts. The themes are: Lives of two villagers, Ananda (joy) and Dhukhiram (sorrow), and how they were affected by the size of their families; Five Year Plans and the race between Population and Food Production. The flip charts have been produced in colour and are being pretested. After modification they will be used for group meetings.

**Stories:** If the flip charts are found acceptable, the stories from them will be prepared as pamphlets.

5. **Five Years of Family Planning in the Countryside:**

An experiment was begun in April, 1952, by the J.K. Institute under the Family Planning Pilot Research Project, funds being furnished by the Uttar Pradesh Government. The project consisted of a program of action and research in a rural area of 26 villages in the District of Lucknow. The main objectives of this research project are: to collect reliable data in respect to rural fertility; to study attitudes and responses of couples in the countryside towards family planning; and to carry on sociological research on the most acceptable methods of family planning in villages.

The first step in the experiment was the collection of data relating to size of population, births, deaths, fertility record of married females, attitudes of married females.

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couples toward family planning, and so on. The action, or experiment, consisted of the dissemination of information about methods of family planning and free distribution of simple contraceptives to those wanting to use them. Information on family planning methods was confined to the rhythm method in the initial stages. After about a year, other methods were introduced, including a rubber sponge and a cotton pad. At a later time, the foam tablet was also introduced.

There were about 1,900 married females in the area and a sample of 1,453 was included in the study. There was one follow-up visit by village workers to almost all of those included in the study. About 4/5 were followed up twice, and about 1/8 were followed up three times in a period of five years. Thus the number of contacts and the intensity of educational methods was quite low. The report by Baljit Singh states that: “some 22 per cent of the mothers in the childbearing age, i.e. one in every five, who were given advice on family planning methods adopted them, although seldom regularly. These constitute 17 percent of all mothers of childbearing age living in these villages.” He also states: “Our experiment goes to indicate that, contrary to the popular belief, the need for family planning is felt by village parents. They are, however, completely unaware of any method of satisfying this need and are certainly slow to respond when they are given information about it.”

An interesting by-product of the study is the observation that “child mortality is directly proportional to the number of children born to a mother. For women with completed fertility, 60 per cent of the children born to mothers having given births to 10 or more children are reported to be dead, as against only 20 per cent of the children born to mothers bearing not more than 3 children.

“The number of children surviving per mother varies directly with the number of children born up to the fourth child only. Beyond that it increases little with the number of children born.”

6. Research on the Use of Synthetic Meta-Xylohydroquinone as an Oral Method

**Auspices:** This study is being carried out by the All-India Institute of Hygiene and Public Health in Calcutta with funds furnished by the Government of India.

**Purpose:** To determine the extent to which meta-xylohydroquinone (an extract from the common garden pea) inhibits fertility among women, and the degree of toxicity of the compound.

**Study Design:** Women attending a material welfare clinic are divided into two groups, one of which is given the compound being tested, and one of which is given another compound, identical in appearance, but which is known to have no effect on fertility. The control, or placebo, is stearic acid. At the beginning of the study, alternate women were chosen for receiving the compound, and alternate women for receiving the placebo. At the suggestion of Professor J. Neyman of California, this procedure was changed and serial numbers were matched against random numbers. Each random number bore the designation M, for the compound being tested, or 0 the control group. These numbers were placed in envelopes bearing the serial numbers, and each envelope was opened when the serial number was assigned.

Preliminary results are tentative, but they indicate about 50 per cent effectiveness of the compound in reducing fertility. Pregnancy rates are about 60 (60.9) per 100 years of exposure for the test group, and somewhat more than twice this (137.5) for the control group.
**Dosage:** The compound is given on the 16th and 21st days of the menstrual cycle in doses of 300 to 400 mgs. The pills are always taken in the presence of a staff member of the project.

**Miscellaneous:** Earlier tests on rats did not indicate any inhibitory effect of the compound, in the dosage used for the rats. The pregnancy rates both for the control and the experimental groups are very high. There does not appear to be any toxic effect from the compound. The total experience, as of January, 1958, amounted to about 200 women each in the control (209) and experimental (201) groups, who have been observed for less than 1 year each, on the average.