



USING INFORMATION FOR PROBLEM SOLVING

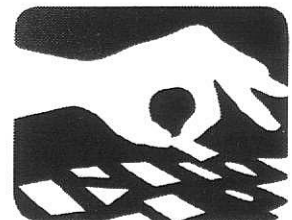
**Sumiye Konoshima, David Radel,
Generoso Gil, and Elizabeth Buck**

A PROFESSIONAL DEVELOPMENT MODULE

EAST-WEST COMMUNICATION INSTITUTE

 EAST-WEST CENTER

Case Study



USING INFORMATION FOR PROBLEM SOLVING

by

Sumiye Konoshima
David Radel
Generoso Gil
Elizabeth Buck

Module Text

Case Study

PROFESSIONAL DEVELOPMENT MODULES

A series of learning modules for professional and administrative staff working in development communication programs.

● John Middleton, General Editor

© 1977

East-West Center
East-West Communication Institute
Honolulu, Hawaii

FOREWORD

Any discipline faces the challenge of translating what it learns from research and practice into a form usable by persons who apply knowledge to problems. This challenge is particularly demanding in the field of economic and social development, and nowhere more so than trying to inform and educate people about the problem of population.

Population problems exist, in one form or another, throughout the world. To help solve these sensitive and difficult problems, a large number of countries depend upon a group of professionals working in what has come to be called Population IEC (information, education, and communication). These professionals, working under great difficulties, often isolated from the sources of learning, feel a continuing need to keep up with recent knowledge in their field. The East-West Communication Institute, under the general supervision of Dr. Robert Worrall and the specific direction of Dr. John Middleton, and with the support of the U.S. Agency for International Development, has made an effort to respond to this need.

The Modular Learning Materials, of which this is one unit, are not quite like any other learning materials in the subject area. They have been developed with the aid of scholars and practitioners, and tried out by representatives of the audience for whom they are intended: working professionals. Consequently, they represent a blend of theory and practice in what we believe is a usable form and one we hope will be widely helpful.

Wilbur Schramm

EDITOR'S INTRODUCTION

These materials are part of a series of development modules designed and produced at the East-West Communication Institute to assist professionals working in population and family planning information, education, and communication (IEC) programs in sharpening their professional skills. A wide range of expertise--drawn from IEC programs in Asia and the United States, from universities, and from the Communication Institute staff--has been brought to bear on the development of the materials. Acknowledgment of authorship is given in each module. The project has been supported with a grant from the U.S. Agency for International Development.

We began this project with the major goal of producing professional instructional materials which, in addition to serving as the core of population IEC professional development programs at the Institute, could be adapted and used in a variety of training and development settings. To this end we have attempted to make each module as complete and self-sufficient as possible. The modules are self-instructional to lessen the burden on teaching and training staffs, and to facilitate their use on an individual basis. We have built the modules around real life cases, problems, examples and data, and have sought at all times to strike a balance between principles and techniques for practical application.

A basic premise of our work with the modular materials is that they will be constantly revised. As we use the materials in Honolulu, and as cooperating institutions use them in other institutional settings in Asia, Africa, Latin America, and the United States, we receive feedback which helps us refine and improve the modules. We are especially grateful to the 40 participants from Asia, Africa, Latin America, and the United States in the First Modular Program of Professional Development in Population and Family Planning IEC who helped us conduct the first full field test of the materials in Honolulu in the spring of 1974. Their critical review and commentary has been a rich source of ideas for improvement. We owe a similar debt of gratitude to the numerous IEC experts around the world who reviewed and criticized the materials. A special vote of thanks is due the Planned Parenthood Federation of Korea, which has generously shared with us the results of their project to review, revise, and adapt modules for their own use.

Recognizing the need for continual improvement of the modules, we are nonetheless sharing them in this "second revised form." We encourage non-profit education and training institutions to use the materials, revising, adapting, translating and tailoring them to meet their needs. We would be grateful for feedback on the nature and results of such efforts.

We intend to continue developing existing modular materials and will be adding modules as the need arises. Institutions interested in obtaining copies of the modules and audiovisual support materials are encouraged to write to the Communication Institute for more details.

The conceptualization and coordination of the project has been the work of the Task Group for Modular Professional Development. Without the creativity and hard work of these people, there would have been no modular materials: Ronny Adhikarya, George Beal, Jerry Brown, Ellwood B. Carter, Sanford Danziger, James R. Echols, O.D. Finnigan, Francine J. Hickerson, Ying Ying Hsu, D. Lawrence Kincaid, David Kline, Sumiye Konoshima, Jan LaBrie, Iqbal Qureshi, David Radel, Syed Rahim, Merry Lee San Luis, John Shklov, Mary-jane Snyder, Victor Valbuena, Hichul Whang, Margaret White, and Robert P. Worrall.

This project was supported by the Office of Population, U.S. Agency for International Development, AID/csd-1059. Special thanks are due to Dr. Wilbur Schramm, whose guidance has been essential, and to Dr. Robert P. Worrall, who, as Assistant Director, gave this project the support needed to transform an idea into reality.

John Middleton
Honolulu, 1977

PREFACE

This case study or databook describes a typical country in South Asia to which the fictitious name Limat has been given. All of the information that appears here is real, however. This case study describes the overall demographic, political, social, and economic situation of Limat and of a rural area known as Roothana Block. Then detailed information is provided on the family planning program of Limat and of Roothana Block.

The country has been disguised so that the reader will not be unduly constrained by his knowledge of that particular country and so that the situation may be more readily generalized. To maintain the disguise, all footnotes and source references are excluded.

This databook was prepared by the PopCase Project, Department of Health Administration, School of Public Health, and Carolina Population Center, University of North Carolina at Chapel Hill. For use in this module, modest changes have been made in the format of the presentation. The four chapters of the case study, as they appear here, were originally four separate volumes of the Limat/South Asia Databook Simulation. The authors of these separate volumes are as follows: Limat, compiled by K.A. Pisharoti and revised and enlarged by Laurel F. Gooch and Harriet H. Imrey; Roothana Block, compiled by K.A. Pisharoti and revised and enlarged by Harriet H. Imrey; Family Planning in Limat, compiled by Laurel F. Gooch and revised and enlarged by Harriet H. Imrey; and Family Planning in Roothana Block, compiled by K.A. Pisharoti and revised and enlarged by Harriet H. Imrey. Selection and editing for this combined volume were carried out by David Radel, who assumes full responsibility for any errors that may have been unwittingly introduced thereby.

TABLE OF CONTENTS

Foreword	iii
Editor's Introduction	iv
Preface	vi
Guidelines for the Use of This Case Study	1
I. Limat	3
II. Roothana Block	21
III. Family Planning in Limat	35
IV. Family Planning in Roothana Block	55
Appendix: Tables on Family Planning in Limat and in Roothana Block	65

GUIDELINES FOR THE USE OF THIS CASE STUDY

This case study is intended to help you gain experience in analyzing an ongoing family planning program. You are to suggest the kinds of IEC strategies and tactics that are needed to help solve program problems. You are to identify possible causes of problems that have IEC implications and determine what kind of information is needed to identify the most likely causes of the problem and to select the most appropriate and feasible IEC activities to carry out for solving problems. You should make notes and underline sections of the case study, and do whatever else you need to with the case study that will help you do the exercises.

For Exercise II-1, you should read the entire case study, paying close attention to Chapters 3 and 4 and to the data that appear in the Appendix. To help you get started on this exercise, we have stated on the exercise sheets one of the major program problems that the Limat family planning program is faced with. When you read the case study, you may identify some additional problems that we did not list in the exercise. If you do, please add them to the list of program problems on the exercise sheets. Detailed instructions for Exercise II-1 appear in the module text.

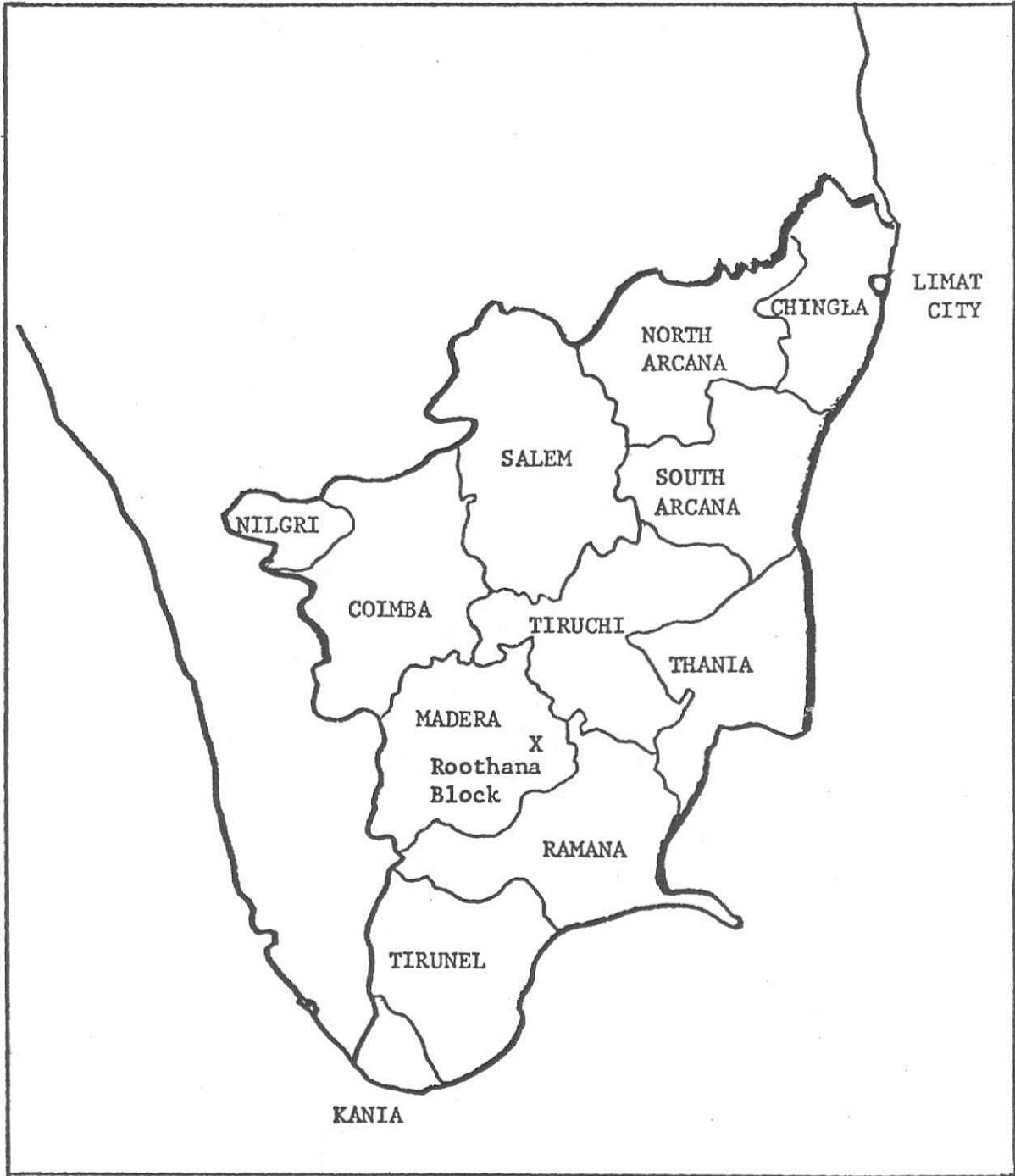
The case study also provides background data for Exercises II-2 and III-3, which take one major program problem faced by the Limat family planning program, namely the decline in vasectomies, and ask you to indicate what components of a mass media campaign should be considered in preparing a plan of action and what information would be needed and used to make detailed recommendations about each of these components. Additional instructions for Exercises II-2 and III-3 appear in the module text.

In addition, the data in this case study are used in Exercises IV-1 and IV-2, which involve preparation and justification of a recommended plan of action for a mass media campaign. Selected tables in the Appendix are used in Exercise VI-3, which involves reporting research results to different audiences. Instructions for both of these exercises appear in the appropriate place in the module text.

CHAPTER I

LIMAT

MAP OF LIMAT



INTRODUCTION

Limat is situated geographically and economically in the Third World. It is a country that is homogeneous both linguistically and culturally. The stated objective of its government is to "function for nation building, and the promotion of social and economic development through planned government efforts." Limat is proud of its political stability, and of the administrative machinery it has built up over the last two decades.

Government in Limat is by the cabinet system. The country has a legislative body consisting of representatives elected on the basis of adult franchise. The prime minister is chosen from among the elected representatives; he then chooses the members of his cabinet, who are collectively responsible to the legislature.

For purposes of administration, the country is divided into twelve states,* plus the capital of Limat City. Control of the states is vested in collectors, assisted in the maintenance of law and order by superintendents of police. (Such a unitary system of administration does not exist in Limat City, however. The city's administrative set-up does not include the suburban towns around the city, but is limited to the area of the Corporation of Limat. The city collector is responsible for revenue functions, the commissioner of police for law and order, and the commissioner of the corporation--controlled by a council, subject to certain statutory limitations--for all residual functions.) The states are subdivided into districts that form the limits for maintenance of revenue records; two or three districts are grouped together as a subdivision that the Limat Civil Service controls for all revenue matters. According to the 1951 Census, "The set-up of the states has emerged as a result of the evolution of the state administration in the nineteenth century and has its roots in the early decade of the century. It has not undergone any vital change in the last 150 years."

Between 1951 and 1961, however, the Limat government created "development areas." Limat City, Kania, Nilgri, and Chingla each constituted one development area, while Coimba, Madera, Ramana, Salem, Thania, Tiruchi, and North and South Arcana were each divided into two development areas. The purpose of this was to relieve the overworked state collectors, who were unable to adequately supervise increasing development activity.

*These states are Chingla, South Arcana, North Arcana, Salem, Coimba, Ramana, Madera, Tirunel, Thania, Tiruchi, Kania, and Nilgri.

Traditionally, the districts have been divided into villages, "convenient units of administration formed for other than statistical or sociological reasons . . . areas which revenue authorities have arranged . . . for administration and the maintenance of records." For census purposes, however, by 1961, villages had virtually ceased to be of any significance, and most had been replaced by panchayats--one or more villages or parts of villages--representing groupings of residential and social units.

According to the 1961 Census:

The old concept of a village as an entity living on its own resources has largely disappeared because of the improvement in communication in which the isolation of a village has been shattered. Again improvements have been effected in social amenities available in the village. Sometimes the facilities found in a well developed village in Limat are much better than in an urban unit like a municipality. No longer can urbanisation be associated with amenities like drainage, drinking water supply or electricity. What will follow in the 1971 Census is a complete disappearance of villages as Census units of Limat. The entire country has now been covered by panchayats and in 1971 panchayats and towns will form the units of Census administration.

THE LAND AND THE CLIMATE

TOPOGRAPHY

Limat is a country that is geographically contiguous, although topographically there are several distinct divisions. Parallel to the western coast and gradually rising away from it is a broad strip of plain country; all along the eastern boundary is a narrow mountainous strip (average height of 4,000 feet, and 8,500 feet above sea level at its peak). A chain of low flat-topped western hills extends south in a broken formation, eventually meeting another chain of hills in Madera State. Between these hills and the eastern mountains is a plateau (average elevation 1,000 feet) rising eastward.

SOIL

The major types of soil in Limat are black, red, and alluvial, which is primarily red. Although black soils are found in most of the states, this type covers less than 25 percent of the country--predominantly in Ramana, South Arcana, Tirunel, and Thania. Black soil is fertile, but deficient in nitrogen, organic matter, and available phosphoric acid; its successful cultivation is dependent upon water.

Red soil is even less fertile than the black--with the same deficiencies but more so; however, it is suitable for the cultivation of a greater variety of crops than the black soil. Of its sandy, loamy, or clayey textures, the clayey is the most fertile. Red soil is found in all of the states, with the largest concentrations in Madera and North Arcana.

CLIMATE

The climate in Limat is tropical. The maximum temperature is rarely above 110° F (43°C) and the minimum is seldom below 65° F (18°C). Average rainfall varies from area to area, but is normally between 20 to 40 inches annually, for about three-fourths of the country (over a range of 25 to 76 inches for the whole country). Monsoon rains are important as the source of water supply for storage tanks--where topography and soil allow the construction of such tanks.

The mountainous region in Nilgri and the southernmost area in Kania experience the maximum rainfall--during the two monsoons, as well as in the summer. Coimba and the southern states of Ramana and Tirunel have the lowest rainfall.

IRRIGATION

To compensate for lack of rainfall, irrigation procedures are used in many areas of the country. In 1956, 38 percent of Limat's net sown areas were irrigated--more than double the figure for the surrounding region. The states vary in the amount of acreage they have irrigated--from none in the eastern state of Nilgri to about ten million acres in coastal Thania; Madera, with somewhat less than five million irrigated acres, is probably typical of the remaining states.

Almost 34,000 water-storage tanks have been constructed to take advantage of the greater rainfall during the winter monsoons. Of these tanks, 3,332 have an irrigation water supply of less than 10 acres; 22,914 between 10 and 200 acres; and 7,707 are of other sizes. These tanks are the source of irrigation for a total of approximately 2.2 million acres--40 percent of Limat's total irrigated area.

Canals serve another 36 percent of the country's irrigated area--about 2 million acres. Of the remaining irrigated area, 1.4 million acres (22 percent) are served by 800,000 wells and 2 percent are served by spring channels and other similar sources.

The states vary considerably in the type of irrigation employed. Thania,

for instance, is almost totally irrigated by canals, while Ramana is primarily dependent upon storage tanks; Madera, on the other hand, is served equally by canals, wells, and storage tanks.

There are only two major rivers in Limat that can provide water for canal irrigation. With the completion of four major schemes under consideration in 1961, an additional 600,000 acres will have been irrigated and the country will have fully exploited its own rivers for major projects. With the cooperation of other countries in this region, however, it has been estimated that it would be possible to irrigate almost another three million acres in Limat.

More than a dozen schemes for "medium-size" river irrigation projects to irrigate one million acres and stabilize irrigation in 25,000 acres are also under consideration. Other possibilities include open-well irrigation, although this is limited by the rocky substrata found in most areas, by the unevenness of water tables, and by the uncertainty of water supply; exploration of underground water through deeper wells is a current task. All suitable sites for the construction of storage tanks have been exhausted, however, and the existing tanks need to be kept in repair.

In addition to providing water when and where it is needed, irrigation has several other advantages. Most importantly, a positive attitude toward improved agricultural techniques seems to go hand-in-hand with the existence of irrigation facilities. Farmers generally attempt to make the most of irrigation facilities and the new methods these facilities make possible: They will switch to more value-yielding crops, cultivate more crops annually, and utilize fertilization techniques and better seeds.

In 1955, because of irrigation, Limat was able to double-crop almost 20 percent of its cultivated area. More intensive use of fertilizers and manures has occurred, and the utilization of improved seeds is steadily increasing.

POPULATION

SIZE AND DENSITY

The population of the country was about 30.1 million according to the 1951 census figures, was estimated to be almost 32 million in 1955, was 33.7 million according to the 1961 census, and 39.7 million in 1971. With an area of 50,541 square miles, the population density was 786 persons per square mile in 1971.

URBAN-RURAL DISTRIBUTION

Roughly 75 percent of the people in Limat live in rural areas, and of this rural population, about 53 percent live in villages of more than 2,000 people. There are an average of 1,748 inhabitants per village.

There are 339 towns and cities in Limat. The majority of the urban population (52 percent) live in towns with 50,000 to 100,000 inhabitants. Over 37 percent of urban residents are in cities of more than 100,000 people. In 1961, Limat City, with a population of 1.7 million, was the largest of Limat's cities, and the fourth largest city in the region.

MIGRATION

Limat's standard of living has traditionally been low, and such has been the continued pressure of population on the meager resources that for centuries the people have been forced to emigrate. About one million persons are estimated to have emigrated from Limat between 1941-51; these people were mainly a surplus of unskilled laborers that local agriculture could not absorb. But this emigration trend has almost stopped, and in fact, the country has been forced to take back some of the emigrants who recently have been denied citizenship in other countries.

An analysis of migration by states in Limat shows that the proportion of the population native to the place of 1961 Census enumeration ranges from 51 percent in Nilgri to 80 percent in Kania. Nilgri has attracted labor from both outside the state and the country; Kania, on the other hand, is a small state, mostly nonindustrial, and therefore has not attracted many immigrants. Thania, being agricultural, has seen a high degree of intrastate movement of population. Coimba has also witnessed considerable internal movement, but in its case, with its expanding industrial economy, this has probably been due to a need for additional labor by industrial enterprises.

The 1961 Census indicated that a total number of 1,095,590 persons emigrated from Limat to other countries in this region (53 percent male and 47 percent female); Limat's net migration within this region was -507,845. (There are no data on emigration from Limat to areas outside of the immediate region.)

MAJOR RELIGIONS

Only Hinduism, Islam, and Christianity have any significant following

in Limat. Hindus comprise 90 percent of the population and are found in large numbers in all the states; Kania, with 58.93 percent Hindus is the major exception, due to the presence of a large proportion of Christians (36.90 percent). Christians are 5.3 percent of the population, while Muslims are 4.7 percent.

LITERACY AND EDUCATION

The effective literacy rate (excludes those in the age-group birth to four-years-old) for Limat is 36.4 percent, but literacy is much higher in the urban areas (57.7 percent) than in the rural areas (28.6 percent); this is probably because of the greater number of educational institutions located in urban areas and because urban children are less likely to be diverted by agricultural chores. The Elementary Education Act makes schooling mandatory for children five-years-old and over, but this act is more rigorously enforced in the urban areas than in the rural areas.

There are a total of 33,575 educational institutions in Limat; this includes universities, colleges, and schools. A total of 5,887,878 pupils attended these institutions in 1964-65; 62 percent of these scholars were male and 38 percent were female. The teacher:full-time student ratio in Limat is 1:25, with a range from 1:19 to 1:28 in Limat City.

HOUSING

During the enumeration of the 1961 Census, housing data was gathered from a 20 percent sample of the population. This housing survey revealed that over 65 percent of the households were living in mud homes.

The total number of households surveyed (1,421,310) consisted of 6,555,268 members; the total number of rooms in these households was 2,055,003. On the average, therefore, there were 3.2 people per room. This statistic, however, obscures the fact that 3.8 percent of the households had no regular room, and 65.6 percent were households with only one room.

MEDICAL CARE PERSONNEL AND FACILITIES

In 1951, there were 802 hospitals and dispensaries in Limat; by 1962, that number had risen to 945. During that same period, bed strength increased 100 percent, to a total of 24,756 beds in 1962. The number of Primary Health Centers (PHCs) increased from 9 to 123.

Limat City leads with 95 hospitals and dispensaries, but Thania and Coimba also have good medical facilities. In terms of bed strength, Limat

City, Madera, Thania, Chingla, North Arcana, and Coimba are in the best position; Salem, however, tripled its bed strength during the decade ending 1961.

Coimba with 20 has the largest number of PHCs. Limat City, Thania, Ramana, Chingla, and North and South Arcana each have ten or more. The 1961 Census reported:

The distribution of hospitals and dispensaries cannot be considered to be equitable in all areas of the country. Rural areas of Limat do not command good medical facilities. Positively, in a few rural areas the available medical facilities are woefully inadequate. In general, the states of Tiruchi, Ramana, Kania, South Arcana, Salem, and Nilgri are backward in respect of medical facilities.

In the early 1960s, Limat's medical personnel included 12,000 doctors, 9,000 nurses, and 15,000 midwives.

MASS MEDIA

There are two radio broadcasting stations in Limat, but no television. Newspaper and periodical circulation is over four million.

MANPOWER

According to 1951 Census data, 30 percent of Limat's population is in the working force--in both the rural and urban areas--either as self-supporting persons or earning dependents. This is contrasted to the 53 percent of Limat's population that is in the working-age group (15 to 55 years old).

RURAL UNEMPLOYMENT AND UNDEREMPLOYMENT

One government enquiry suggested that the labor force participation rate in rural areas was much higher than the census estimates (55 percent as compared to 30 percent). However, in calculating its rates, the enquiry considered one day's work in the year sufficient to make a person an "earner." And in Limat, which is primarily a rice-growing country with a heavy demand for labor during relatively short transplanting and harvesting seasons, there is a large proportion of persons who work for very short periods annually. In any case, it is clear that there is a large, surplus, rural labor force that is either unemployed or is contributing little to the country's total productive output.

Of course, the extent of the demand for agricultural labor is dependent

upon the availability of cultivable land. And the cultivated land per capita of rural population in Limat is 0.7 acre, considerably less than the average ratio for nearby countries (1.118 acres).

If we arbitrarily define chronic underemployment as describing families who earn less than half the average income of a Limat family supported by agricultural labor, 19.6 percent of rural families so employed would be chronically underemployed. This numbers about two million persons (calculated on the basis of half the size of the family)--the highest in this region.

URBAN UNEMPLOYMENT AND UNDEREMPLOYMENT

On the basis of various sets of data, it was estimated that about 5 percent of Limat's 1955 urban population--approximately 400,000 persons--was unemployed.

OCCUPATIONAL DISTRIBUTION

A higher share of employment in the mining, secondary, and tertiary sectors of the economy and a lower share in agriculture generally reflects a higher level of economic development. Limat is beginning to indicate such economic development.

THE ECONOMY: AN OVERVIEW

STRUCTURE OF EMPLOYMENT AND OUTPUT

In terms of both employment and output, primary production (agriculture, livestock, forestry, fisheries, and mining) is the most important economic activity. Yet the size of secondary (industry) and tertiary (service) activities points to a diversified pattern of economic activity.

PRIMARY ACTIVITIES

Agriculture and animal husbandry account for about 97 percent of primary output. In 1960 the gross cropped area of Limat was 18 million acres and the total value of farm output was more than \$450 million. Per acre of crop area, the value of production was \$25.00.

With an extensive seaboard, fishing is an important source of income, yielding 36 cents per capita. The scarcity of mineral and forest resources in

the state is reflected in their negligible contribution to the total output, approximately four cents per capita.

SECONDARY ACTIVITIES

Of an estimated industrial employment of 1.33 million in 1961 more than 500,000 were factory workers. Textiles, with 36 percent of all factory employment, is the largest modern industry. Metals and engineering, food and agricultural processing, chemicals, printing, and cement are other major industries.

Except for the agricultural processing industries--which rely upon local raw materials--and some of the service-type industries, which are dependent upon local demand, the factories import a considerable portion of their raw material requirements (particularly coal, metals, cotton, raw hides, and mill stores) and export a significant number of their products.

There are also small, ill-organized industrial establishments that use poor techniques and frequently cater to a limited local market. Roughly two-thirds of the employment in this small-scale sector is in hand spinning and weaving.

TERTIARY ACTIVITIES

Tertiary activities, consisting of commerce, transport, public administration, health, education, and domestic and personal services, employed nearly 25 percent of Limat's working force, slightly higher than that for other countries in this region. This slightly higher percentage of tertiary employment (6 percent higher) probably reflects Limat's higher urbanization, better developed transportation system, and generally an economic structure at a somewhat higher stage of development. Annual per capita output (\$30.55), per capita income (\$30.96), and per capita consumption expenditure (\$2.83) are lower than for the rest of the region, however.

AGRICULTURE

Agriculture dominates the economy and life style of the people in Limat. Nearly all of Limat's food needs are met by farm output, and a major portion of the country's industry depends upon its agricultural raw materials.

Agriculture in Limat, as we have already seen, is characterized by overcrowding of the land; this results in a per capita income of only \$12.65 in the agricultural sector (\$2.56 less per capita than the average for this region).

This low per capita income in turn results in a minimum of investments in land improvement and fixed capital, so that the techniques employed in this sector are chiefly labor intensive.

One major effect of the consequent low purchasing power in the rural sector is the natural curb it places on the development of consumer industries, which can do little more than keep pace with the growth of agriculture.

It is expected that Limat's growing population and urbanization will result in an even greater demand for food. And this means that agricultural productivity must rise both in terms of yields of food crops and value of output per acre. More than half of Limat's total cropped area is under the cultivation of the higher-value-yielding crops of sugarcane, rice, groundnut, and cotton. Between 1953 and 1956, the average value of output per acre was \$24.63. The per acre yield of the major crops in the country during this same period was

<u>Crops</u>	<u>Per Acre Yield</u> <u>(in pounds)</u>
Rice	1,077
Cholam	706
Cumbu	545
Ragi	1,002
Sugarcane	6,151
Groundnut	1,035
Cotton	120

MARKET ACCESSIBILITY

If farmers are expected to increase their productivity and produce for cash returns rather than simply for self-sufficiency, markets must be relatively nearby and accessible.

In 1956, there were 101 principal markets in Limat and an additional 1,769 markets in the surrounding areas.

Limat has four miles of railway and 48 miles of roads for 100 square miles of area. The basic vehicle for transporting goods from the rural areas is the bullock cart, and in 1956, Limat had four bullock carts per 100 acres of cultivated land.

LEVEL OF AGRICULTURAL DEVELOPMENT

In 1957, 77 percent of Limat's cropped area was producing foodstuffs--

primarily rice and millets. Of the nonfood crops, oilseeds and cotton were the most important. During the year, there was a 200,000- to 300,000-ton surplus of foodgrains.

Between 1949 and 1956, foodgrain production increased 54 percent (1.67 million tons), converting Limat from a net importer of foodgrains to a net exporter of foodgrains. A major part of this increase (1.63 million tons) took place in 1953--most likely due to a change in crop cutting and better weather conditions.

LIVESTOCK AND FISHERIES

In 1961 Limat had a livestock population of 24.64 million, 54 percent of which was bovine, 43 percent goats and sheep, and the rest horses, donkeys, pigs, etc. The poultry population was 11.3 million.

Cows and buffalo yield approximately 540 pounds of milk per year. The number and quality of milch animals in Limat is poor, and the country's daily per capita milk consumption (2.8 ounces) is less than half that for this region. The average meat consumption (5.6 pounds per head annually), however, is 60 percent higher than the region's average.

Limat, with a 600-mile coastline and numerous inland lakes, rivers, and ponds, is a leading fish-producing country in this region. In 1957, over 100,000 tons of fish were produced (60 percent of which were sea fish). About 60 percent of that production was available for consumption in Limat. The remainder was available for processing--curing is the major industry.

Marine fishing provides full time employment for 100,000 active fishermen who live in 242 villages along the coastline, and for an unestimated number of inland fishermen. The level of production per craft and per fisherman is low, however--2.42 tons and 0.8 tons, respectively (for marine fishing).

With mechanization of fishing operations, and the increased availability of proper storage and marketing facilities, Limat's fisheries could become a significant source of employment and income.

NATURAL RESOURCES

FORESTS

Limat's forest resources are small in comparison to the surrounding area: 8,255 square miles, 17 percent of Limat is under forests--5 percent

less than the average for the rest of this region. On a per capita basis, Limat has 0.16 acres per capita, as compared to 0.35 acres for the region, 3.0 acres in the U. S., 7.9 acres in Sweden, 8.6 acres in the U. S. S. R., and 22.2 acres in Canada. In addition, 10 percent of Limat's forest area is inaccessible and therefore unsuitable for economic exploitation.

Under present patterns of utilization, the quality of Limat's forests is poor; they are of mixed type and the value of timber is comparatively low. While 60 percent of the tropical evergreens and 30 percent of the tropical deciduous trees have commercial value only as firewood, still only 20 percent of the country's domestic fuel needs are met by firewood from regular forest areas.

Timber, fuel, and raw material are provided for several industries, and forests provide supplementary employment for agriculturists. In 1955, however, forests contributed only 0.2 percent of the country's total net product; Coimba and Nilgri together contribute about 80 percent of the total value of timber produced.

One square mile of Limat's forests yields a net output of approximately \$196.50--less than half the region's average. In order not to deplete its forest resources, however, it will be necessary to improve the quality of the forests if their yield is to be increased.

MINERALS

Most of Limat's mineral resources are located in Tirunel, Tiruchi, South Arcana, Salem, and Coimba. Although there is a wide variety of mineral deposits, not many of them are yet exploited on a large-scale commercial basis; the deficiency of metallic ores and industrial fuels has seriously handicapped Limat's industrial development.

In 1957, only 49,000 people (5 percent of the country's working force in nonagricultural occupations) were employed in mining operations, and mineral production contributed only 0.1 percent of the country's net output (9.3 cents per capita, as compared to 38 cents per capita for the region).

POWER

With the exception of energy from a limited amount of hydropower resources almost every unit of Limat's energy has been imported into the country, as the country is not endowed with significant energy resources. At present, Limat's power system cannot meet industry's demand for energy.

In 1963 Limat had a total installed capacity of 631,250 KWH. Approximately 85 percent of it was hydro and 15 percent, thermal (primarily steam plant). In 1956 power stations were located as follows: 28,000 KWH in Tirunel (hydro), 14,000 KWH in Madera (thermal), 70,000 KWH in Nilgri (hydro), and 68,500 KWH in Chingla-Limat City (thermal). The cost of generation is much lower for hydro than for thermal power. But hydroelectric generation capacity, which decreases during the five nonirrigation months, has a greater variable effect on the total generation capacity of the country.

The predominance of hydroelectricity in the power system influences distribution and utilization of power. In 1956, there was a 21 percent loss in transmission and distribution--the highest in this area--due to the longer distances over which the hydroelectricity had to be transmitted. This loss was balanced by the benefit of rural electrification--14.5 percent of Limat's total sales of electricity were in the rural agricultural sector, as compared to 4 percent for the region. In 1956, 3,321 villages were electrified; by 1959, that number had been increased to 9,000.

INDUSTRY

Limat ranks third among the industrially developed countries in this region but lags far behind the two leading countries. In terms of large-scale industry's share of the total industrial net income, for example, the large-scale industries in the two leading countries showed a 75 percent contribution, while in 1956 the corresponding figure for Limat was 55 percent of the industrial net income of the \$165.6 million, which in turn was 16.8 percent of Limat's total net income for that year.

It has been estimated that between 1956-71, there would be three million new entrants into Limat's labor force. In 1956, 11.7 percent of the working force was in industry and 67 percent of that industrial employment (approximately 740,000 persons) was in small-scale industries (small-scale factory units and nonfactory establishments).

Development prospects for large-scale industry in Limat must be based upon three considerations: (1) limited mineral resources, which restrict the development of heavy producer-goods industries; (2) availability of skilled labor--an advantage to the country with respect to engineering, chemical, and durable consumer goods industries; and (3) a large population, which provides the market for consumer goods.

Agriculture-based industries provide 58 percent of total factory employment and 51 percent of its net output. The major large-scale industries are textiles (40 percent of total factory employment), engineering (15.7 percent),

food industries (12.5 percent), chemicals (6.3 percent), and agricultural processing (3.7 percent).

Textiles are the most important of the agriculture-based industries; it is an industry that provides 67 percent of the employment in all industries based on agricultural raw materials, and 38 percent of the net industrial output of those industries. Coimba houses 39.4 percent of the 108 cotton and woolen mills; 18.8 percent are in Madera, 15.3 percent in Limat City, and 13.9 percent in Tirunel.

Limat City and Chingla are most important in the numbers of engineering units. Coimba is third in manufacturing units and Tiruchi third in all engineering units. Madera is another major center for nonmanufacturing units; and Tiruchi and Madera are important states for transport services, particularly railways.

In terms of the growth of producer and consumer-goods industries, the former grew 70 percent between 1952 and 1956 and the latter only 17 percent. Among the metal-based industries, transport equipment grew 107 percent and machinery manufacturing 51 percent.

Of the small-scale factories (numbering 3,255 units), Coimba and Limat City accounted for a third of the units and employment. Chingla, Madera, Tiruchi, Salem, and Tirunel were the other important centers.

TRANSPORTATION

While Limat has progressed industrially, the development of its transportation facilities has not kept pace, and thus the latter are inadequate for the country's industrial needs. Limat has 2,118 miles of railways (0.042 railway mileage per square mile) and 29,127 miles of extramunicipal roads--including 1,084 miles of national highways and 1,087 miles of metalled roads--(0.48 miles of roads per square mile). The rail network reaches all states except for Kania, at the southernmost part of the country (1956 figures).

In addition to its 600-mile coastline (with several ports), there are two north-south canals in Limat that serve as major waterways.

The National Economic Council, in 1960, studied the stress that would be put on existing transportation facilities, in terms of where agricultural and industrial growth was anticipated. They found that in the case of increased agricultural output, the strain would be evenly distributed over the existing lines. In the case of industry, however, they projected that the northern lines between Limat City and Coimba and Salem would bear a large share of the industrial traffic, and that in the south, major industrial development was to

be expected in Tirunel, with sizeable expansion in Tiruchi and Madera. The council felt that this potential development demanded priority for these areas in planning transport facilities.

FUTURE ECONOMIC DEVELOPMENT

At the invitation of the Limat government, the National Economic Council (NEC) undertook a techno-economic survey of Limat in 1958. Its purpose was to assess the country's natural resources "in light of growth rates already achieved in the various sectors of the economy and probable increases in demand" over the following 10 to 15 years, to attempt "to indicate the pace and direction of economic development that could be profitably adopted." The physical resource growth possibilities, in other words, were to be matched against the governmental and private financial potential. Their report was released in 1961, and its recommendations are highlighted below.

The NEC suggested a doubling of net output for the country between 1956 and 1971, that is, an increase of over \$985 million. This implied a total investment of \$2.8 billion.

For the ten-year period 1961-71, it was estimated that a total investment of \$2.2 billion would have to be undertaken. Of this investment, it was estimated that \$888.3 million would be required from the government sector, but it was projected that only \$371.5 million would be available--leaving a gap of over \$512 million. It was expected that a substantial portion of the gap would be covered by monies from outside Limat, but that additional taxation might be made necessary if tax revenues did not automatically rise with increases in income and economic activities.

PATTERN OF GROWTH

The principal constraints facing Limat's economic development, as seen by the NEC, were unemployment (including underemployment) and poverty--the typical problems of all underdeveloped economies. It was felt that Limat's high density of population made both of these constraints more acute.

According to the NEC, one factor in Limat's favor was a relatively low birthrate and rate of natural increase. It was anticipated that Limat's annual percent of population increase for each successive five-year period from 1951-76 would be 1.4, 1.5, 1.6, 1.6, and 1.6 percent, with an increase of 20 percent between 1956-71. Said the NEC at that time, "If the Census of 1961 were to prove these projections substantially accurate, it would represent a real advantage to the State." As it turned out, the NEC projections were too high, and

according to the Census of 1961, the population in that year was below the level the NEC had projected for 1959.

PER CAPITA INCOME

In 1956, Limat's per capita income was less than \$31. This, along with widespread unemployment and underemployment, was translated into a demand for the creation of new job opportunities at a high level of technology, so that the output per worker would increase. The NEC saw this as "the crux of the development problem" in Limat and "the key to the decisions for sectoral allocations of investment resources."

The NEC estimated that a 100 percent increase in income generated in Limat would occur if net output in the primary, secondary, and tertiary sectors increased by 76 percent, 178 percent, and 93 percent respectively, between 1956-71. (And, as already indicated, a \$2.8 billion investment would be required to achieve this growth.) With their more pessimistic growth rate projections, this converts into approximately \$36 per capita income in 1961 and almost \$49 in 1971.

ADDITIONAL VITAL STATISTICS

An extensive section on vital statistics is presented in tabular form only, in the Appendix. Data in that section include detailed information on births and deaths (including infant mortality), birth and death rates, marriages and marital status, fertility rates, gross and net reproduction rates, life expectancy, and survival ratios. The reader is cautioned to recognize that these statistics are based on registration data and are therefore subject to the limitations of such data, for example, underregistration, inaccuracies because of a time lag between the occurrence and the recording of an event, etc.

CHAPTER II

ROOTHANA BLOCK

BACKGROUND

GEOGRAPHY

Roothana Development Block covers an area of approximately 90 square miles in eastern Madera State. The national highway and a railroad cross Roothana for 15 miles near the eastern boundary.

The temperature varies from 70°F (21°C) to 100°F (38°C) and the average humidity is 30 percent. Average annual rainfall is 30 to 35 inches, most of which occurs in October and November during the major monsoon; the minor monsoon brings occasional showers in June and July. April and May are the hottest months, December through February the coldest, and September the most humid.

Roothana Block is divided into 21 villages and 3 towns (major semi-urban areas)--Chinnala, Sithian, and Ayampa. The block is broadly divided into three zones, based on consideration of the water-table. Zone I, which contains Chinnala and ten villages, is in the east and has a very low water-table and red gravelly soil.* Wells dry up in the summer causing severe hardship; dry crops are therefore the only kind suitable for cultivation. Zone II--Sithian and eight villages (including Hathor Village)--has a better water supply, and wet crops such as paddy are cultivated. The westernmost area, Zone III--Ayampa and three villages--contains a river, an abundant water supply, and fertile soil.

Four main roads pass through the block, and regular bus service is available. One-third of all hamlets (small subdivisions of a census village) are inaccessible to any road except, in some cases, by jeep in dry weather. Alternate means of transportation are bullock and horse-drawn vehicles.

ECONOMY

Agriculture is the chief occupation in Roothana Block, engaging 60 percent of all households; about 40 percent of the agricultural households own land. Major crops are foodgrains and cotton. Zone III produces sugarcane, tobacco, coffee, and fruits. Paddy is cultivated in Zones II and III. Grapes and vegetables are also cultivated throughout the block.

*A household survey, from February 1-September 30, 1960 was conducted in all 3,673 households of Chinnala and 868 households of Hathor Village, and a sample of households in the rest of the block.

Weaving is the only industry in the block; half of all households in Chinnala engage in weaving and allied occupations to produce the handloomed rayon cloth for which the town is noted. In the whole block, 10 percent of all households are engaged in weaving; the remaining 30 percent are engaged in services.

Among the farmers, the annual income is less than \$170 for 93 percent of the families; average per capita income is \$25. The average annual income of weaving families is less than \$110; their average per capita income is \$25.

GOVERNMENT

The village or town is the basic unit into which the block is divided for administrative purposes; minimum population is 500. Each village or town is divided into wards, which elect a member to serve a five-year term on the municipal board; each board contains between five and fifteen elected members, in addition to a woman appointed by the other board members (women do not run for office). The elected members of the board select a president.

The board president is the executive authority of the municipality. He employs a part-time clerk, or, in a town, an executive officer and several clerks. The municipal board is responsible for all governmental functions, including the implementation of state and national functions within the municipal boundaries.

Municipal revenue is derived from certain excise and house taxes, as well as a percentage of state stamp duties and land taxes reimbursed by the state on the basis of population. State law requires that the municipal budget be allocated in compliance with the following ceilings:

Health and sanitation	30%
Lighting	30%
Water supply	15%
General	25%

The next higher tier of administration is the block. All municipal board presidents within the block are members of the block-level policy-making council. The council elects a chairman, but its functions are legislative only; executive authority resides in the block commissioner, an appointive office responsible to the national government. The council employs a permanent full-time staff of civil servants, eight extension officers, and one village worker per

10,000 population. The block extension officers and village workers are responsible to the commissioner, and are appointed at the state level.

The 1960 budget for Roothana Block was \$230,000. Approximately half of a block's annual expenditure is usually allocated to education, since elementary and higher elementary education is under block control. Other block expenditures, in order of importance, include salaries (about 25 percent of the budget), agriculture, roads, health, and animal husbandry.

Madera State is the third level of administration. The chairmen of all block-level councils within the state constitute the Development Council, which is presided over by the state revenue and development officer, a national government appointee. State-level officers in health, medicine, public works, agriculture, etc., are responsible to the revenue and development officer. The other state officers are also ex-officio members of the Development Council. (See Figure 1, Administrative Structure: State, Block, and Village.)

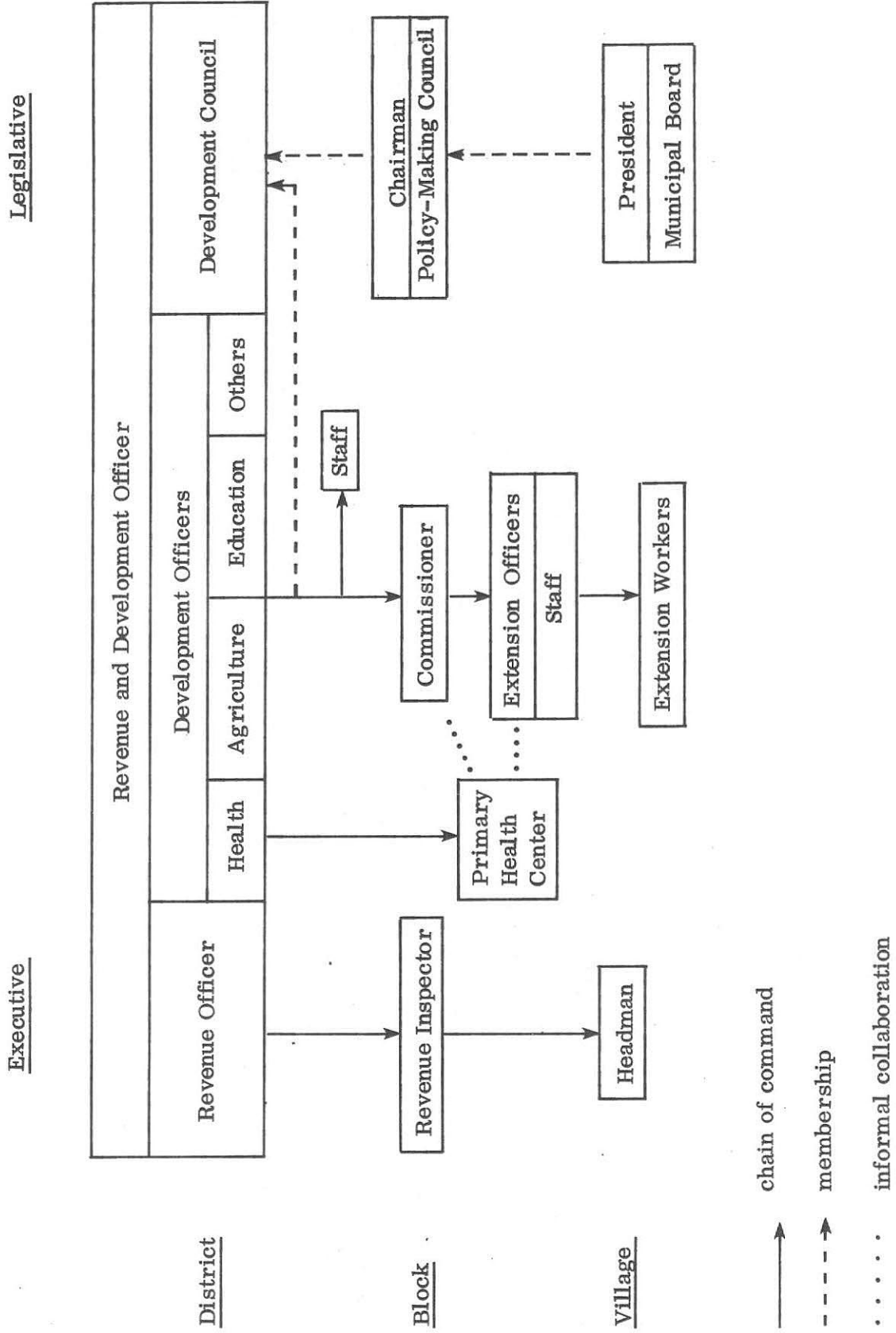
SOCIAL DATA

The Hindu religion is dominant in Roothana Block; 86 percent of households are in this category. Christians make up 10 percent of the population, and Muslims, 4 percent. The Hindus are further divided into several major subcastes, including two groups of untouchables and the hill tribes. There is no intermarriage between castes or subgroups of castes. The castes include two groups of weavers, a group of polygamous agriculturists, a large group of craftsmen divided into five strata according to type of craft, and two poorer castes of agricultural laborers and cobblers. The Muslims are divided into two language groups.

The level of education is generally low. In 1960 there were 62 elementary schools, 10 higher elementary schools, 5 high schools, and 550 teachers in the block. The school age populations in that same year were 14,000, 10,000, and 10,000 respectively. An estimated 13,000 children in the age group 1-4 needed preschool care. About 40 percent of the households in Roothana included no members who had received any education. Only 3 percent of households contained at least one person with twelve or more years of education. Muslim households are more likely to receive some education, and Christians are more likely to progress beyond the sixth grade.

Three types of dwelling units are common in Roothana. Kutcha houses (dwellings with mud walls) are the most common; 71 percent fall into this category. Huts (dwellings with no walls or low mud walls) constitute 12 percent of total units. Pucca houses (brick or stone walls) form the remaining 17 percent.

Figure 1. ADMINISTRATIVE STRUCTURE: DISTRICT, BLOCK, AND VILLAGE



Communications facilities include 279 private radios and 30 public sets. Two-thirds of the private radios, all of the telephones, and the single movie theater (capacity 1,000) are located in Chinnala. There are 5 telegraph offices, 12 post offices, and 26 public reading rooms. Electricity is available only in the towns and in a very small number of adjacent hamlets.

There is no piped water supply, and most people depend upon open public wells. In 1961, each well served 550 people, on the average. Public wells numbered 185; 3 percent of all households had private wells. Public water supplies were not available in 25 percent of the 114 hamlets. Only 7 percent of households used latrines; private facilities were available to 3.4 percent of the households.

POPULATION

The 1961 population of Roothana Block was slightly over 100,000, an increase of 12,000 since 1951. In 1961 the sex ratio was 101.2. (Age-sex distributions are available in the accompanying tables.) About 90 percent of the women marry before the age of 20, and 90 percent of the men before age 25.

REGISTRATION OF VITAL EVENTS

Until 1959, registration of vital events was the responsibility of the village headman. He was to receive reports of births (from the parents) within two weeks of occurrence, and receive death reports within four days from relatives; this information was to be entered on the registers and forwarded monthly to the district revenue officer. District-level revenue and health officials, and block-level sanitarians, were required to confirm the accuracy of the registers. This system produced poor results; under-registration of births in 1958 was estimated at 45 percent, and deaths at 60 percent.

A 1959 study in Roothana Block revealed that many of the headmen were unconcerned about their role as registrar and were frequently unavailable to the villagers. The village populations were unaware of the correct procedure for registration and did not know to whom to report. Hospital births were not reported because the medical staff incorrectly assumed that registration should take place at the village of residence rather than at the place of birth. The wide variation in the size of villages often resulted in long distances from places of residence to the registrar's office. The quality of data was likely to be poor, due to inaccuracies resulting from many variants of a single name, as well as lack of time or willingness to fill out forms on the part of the registrar. For example, three-quarters of all registered deaths in 1958 were attributed to "other fevers" or "all other causes."

Since 1958, an intensive scheme to improve the registration system has produced some favorable results. The areas served by a single registrar are now smaller and more uniform in order to decrease travel time for persons wishing to report a vital event.

The new system requires that hospitals and maternity and child welfare centers report directly to the registrar. A series of informal seminars for registrars and health personnel has been set up at the block level to increase awareness of the need for accurate registration; the sessions last for one day and take place twice yearly.

Maternity assistants are utilized as informants; each assistant, serving 7,000 people, receives booklets containing birth and death slips in triplicate. When she becomes aware of a vital event, she fills out the forms and gives one to the parties concerned, with instructions to report to the registrar. A second copy is sent to the health inspector with the maternity assistant's fortnightly reports, and the third copy is maintained by the assistant. Registration forms are provided in some cases to other informants such as teachers, untrained auxiliary nurse midwives, or village leaders on the Health Committee. Health assistants (vaccinators) have also been co-opted as informants.

In the last quarter of each year, the vital statistics health inspector checks the village registration data and, whenever the totals seem low, initiates further investigation. In some villages, house-to-house surveys are employed to correct insufficient reporting. Health committees or town and village meetings and festivals are used as forums for the presentation of information on the importance of registration.

An important change initiated in 1965 was the appointment of a block computer, who relieved the health inspector of the Primary Health Center of his vital statistics functions. The computer is responsible for periodic visits to villages, transmission of birth slips received from various sources to the appropriate registrar, and the checking of registration data for completeness and accuracy. He prepares an annual report on registration in the block.

The new system produced several improvements. The registered birth-rate rose from 22 to 44 between 1958 and 1961 (the birthrate from a 1958 survey in Roothana Block was 43); the registered death rate rose from 8 to 16 in the same period (the corresponding estimated rate was 18). After 1963, improvements in public health and a family planning program had a confounding effect on registration data, since fertility and mortality fell as the proportion of registered births and deaths increased. The feeding-in system--using informants to report vital events--has increased the amount of registration data, but the number of events reported by concerned parties has not improved; the educational aspect of the system improvements is still a vital one. The time-lag between an event and registration has been reduced, but only one-third of births or deaths were

registered within the required time interval in 1966. The accurate reporting of "cause of death" has not improved; in 1966, only 25 percent of registered deaths listed a specific cause, the same rate as 1958.

FERTILITY

Fertility in Roothana Block has historically been below the levels for the rest of the nation. During the last decade, the results of an action-research program in family planning further reduced observed fertility in the block. In 1965, a fertility survey was initiated in the block, covering a stratified random sample of 2,792 households; information on fertility has been derived from the survey and from birth registration.

In 1969, the crude birthrate was 30.2, a 30 percent decrease, from 43.6 in 1961. The crude birthrate is not completely applicable to the block, since birth registration occurs at place of birth rather than place of residence, and Castor Hospital attends a large number of nonresident patients; in addition, pregnant women usually return to their parents' home for delivery. Therefore, the fertility survey estimated birthrates for block residents alone, and found a 35 percent drop from 1959 to 1968, from 43 to 28. In the same period, general fertility declined 14 percent between 1964 and 1967, pregnancy rates declined 15 percent, and live-birth pregnancy rates, 20 percent. The decline was most apparent among women aged 30 or over. Closed-birth intervals increased slightly between 1965 and 1968, from 36.5 to 37.1 months; open birth intervals increased from 43.1 to 50.6 months.

Religion is associated with fertility within the block; Muslims and Christians have significantly larger families than do Hindus, but only 15 percent of the population belongs to these minority religions.

Economic status shows a small relationship to fertility. The low-status group (hut-dwellers) produces the smallest average number of children (3.18), the middle group (owning mud-walled houses or renting for \$.75 a month) has the largest families (3.53), and the high-status group (owning stone-walled houses or renting for \$2.00 a month) has slightly smaller families than the middle groups (3.47). One hypothesis for the positive association between fertility and income in the lower groups is that the abject poverty of the lowest groups produces significantly lower levels of fertility due to poor nutrition, chronic illnesses, etc., and subfecundity reflects a genuine biological disadvantage. On the other hand, it is possible that women from the poorest sectors are less likely to remember and report births of children who are no longer living.

Occupation shows a slight association with fertility. Weavers and dyers (a relatively urban-centered group) have the smallest families (3.15), and agriculturists the largest (3.53). The lower age at marriage among agriculturists

may account for the difference, since the average family size for women above 30 is fairly similar for all occupational groups. Fertility shows no ordinal relationship with caste, although the average family size is appreciably larger among lower-caste Hindus. The effect of husband's education on fertility is unclear, although when all age groups are combined, the data show a slight decline in fertility as the husband's education increases.

HEALTH

Whooping cough, smallpox, and dysentery are common in Roothana Block, and cholera epidemics have occurred as recently as 1957. Infants and preschool children are particularly susceptible to scabies and whooping cough. Worm infestation affects one preschool child in three. Tuberculosis and leprosy are the most prevalent chronic diseases.

In a sample of 467 villagers, about 66 percent were unaware of the cause, and 50 percent were unaware of the treatment, of cholera, tuberculosis, typhoid, and skin disease. Half of the respondents attributed smallpox to the wrath of God, one-third blamed the heat, and most of the remainder responded that they did not know. One-half of the group also believed that worship is the most effective tool in the prevention and control of smallpox. Two percent of the respondents knew that an inoculation might prevent typhoid; the percentages for cholera and smallpox were 37 percent and 50 percent, respectively.

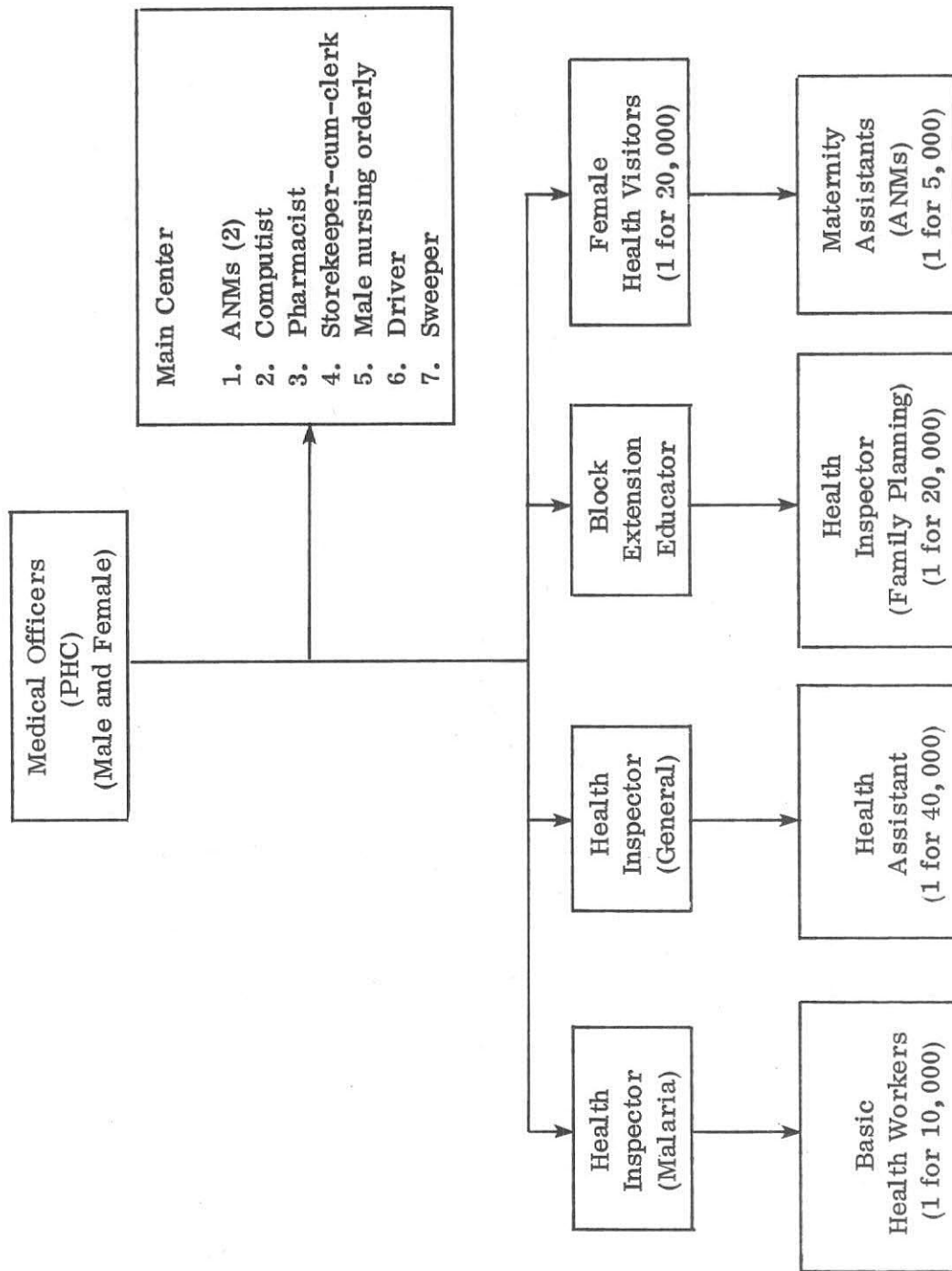
NUTRITION

A 1960 survey of nutrition of Roothana Block revealed widespread dietary deficiencies. The weaver community spent an average of 80 percent of their income on food; their diet is vegetarian. The agricultural households surveyed were not vegetarian but rarely consumed animal protein. Landowners spend 72 percent of their income on food and farm laborers spent 78 percent. All respondents except landowners exhibited caloric and protein deficiencies. The only nutrients available in abundance were iron and vitamin B₁.

HEALTH SERVICES

Delivery of comprehensive health services in rural areas is the responsibility of the Primary Health Center (PHC), at least one of which is located in each block. Roothana Block has two centers, one in Chinnala and one in Hathor, a village in Zone II. The PHC is headed by a physician, who is assisted by a sanitarian, a lady health visitor, four auxiliary nurse midwives (ANM), and a pharmacist, in addition to a nonprofessional staff. Each health center has three

Figure 2. ORGANIZATIONAL CHART FOR A PRIMARY HEALTH CENTER



subcenters plus a maternity subcenter; an auxiliary nurse-midwife is assigned to each. (See Figure 2.)

The functions of the Primary Health Center include medical care, communicable disease control, environmental sanitation, maternal and child health (including family planning), school health, health education, and vital statistics.

The Primary Health Center is expected to work in coordination with the block council. The PHC sanitarian is also the block-level extension worker; the medical officer attends block staff meetings, and the block commissioner is expected to attend PHC staff meetings. However, supervision of the PHC is provided at the state level, by the state health officer.

In addition to the two Primary Health Centers, Roothana Block is served by a leprosy center, a malaria and smallpox eradication project, dispensaries at Sithian and Ayampa, Castor Hospital in Chinnala, family planning clinics in Chinnala and Sithian, and an experimental action-research project in health.

Castor Hospital was founded in 1947 as a maternity hospital but has expanded to include 75 beds, a delivery room, an operation theater, a children's ward, an outpatient clinic, and a 12-bed male ward. It is run by a voluntary agency.

The Primary Health Center at Chinnala is staffed by a medical officer, two pharmacists (one is female to provide for the Muslim women who must avoid male company), two nursing orderlies, four auxiliary nurse midwives, two vaccinators, and a sanitarian, health visitor, and watchman. The 1959 budget for the PHC was \$830; equipment was provided by UNICEF. The center is open five hours daily; average daily attendance is 200 patients.

Patients are met by an orderly who prepares outpatient chits, noting the name, age, and sex of the patient. Old patients who need only drugs or a change in dressings have their chits dated and signed by the orderly and do not see the medical officer. Prescriptions are issued in one-day amounts only. New patients line up before the medical officer, who inquires about their symptoms and examines them. Diagnosis and treatment are entered on the outpatient chit and copied into the outpatient register. Patients are then directed to the pharmacist or to the dresser. The average time spent by the medical officer on any one patient is about one minute. Of this time, 40 percent is spent on the patient's history, examination, and marking the diagnosis on the chit; the remaining 60 percent is spent transcribing the information into the outpatient register.

The center serves primarily an area within a radius of three miles from Chinnala, or 25 percent of the block's population. Scabies and bowel and eye infections account for one-third of the total attendance.

The medical officer is expected to maintain 20 registers, prepare and send 8 monthly, 1 fortnightly, and 2 annually, besides forwarding about 75 reports received from his subordinates monthly.

CHAPTER III

FAMILY P LANNING IN LIMAT

INTRODUCTION

In the early decades of the twentieth century, rapid population growth--in the absence of economic growth--was recognized as a serious concern in the region in which Limat is located. The region's first birth control clinic was opened in 1925, and in 1930 this region saw the establishment of the first government birth control clinic in the world.

In 1943, a regional government commission suggested that birth control services be provided for health reasons, and before the end of the next decade, it was recommended that family planning and population control form part of the public health programs.

To develop such a program systematically, a Central Family Planning Board for the region was set up in 1956; 500 urban and 2,000 rural clinics were the aim for its first five-year period.

BACKGROUND

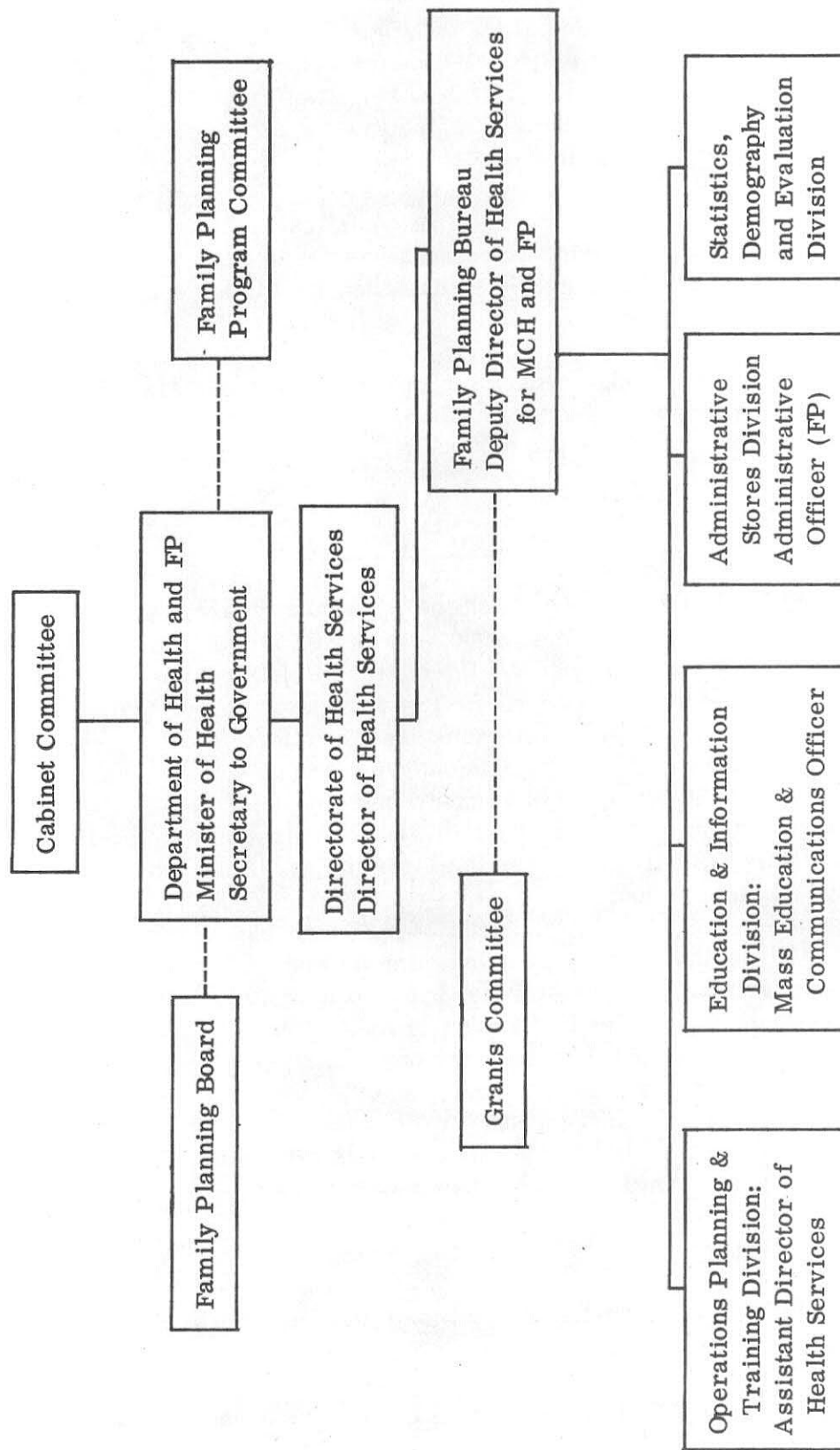
Limat had early recognized the relevance of family planning to the country's national planning. As early as 1930, it was said of Limat that it was ahead of other countries in this region "in the matter of birth control. A tendency was observed . . . for the men at any rate to marry later and contraceptive methods were advocated by influential persons and advertised in the Press." The medical model of delivery of family planning services was begun in 1945. However, it was not until 1956 that the Limat government organized efforts for propagation of family planning practices, when it set up the first Limat Family Planning Board. This official agency was to advise the government on program organization and administration.

At that time, family planning clinics were opened in certain government hospitals, primarily to give advice, but also to distribute conventional contraceptives (including advice on the rhythm method) to all mothers and fathers. During that same year, it became obvious that sterilization seemed to be preferred over contraception, and so the surgical method was accepted as a means of stabilizing the population. Consequently, efforts to promote contraceptive methods for spacing children were made side-by-side with efforts to popularize surgical methods of family planning.

During the years 1956-66, many family planning clinics were opened:

1. State government medical institutions: 15 urban and 83 rural family planning clinics
2. Limat City Municipal Corporation: Six urban family planning centers

Figure 3. FAMILY PLANNING IN LIMAT



and 44 mother information centers attached to maternal and child welfare centers in division of Limat City

3. Madera Municipality and Coimba Municipality: one family planning clinic apiece
4. Voluntary organizations in Limat City and six states: a total of seven urban and rural family planning centers

ADMINISTRATIVE ORGANIZATION

NATIONAL

Health services administration in Limat is the responsibility of the Department of Health and Family Planning, which is headed by the minister of health. The next level of administration is the Directorate of Health Services, which includes the Family Planning Bureau. The deputy director of health and family Planning oversees the four divisions of the bureau. (See Figure 3.)

Policy-making for family planning in Limat is conducted via advisory committees, which make recommendations to a cabinet-level subcommittee on family planning. The Cabinet Committee is chaired by the chief minister, and includes the minister of public health as well as the heads of four other ministries. The Family Planning Board meets semiannually to consider major policy decisions; it is chaired by the minister of health, and the deputy-director of family planning acts as secretary. The Family Planning Program Committee is chaired by the chief secretary. Members include the development commissioner, the secretary of health, the director of health services, heads of urban hospitals, the Limat City health officer and family planning officer, other national officials, and the deputy-director of family planning who again functions as secretary. The Board and the Program Committee have a supervisory relationship to the Department of Health and Family Planning, the highest level of administration for family planning in Limat.

Each of thirteen state-level Family Planning Program Committees meets semiannually to determine policy on ways and means to improve state family planning programs. The state collector chairs the committee, and members include the state medical officer, health officer, development officer, etc.; the committee secretary is the state family planning officer. Each state committee submits resolutions to the Limat Family Planning Board whenever a policy needs modification. The structure of the program committees is duplicated at the block level, where the committee is headed by the chairman of the block policy-making council. The block development officer serves as secretary and members include the medical officer of the Primary Health Center, and other local officials concerned with health and family planning.

The Grants Committee is another advisory board at the national level. The director of health services is chairman of the Grants Committee, which includes national family planning officers as well as representatives of a region-wide organization. The committee reviews all grant requests over \$1,000, whether submitted by private organizations or submitted as requests for municipal grants-in-aid. Recommendations from the Grants Committee are routed through the Family Planning Bureau.

In 1972, the Family Planning Bureau consisted of fourteen officers including the deputy director, two assistant directors, a medical officer for the IUD program, two mass education and communication officers, a health education officer, two statisticians, two assistant editors, a statistical investigator, a statistical assistant, and an artist/photographer. The bureau has two vacant positions for a demographer and a social scientist, but is unlikely to hire any personnel due to a nationwide freeze on jobs in the family planning bureaucracy. The bureau also employs a technical staff of 60 persons, plus 12 maintenance personnel.

STATE

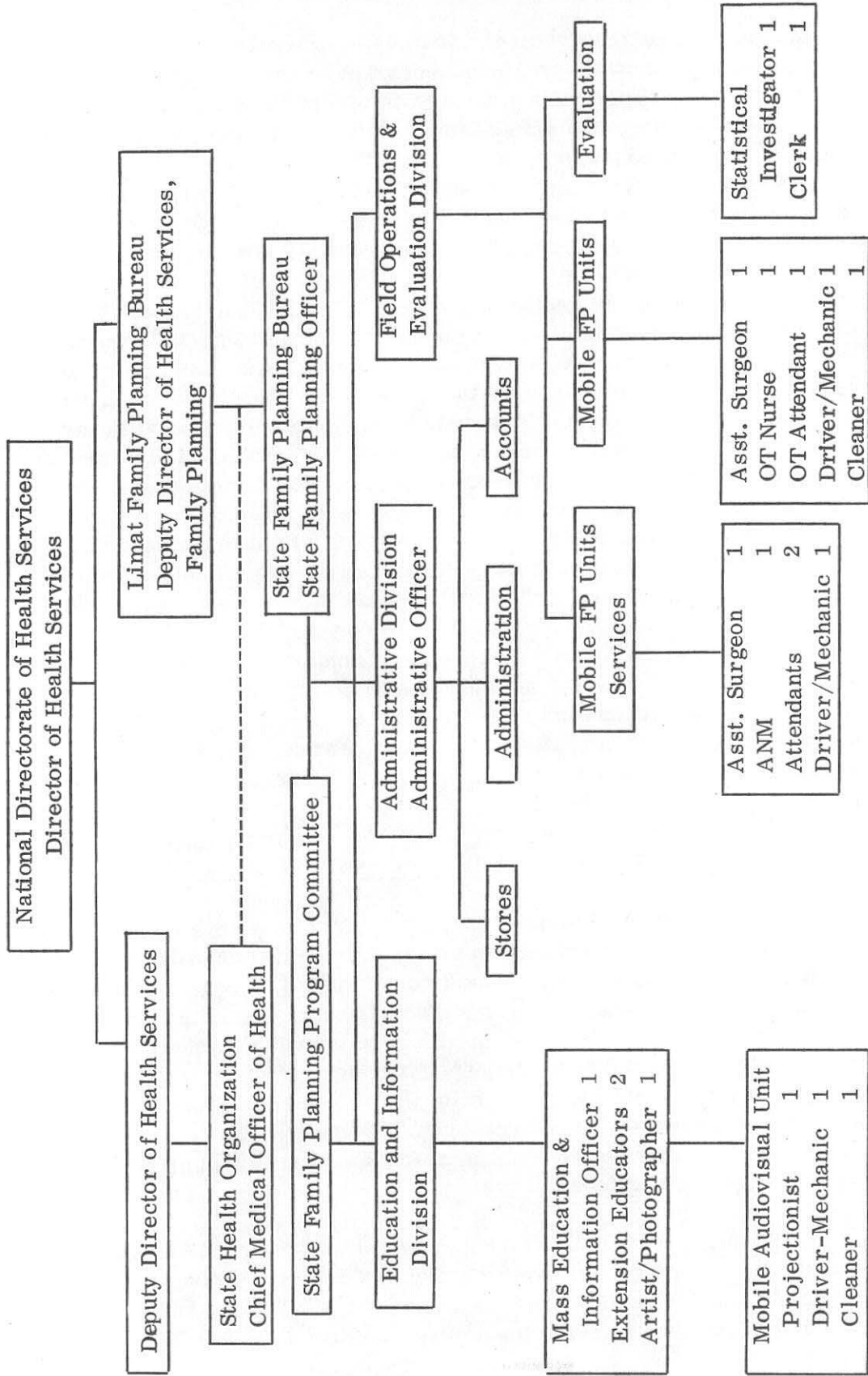
Each state has a State Family Planning Bureau headed by a family planning officer. The state bureau is divided into three divisions for administration, education and information, and field operations and evaluations. The bureau receives policy directives from the state Family Planning Program Committee as well as administrative supervision from the Limat Family Planning Bureau and, to some extent, from the State Health Organization and chief medical officer. (See Figure 4.)

Authorized positions for state family planning bureaus are a family planning officer, a mass education and information officer, a medical officer for vasectomies, two women medical officers for IUD insertions, two extension educators, a statistical investigator, a surgical nurse, two auxiliary nurse-midwives (ANMs), two family planning field workers, an artist/photographer, and a projectionist. In 1972, one-third of the total authorized positions were vacant. The job categories with the most critical shortages include family planning field workers, woman medical officers, and ANMs. Each state bureau should be equipped with two mobile service units, one for sterilizations and one for IUD insertions.

BLOCK

Family planning at the block level is a function of the Primary Health Center. Limat contains 374 functioning PHCs and needs an additional 6 for complete coverage of the development blocks. In 1972 there were 2,992

Figure 4. ORGANIZATION FOR FAMILY PLANNING IN A STATE



subcenters functioning throughout the country, an excess of 277 subcenters beyond the minimum requirement for full coverage of the population. In addition, there are over 230 urban family planning centers in full-time operation, including those run by private organizations. The state health officer directs general activities of the Primary Health Center, and the state family planning officer supervises its family planning functions. The block-level Family Planning Program Committee and the block commissioner (head of civil government in the block) also share in the PHC policy-making process. (See Figure 5.)

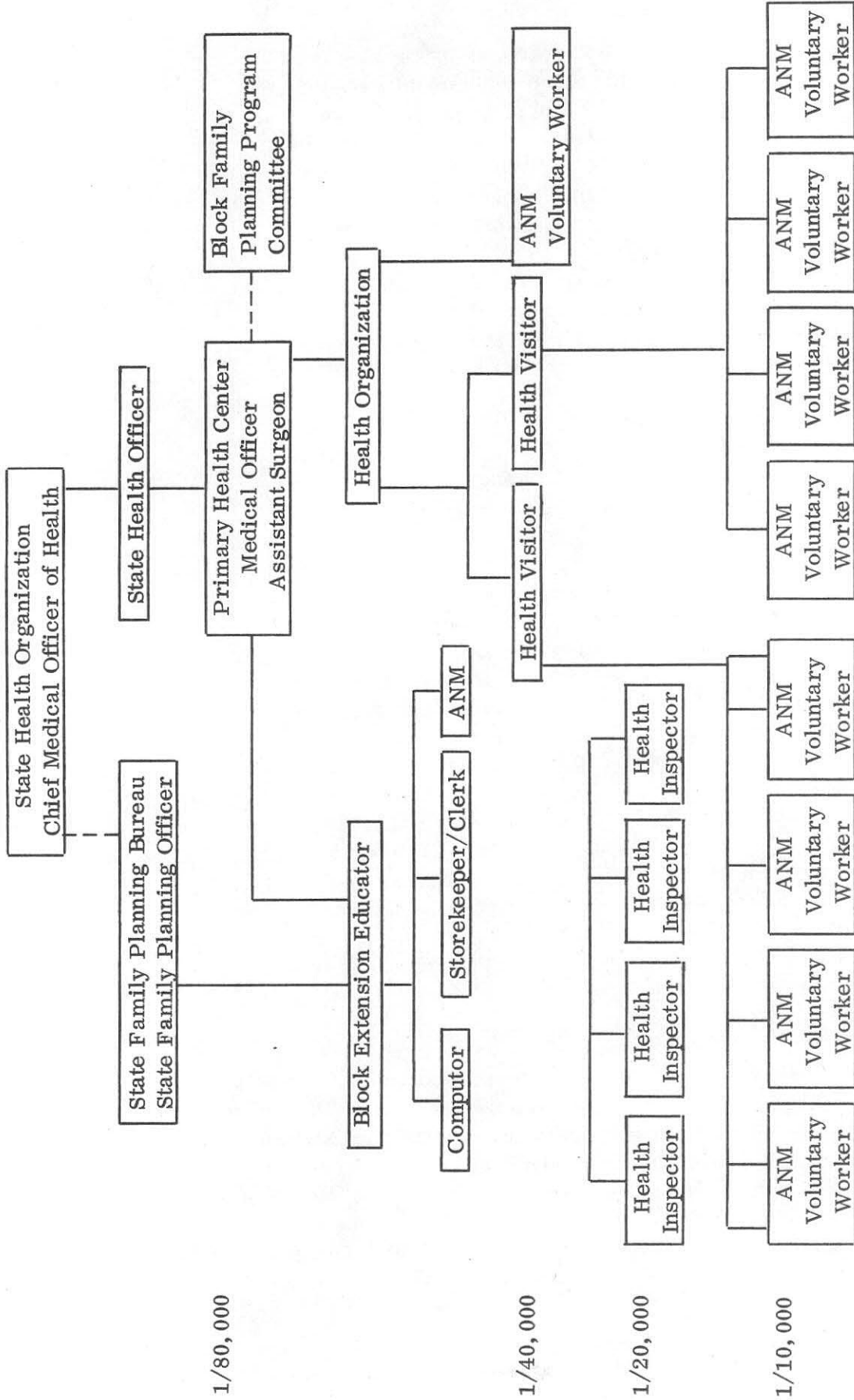
The administrative head of the Primary Health Center is the block medical officer. When fully staffed, the PHC should employ an assistant surgeon, a woman medical officer for IUD insertion, two ANMs, a computer who collects vital statistics and family planning data for the State Family Planning Bureau, a pharmacist, a storekeeper/clerk, a male nursing orderly, a driver, and a maintenance man. All staff members of the PHC are expected to cooperate in the family planning program, which is officially under the direction of the block extension educator. The extension educator directs a number of family planning health inspectors, the basic-level workers who usually cover a population of about 20,000 each. He directs the family planning activities of other health personnel at the PHC and the subcenters, including the female health visitors (one per 40,000 population) and the ANMs (one per 10,000 population). Other organizations that are expected to cooperate with the extension educator in family planning activities include the elected representatives of the block policy-making council, the block development staff assigned to the block commissioner, local social organizations and political groups, the education department, and the village-level workers (one per 10,000 population) in the Block Development Program.

DELIVERY OF FAMILY PLANNING SERVICES

Family planning activities of the family planning health inspector begin with the preparation of a list of eligible couples from the records of the basic health worker for his sector. He then divides his area of coverage into 20 working units of 1,000 people each. Program development is coordinated with the health activities of the ANMs so that health care is available at the time when family planning is initiated in a village. Initiating a program in family planning requires about three months of preparatory work. A health inspector is expected to devote ten months of the year to program development in his sector and the remaining two months in intensive campaign work as directed by the block-level Family Planning Program Committee.

Development of a family planning program unit requires a geographical reconnaissance of the area and house-to-house visitation, followed by an updating of the eligible couples registry and the identification of high risk groups. Community leaders are then selected (by a pre-established system involving socio-

Figure 5. FAMILY PLANNING IN A BLOCK



1/80, 000

1/40, 000

1/20, 000

1/10, 000

grams or a sample survey approach) and trained in a one-day camp at block headquarters. At the training camps, community leaders discuss the advantages of small families, offer advice on program implementation, discuss various means of contraception and the history of the family planning program in Limat, and learn how to participate effectively in village educational activities oriented toward family planning. They are also encouraged to help promote improved registration of vital statistics in their communities.

The next step in program development is the selection of depot holders for the distribution of contraceptives. Health inspectors and ANMs nominate male and female depot holders, respectively. Depot holders participate in a half-day training session and are provided a list of eligible couples, a distribution register, and a stock of contraceptives that is kept supplied by the health inspector and ANM during routine village visits.

Group meetings and individual sessions with eligible couples provide some of the necessary educational services.

The schedule for program initiation by the health inspector should allow four to five days for the initial survey, two days for identification of leaders, two days to arrange a training camp, one day to conduct a training camp, two to three days for group educational sessions, and three to four days for individual contacts. These activities are spaced over several visits. During later visits (once a week for the next three months, then once a month), the health inspector issues contraceptives to depot holders, conducts educational sessions in groups and individually, obtains details regarding regular users and dropouts, helps dropouts by attempting to discover their difficulties with a particular contraceptive and by offering advice, arranges for sterilization and post-operative care, helps organize training camps, arranges for IUD insertions when facilities are available, reviews the program with local leaders, maintains village registers and records of contraceptives distributed, submits monthly reports, organizes intensive educational activities whenever necessary, and participates in child-care activities. Ordinarily about two years will elapse before a program is considered to be effective and somewhat self-sustaining.

The auxiliary nurse midwife is an integral part of any family planning program because her activities in maternal and child health provide direct access to the target population. Her family planning activities parallel those of the health inspector: Her clientele is the female target population of her sector, while his is the male target population. The selection of female community leaders is usually accomplished within two of her regular visits. In areas of Limat where the number of ANMs has been increased to one per 5,000 population, she can visit a village unit of 1,000 people once weekly. Ordinarily the weekly visit involves three deliveries, 20 antenatal cases, and 140 to 150 eligible couples, of

which 70 will have more than three children. (Note that these figures indicate an average of more than one child annually for each female of child-bearing years, despite the fairly low birthrate--by regional standards--suggested by registration data in Limat.)

The block extension educator fills an administrative and public relations role. He is expected to create a congenial social climate for the family planning program via contacts with local organizations such as teachers' groups, occupational groups, industrial units, political organizations, etc. Good personal relations with other governmental agencies in the block are essential. He organizes training camps for village leaders in conjunction with the health inspectors and ANMs; he must order contraceptives and distribute them to the depot holders; he provides educational materials when needed, and sees that the medical officer maintains an adequate supply of drugs needed by sterilization and IUD patients; he distributes records, registers, forms, etc., as needed by his field workers, and supervises housing and office arrangements for health personnel. He supervises and trains the health inspectors, whose previous experience and training is usually minimal, and oversees their work by spending four days a month with each health inspector, in addition to unannounced spot-checks. He must coordinate the family planning activities of health inspectors, ANMs, village-level workers from the Block Development Staff, and all other government and voluntary agencies. He supervises all record-keeping, planning, and evaluation of the family planning program in the block.

In 1972, there were 231 Urban Family Planning Clinics, of which 148 were associated with governmental hospitals or health agencies. Towns of 10,000 or less (there were 98 in 1961) should be served by a part-time medical officer and a family planning field worker. Towns with 10,000 to 25,000 people (numbering about 130 in 1961) should have two part-time medical officers, (male and female), plus a family planning field worker and an ANM. Towns with 25,000 to 40,000 people (N=50) need two part-time medical officers, a family planning extension educator, a family planning welfare worker, an ANM, and an attendant. Larger urban areas should have one clinic per 50,000 population.

The 1961 Census indicates that nearly five million people live in cities having a population larger than 50,000 people, implying a need for 100 large urban clinics. These clinics should be staffed by two full-time medical officers, (male and female), a public health nurse or lady health visitor, a family planning extension educator, a family planning welfare worker, an ANM, a storekeeper-accountant, an attendant, and a sweeper. About 380 clinics should have been operating in 1961; by 1972, 230 were in service despite the greater needs of a larger population. (Urban population data for 1971 is not yet available.)

Urban family planning clinics should be directed by a City Family Planning Bureau in areas larger than 20,000 population. For cities with 20,000 to 50,000

people (60 in 1961), the bureau should employ a medical officer, a clerk, and a sweeper. Cities with 50,000 to 75,000 people (about 15 in 1961) require a medical officer, an extension educator, a clerk, and a sweeper. A bureau in a city of 75,000 to 100,000 (N=7) needs a medical officer, two extension educators (male and female), a statistical assistant, a storekeeper/typist, a projectionist, a driver-mechanic, and a sweeper.

The total number of personnel employed by the family planning program in Limat in 1972 was 7,531. This includes 801 medical officers, 6,245 professional staff (including nurses), 235 clerical staff members, and 250 maintenance workers.

EXPENDITURES ON FAMILY PLANNING

The Medical and Public Health Departments functioned as separate units until 1966, when they were integrated into a separate Directorate of Health Services and Family Planning; medical education and teaching hospitals then became the responsibility of the other new Directorate of Medical Education. Nevertheless, the public health wing of the directorate still functions as a separate unit.

Financing for health services and family planning is channeled through several classifications of the national budget, including the medical budget, public health budget, civil works budget, and various capital outlay categories. Funds for public health programs are allocated through the public health budget, civil works, capital outlay, and through 39 miscellaneous social and developmental organizations. Some family planning activities are privately administered and financed. (See Tables 3 through 5.)

At the state level, family planning activities may be directed (and funded) by the state medical officer, the state health officer, and the state family planning, maternity and child health officer. The health services and family planning budget is prepared independently of the public health budget.

Specific data on family planning expenditures in Limat may refer to total costs of all programs, public or private; to costs of the government bureaucracy for health and family planning; to direct outlays of the Family Planning Bureau or the Directorate of Health and Family Planning; or to any combination of the above. Frequently, published data on family planning expenditures do not indicate which, if any, of the above programs is included.

Government figures on family planning expenditures indicate that \$2.2 million was spent in 1966, \$2.6 million in 1967, \$1.9 million in 1968 and in 1969,

and \$3.6 million in 1970. Another report, which may or may not refer to the same financial data base, indicates that expenditures in 1969 equalled \$58 per 1,000 population, which was associated with 5.5 births averted per 1,000 population. Comparable 1969 figures for the South Asian region contiguous to Limat were \$82 spent per 1,000 population and 5.4 births averted. (See Table 6.)

The regional breakdown of family planning expenditures (by percentage) is as follows:

Services	43.6
Compensation payments	16.4
Administration	13.5
New construction	8.7
Mass communications	6.8
Contraceptive cost	4.9
Training	3.7
Research	<u>2.4</u>
	100.0

Similar information on Limat expenditures cannot be tabulated from available sources, but the regional pattern indicates that fixed costs account for about 80 percent of the family planning budget and variable costs (contraceptives and compensation payments), the remaining 20 percent. The regional estimates for unit costs for tubectomy, vasectomy and IUD insertion are \$5.40, \$4.00, and \$1.50, respectively. Unit costs include compensation for acceptors, motivators, doctors, helpers, etc. The health services budget for family planning in Limat (\$653,000 in 1971 and \$639,000 in 1972) refers almost exclusively to variable costs, since all planned capital outlays for buildings and clinics should have been completed before 1972, and administrative costs are accounted for under separate headings for the entire health establishment.

DEVELOPMENT OF THE STERILIZATION PROGRAM

In 1956 sterilization facilities were established in all state government medical institutions; the patients volunteered for these services--that is, there was no special effort to "recruit" patients. However, by the end of 1959, an "Intensive Scheme" was in effect.

In January of 1960, 3 part-time surgical units were begun in Limat City government hospitals, on an experimental basis. And in May of that year, there were 21 such units established in rural areas throughout the country. These were soon extended to 4 part-time vasectomy units in Limat City and an additional 23 government hospitals and PHCs were trained to do vasectomies.

In February of 1961, the Intensive Scheme was extended to 75 more rural government medical institutions and 123 PHCs, and more and more PHCs were being approved as family planning surgeries. In addition, certain private organizations came forward to secure government approval for family planning surgeries in their hospitals; the Limat government subsidized vasectomies in these hospitals at the rate of \$1.35 and tubectomies (salpingectomies) at \$3.36. The government also approved family planning surgeries in various railway hospitals, plantation hospitals, etc.

Between 1956 and 1968, the number of vasectomies performed was 684,760 and the number of tubectomies was 46,057. (See Tables 7 and 8.)

The following points are relevant to the delivery of services for sterilization:

1. Sterilization operations, performed in all government hospitals, are free to all married eligible persons regardless of income. An eligible couple has two living children; the man is under age 55 and the woman under 45.
2. Hospital charges are waived if the family's income is less than \$30 per month.
3. Government employees are given six days leave for such operations.
4. The patient receives a compensatory allowance of \$4.00 (Limat was the first country in this region to grant such compensation.) Some blocks provide \$1.35 as a supplement to the compensation payment.
5. Pregnant mothers who will undergo sterilization after birth are provided with free ambulance service.
6. Drug costs are waived for vasectomy operations with hydrocele, regardless of income.
7. Vasectomized persons of the same socioeconomic status as the targeted population are appointed as field workers to motivate and bring in eligible fathers; these workers receive \$1.35 per operation. (This practice was begun in 1961.)
8. All government servants and local body (i.e., municipal) employees are eligible to serve as field workers.
9. Private medical practitioners receive \$1.35 for each case they refer for operation.

10. Local government councils are reimbursed for travel expenses they pay for cases referred to government hospitals of PHCs, at the rate of \$1.35 per vasectomy or tubectomy.
11. The national government employees' insurance plan compensates \$2.09 for vasectomies on persons covered by insurance, and \$3.36 for tubectomies.

SUPPLIES AND SERVICES

CONVENTIONAL CONTRACEPTIVES

The most popular conventional contraceptive is the condom, which is used by couples who want no more children as well as for child-spacing.

Between 1968 and 1969, an intensive scheme for condom distribution was initiated. The cost of condoms was drastically lowered, and posters, movies, etc., were utilized to publicize and advertise the usage of condoms. A private marketing organization is in charge of distribution. The government supplies free condoms to the marketing organization, which provides advertising services, field research, sales monitoring, etc. The organization resells the condoms to small retail outlets throughout villages and towns in Limat, which sell them at about two cents for three condoms.

Condoms are still available at no charge from primary health centers and subcenters, and other government and private family planning clinics. Under the Depot Holder System, three condoms cost less than one cent.

In 1967, 12,000 gross condoms were distributed. During the first nine months of 1971, over 615 million condoms were distributed. The estimated couple-years of protection from conventional contraceptives during the first nine months of 1971 was 86,566. Contraceptives distributed during that time period include 6,502,263 condoms, 87 diaphragms, 1,813 tubes of jelly or cream, and 94,924 foam tablets. Conventional contraceptives were used by 2.1 persons per 1,000 population in 1971, or slightly over 12 percent of target couples.

ORAL PILL

Supplied by the U.S. Agency for International Development, a pilot distribution project in North Arcana and Coimba has been sanctioned by the government. A training program involving the use of the pill is also under study at one government hospital.

STERILIZATION SERVICES

Vasectomies are now performed in all government medical institutions--teaching hospitals, state headquarters hospitals, local government and private hospitals, dispensaries, and district PHCs. Tubectomies are performed in teaching hospitals, state headquarters hospitals, and local government hospitals with trained medical officers. The number and type of institutions recognized for performing family planning operations are as follows:

Government medical institutions	200
Primary Health Centers	244
Private hospitals	18
Railway hospitals	9
Plantation hospitals	10
Local body hospitals	2

In addition, there are 46 full-time vasectomy units.

Vasectomy camps are arranged at the district level by the district development officer, with the assistance of PHC medical officers, state medical officers, and state health officers. These camps are generally conducted in a hospital, dispensary, or PHC, but it is not unusual, in remote areas for example, to hold a camp in a school.

IUD

If sterilization is refused, three- to four-year spacing of children with the use of an IUD (also called IUCD) will be suggested. Insertion is free, regardless of income, and the patient receives 25¢ as a compensation payment. IUD insertions are done at 24 family planning clinics in Limat City (run by the Limat Municipal Corporation), 4 teaching hospitals and 6 voluntary organizations in Limat City, all state headquarters hospitals, all local hospitals (government and nongovernment) with a woman medical officer (WMO) trained in IUD on the staff, and in 125 rural family planning clinics. Seven of these clinics have WMOs. Where there is no WMO, the insertion will be done by a WMO attached to a mobile IUD unit in the State Family Planning Bureau.

RECANALIZATION

Recanalization is done at Limat General Hospital and at one hospital in Madera. Statistics on costs for the operation and the number of successful reversals are not yet available.

PROGRAM RESULTS

STERILIZATION

Between the beginning of the program in 1956 and December 1971, 1,183,411 sterilizations had been performed in Limat. A 1965 study of vasectomized patients in sample villages in two development blocks, however, revealed that only two out of three vasectomies had an effect on fertility reduction, and only one patient in three met the legal requirements for vasectomy. (See Tables 11 through 15.) Results of the study were:

<u>Respondents</u>	<u>Number of Vasectomies</u>		<u>Percentages</u>	
Unmarried	2		1.2	
Widowed or divorced	24		14.5	
Married	140		84.3	
Wife 45 or over	38		27.1	
Fewer than 3 children	46		32.9	
Wife under 45, 3 children	56		40.0	
	<u>166</u>	<u>140</u>	<u>100.0</u>	<u>100.0</u>

Demographic effectiveness, or percentage of total vasectomies in which the patient had a wife in the reproductive years, was 61.5 percent in the area covered by the study. Legal effectiveness, the percentage of total vasectomies in which the patients had a wife of child-bearing age and three or more children, was 33.7 percent.

The system of paying vasectomized patients \$1.35 as a finder's fee for new clients was dropped after 1962. Subsequently, the monthly average of vasectomies dropped from 3,500 to less than 200 despite the \$4.04 compensation to men undergoing vasectomy. Re-institution of the canvasser's fee resulted in increased numbers of vasectomies: about 250,000 in 1966, 125,000 in 1967, and declining, but still significantly large, totals since 1967. (The study mentioned previously reported that 114 of the 166 respondents had heard about vasectomy from one of the canvassers.)

Of the 166 vasectomy cases cited earlier, 41 (25 percent) reported mild

complications and four had severe complications requiring hospitalization. Half of the patients maintained a favorable attitude toward the operation, but 24 percent held unfavorable opinions; sixty (36 percent) claimed that their marital relations had suffered since the vasectomy. Another sample of 363 vasectomized patients in Limat City and sample areas of Tiruchi State reported in 1970 that 121 respondents complained that their health had deteriorated, while 30 claimed that their mental health had diminished; 93 had lost their desire for sex and 102 experienced a loss of pleasure in sex. (See Tables 15 and 16.)

A significant proportion of wives also reported unfavorable results from their husbands' vasectomies. Tubectomy patients were also more likely to report unfavorable attitudes following that operation. Two other studies, one in Limat City and one in Roothana Block in Madera State, found that 80 percent of all respondents (married couples in areas covered by intensive family planning activities) were opposed to sterilization and feared deleterious after-effects.

TEMPORARY METHODS

In Limat, over 170,000 IUD insertions were made from 1956 to 1971. The number still in use is unknown. A 1967 study of these acceptors indicates that only 40 percent of loops inserted were still in place after 23 months. Over 20 percent of the women interviewed in Limat City and Tiruchi State complained of health problems caused by the IUD; this figure refers to those women with the device still in place.

An Oral Contraceptive Pilot Project in 1971, conducted in two sample rural blocks, reported 273 dropouts out of 718 acceptors; half of the dropouts experienced unpleasant side-effects. (See Table 17.) In a 1955 study, of 632 women who received free contraceptives (foam or condoms) in Chingla State, 192 failed to use them. Thirty-two percent felt they were too bothersome, and the others reported a variety of reasons including forgetfulness, lack of privacy, fear of injury, and failure to wake up before or during intercourse.

In the Limat region, each sterilization is considered equivalent to 1.7 births averted per ten years; an IUD insertion equals 0.7 births averted per ten years; and each conventional contraceptive couple-year equals 0.15 births averted annually. (See Table 18.)

EDUCATION

The following means of educating the public in family planning are all employed in the Limat program: posters, wall paintings, busboards, and billboards; distribution of literature; exhibitions; cultural programs (that is, family

planning dramas); meetings; seminars; family planning ads in magazines and newspapers; radio; house-to-house surveys; films; movie light advertisements; cinema slides.

TRAINING FACILITIES

One family planning training center per ten million population has been sanctioned in Limat, and there are therefore three such centers: Two are run by the national government, and one in Madera is run privately but is financed by the national government. There is, in addition, a regional family planning center, located at a government hospital in Limat City, which trains WMOs in IUD (21-day course). (See Tables 19 and 20.)

In addition to these full-time training facilities, there is a Central Family Planning Field Unit that provides three- to seven-day family planning training sessions to paramedical workers at their own family planning centers, and the state headquarters hospitals, which have seven- to ten-day training programs about vasectomy for medical officers of medical institutions.

CHAPTER IV

FAMILY PLANNING IN Roothana Block

INTRODUCTION

Roothana Block, in Madera State in the country of Limat, is one of 34 development blocks in the state. The 1961 population consisted of slightly over 100,000 people, over an area of about 90 square miles. Population density was 1,100 persons per square mile, compared to the Limat figure of approximately 650 persons per square mile.

The household population consisted of 86 percent Hindus, 10 percent Christians, and 4 percent Moslems. About 65 percent of heads of households were engaged in agriculture; 40 percent of these owned land. The sex ratio was 101.2; 40 percent of the population was under 15 years of age. More than 75 percent of the population belonged to the low income group (with a family income of less than \$80 a year). Adults with no education were present in 40 percent of the households.

FAMILY PLANNING PRIOR TO 1962

Family planning clinics were established in Chinnala and Sithian in 1958 to provide information and distribute temporary contraceptives including condoms, diaphragms, foam tablets, and jelly. They also provided advice about sterilization operations. A 1961 survey revealed that fewer than 5 percent of couples needing family planning services had taken advantage of clinic facilities and at the time of the study, only 40 couples were using contraceptives supplied by the clinics. The population reached by the clinic was predominantly from the middle-income group (annual family income between \$80 and \$160), a group that included only 15 percent of the target population. The low-income group, 75 percent of the target population, was not using the clinics at all, despite a greater need for assistance.

Among the reasons for the lack of success of the clinics were the following:

1. Clinic hours were inconvenient to many low-income families, especially those in which both husband and wife were required to work all day in the fields.
2. Many couples, especially the illiterate, felt hesitant to discuss such a personal matter in a public place.
3. The clinics were located at too great a distance from potential users.
4. The clinic environment was anxiety-producing, at least in comparison with other potential supply sources for contraceptives.

5. The administrative routine at the clinics required lengthy questioning, examinations, etc., to which the public was reluctant to be subjected.

The low success rate of the clinics is striking when the attitudes of block residents toward family planning are taken into account. A 1960 survey revealed that 65 percent of area residents held a favorable opinion toward family planning; the proportions were not significantly different between the sexes or across age groups. (See Table 22.) Half of those who favored family planning did so for economic reasons, one-third responded that "small families are good," and the remainder cited maternal and child health or other reasons. (See Table 23.) Women were more likely to cite health as a motivating factor.

About 25 percent of the respondents objected. Of the objectors, most referred to the immorality of contraception or to fear of health consequences; a smaller number cited religion specifically, while others referred to family planning as "against nature" or "against God's will." (See Table 24.)

Age and literacy had no statistically significant effect on attitudes toward family planning, although favorable attitudes increased somewhat with literacy among the Hindus. (See Table 25.) The Hindus were more likely to favor family planning than were the Muslims or Christians; Christians were most likely to object. (See Tables 26 and 27.) High parity was positively associated with favorable attitudes. (See Table 28.)

Over 18 percent of all respondents felt a personal need to limit their families; 30 percent indicated a willingness to use modern family planning practices, including 20 percent of the women who held unfavorable opinions about contraception in theory. (See Tables 29 through 31.)

The disparity between the expressed need for contraception and the failure of the clinics to service the need led to revisions of the program package within Roothana Block.

FAMILY PLANNING AFTER 1962

The 1962 goal of the Limat Family Planning Program was the reduction of the birthrate from 40 to 25 per thousand within 10 years (by 1972). Implementation in Roothana Block required three intermediate objectives: group acceptance of the small family norm, individual knowledge of the personal benefits of smaller families and of specific means of contraception, and ready availability of contraceptive supplies.

Family planning in Roothana, as in the rest of Limat, is a function of the Primary Health Center (PHC). The reorganized family planning program in-

volved an increase in the staff of the PHC. The number of auxiliary nurse midwives (ANMs) was increased to one per 10,000 population, and doubled again in 1965 to one per 5,000 population. One family planning field worker (male) was hired for each 20,000 population and one female health visitor for each 40,000 population; the number of female health visitors also doubled, beginning in 1965. Other major changes in 1965 included the appointment of a block extension educator, who was given the responsibility of coordinating all aspects of family planning work, and the appointment of a computer in charge of vital registration. The field workers, computer, and a storekeeper (in charge of contraceptive supplies) were put under the direction of the extension educator, as were all health visitors and ANMs. (See Figure 2, Organizational Chart for a PHC, p. 31.)

Coordination between the PHC and development organization was achieved through the formation of a block-level Family Planning Program Committee, consisting of the PHC medical officer, the block commissioner, the chairman of the block policy-making council, the deputy inspector of schools, the director of the action-research fertility project, and a representative of the local community. The Program Committee encourages communication and collaboration between the health center and the political/development spheres. Family planning is discussed at monthly committee meetings, and program implementation is planned.

The expanded program in family planning began in six villages, which were studied intensively to estimate target populations, to identify and train influential members of the community, to act as opinion leaders and as depot holders for the distribution of contraceptives, and to prepare educational programs. Vasectomy camps were conducted in cooperating villages, with arrangements for clinical follow-up; a program of IUD insertion began in 1965. By 1967 the initial program had been expanded to cover the entire block.

The village leaders (ten male and ten female) are given a special one-day orientation and training session at the Primary Health Center; male and female training camps are held separately whenever local conditions require it. Participants are informed of population problems in their own village and receive some instruction in the reproductive process and in the use of various contraceptives. They are provided with supplies of contraceptives to distribute within their village and are encouraged to suggest improvements in the system of distribution; they are also offered the assistance of the PHC staff whenever they may choose to request help. Village leaders from the entire block meet periodically to compare results and exchange ideas. Roothana Block is served by 400 village leaders who act as depot holders for the distribution of contraceptives. (See Tables 32 through 34.)

RESULTS OF THE FAMILY PLANNING PROGRAM

A 1965 survey of sample households in Chinnala and eighteen villages

showed that nearly 80 percent of area residents were aware of the possibility of postponing pregnancy (see Tables 35 and 36) and 25 percent of this group (18 percent of the total sample) were currently using some form of birth control. Men were more likely to know about various forms of contraception than were women (see Tables 37 and 38); couples with large families were better informed than couples with small ones. Men were more likely to receive information from friends (or from mass media, in the case of knowledge about the IUD), and were also more likely to discuss family planning with other people. (See Table 39.) Women usually were informed by village officials, friends, or relatives. (See Table 40.) Birth control was practiced more frequently by couples in the higher income group (income over \$240 yearly); 34 percent of this group practiced family planning. However, 22 percent of couples in the lower income group were also users, a significant increase since the 1960 survey cited above. The practice of family planning was positively associated with educational status in the 1965 study. (See Table 41.)

The total number of vasectomized persons increased from less than 100 in 1961 to over 3,100 in 1971, or approximately 16 percent of eligible couples.* (See Tables 42 through 45.) The number of vasectomized men who were alive in 1970 and had a living wife of child-bearing age was slightly over 1,000. The number of vasectomies performed has dropped sharply since 1965, following the pattern for Limat. A 1966 study of four blocks in Madera State (not including Roothana) reported that one-third of a sample of vasectomized persons complained that their marital relations had changed for the worse, one-quarter experienced unpleasant side-effects, and one-quarter held unfavorable opinions about vasectomy. A 1965 communications survey in Roothana revealed that 70 percent of sterilized persons discuss their experience with others. It is possible that all of the dissatisfied recipients of vasectomy operations are among this 70 percent. (See Tables 46 and 47.)

The probability of a live birth, for women who do not conceive for four-to-five years in the absence of any contraceptive, is very small. Vasectomized men in the Madera sample survey report an average interval of 5.7 years between the last live birth and the time of sterilization. Consequently it seems likely that vasectomized persons as a group are members of couples with below-average fertility before the operation takes place.

Tubectomy (salpingectomy) operations increased from 40 in 1962 to 300 in 1971, with a ten-year total of 1,400 operations performed. This was 7 percent of eligible couples in 1971. (See Tables 48 through 51.) About 800 tubectomized

* The 1971 estimate of eligible couples in Roothana Block was around 19,700. Note that a significant proportion of vasectomies (around 35 percent) are performed on unmarried men or on men without wives in the child-bearing years.

women were still living and in the child-bearing years in 1970.

Acceptance rates for the IUD have declined steadily since 1965, although a total of 1,600 were inserted between 1965 and 1971 (8 percent coverage of eligible couples). (See Tables 52 through 54.) A study of women who received the IUD during the first year of the program in Roothana (beginning in March 1965) revealed about a 70 percent dropout rate over a three-year interval. (See Table 55.) Three-quarters of the recipients were between 20 and 34 years of age, and the highest rate of acceptance was in the 25- to 29-year-old group. (See Table 56.) Half of the recipients had five or more children each, the rate of acceptance increasing with parity (the number of children previously borne by the woman). (See Tables 57 through 59.) The rate also increased with education. (See Tables 60 and 61.) Acceptance rates are not available for income classifications, but 20 percent of the IUDs were provided for women whose annual family incomes exceeded \$160. Only 10 percent of the population falls into that income category. (See Tables 62 through 65.) Of the women surveyed, over half chose the IUD to limit their families, while 39 percent planned to use it for spacing births. (See Tables 66 and 67.) Three-quarters of the recipients had never used any other form of birth control. (See Table 68.)

Among the 427 single insertions between 1965 and 1968, 198 women had the loops removed. The reasons most frequently cited were bleeding, pain, and weakness. (See Table 69.) In 1968, 122 of these women still retained the loops, the others having been spontaneously expelled. These 122 women cited a total of 98 specific complications from which they were currently suffering, including bleeding, pain, white discharge, weakness, and menstruation troubles--in order of frequency of complaint. Women in Roothana hear about the IUD predominantly (75 percent) through friends, according to the 1965 communications survey, and, to a lesser extent, through village officials. The number of removals and expulsions and the incidence of side effects undoubtedly have a depressing effect on potential users.

The number of couples using condoms increased between 1963 and 1971, from 300 to 600. (See Tables 70 and 71.) In 1965, over 1,500 couples used condoms. The rate of condom usage varied from 800 per 1,000 population (4.8 per eligible couple) in 1965 to 237 per 1,000 (1.4 per eligible couple) in 1968. The rate of consumption for foam tablets was 70 per 1,000 population (0.4 per eligible couple) in 1965. (See Table 72.) Natural methods of birth control have not been widely exploited by the family planning program in Roothana. Figures on the use of rhythm or coitus interruptus are unavailable, but in 1966 only 18 percent of the women interviewed were aware of the rhythm method and only 24 percent knew about coitus interruptus--percentages only slightly higher than those for 1962.

The most common method of birth control in the block may be abortion.

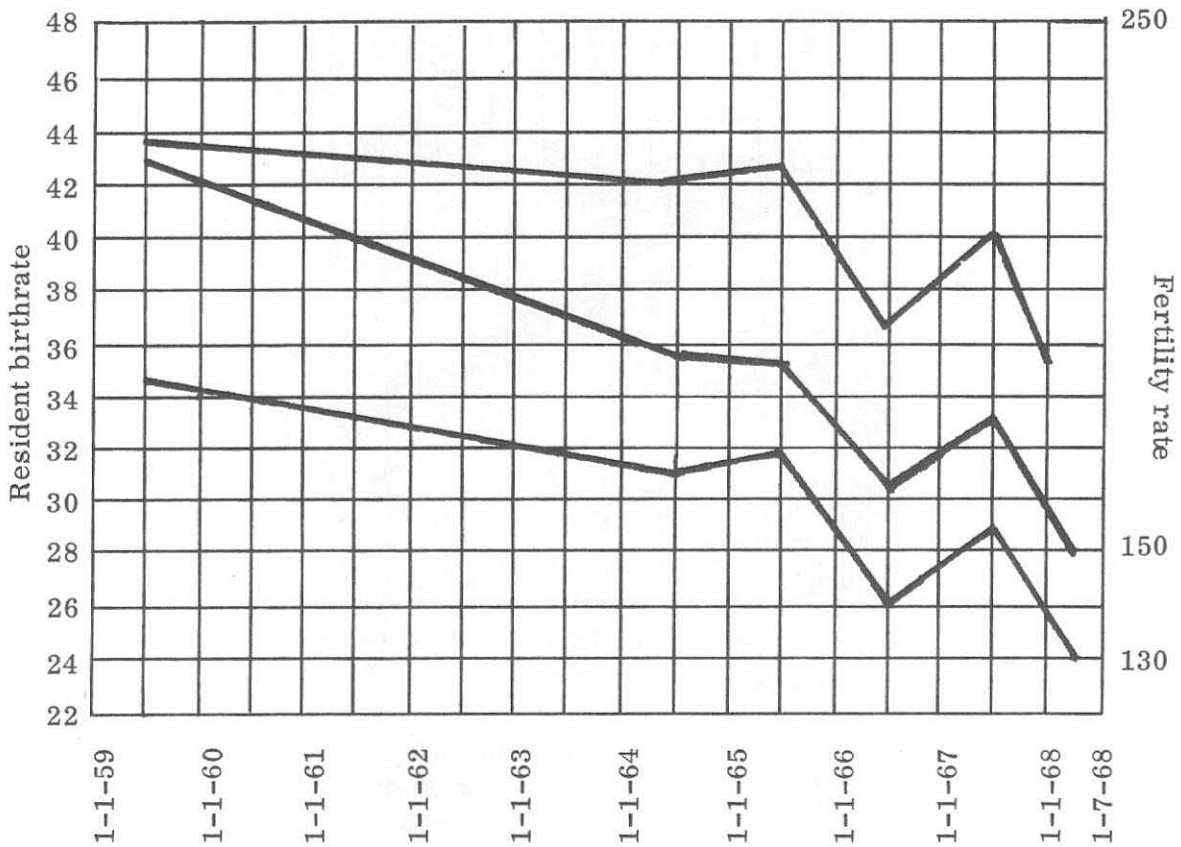
A 1963 study of weavers in Chinnala, with a parity of two or more, estimated the rate of induced abortions to be 30.4 per 100 live births for the period 1960-63; the incidence is higher among older women. (See Tables 73 and 74.) The incidence rate for natural abortions is 21.9 per 100 live births, but the data suggest that the figure is understated: the average month of pregnancy at the time of the abortion was reported as 2.8, although the bulk of miscarriages should occur before the third month. At any rate, over one-third of all conceptions in the study area do not terminate in a live birth. Abortions were legalized in Limat in 1972 and are provided free on request. The service is not yet widely used because most women prefer to avoid what they consider a lack of privacy and confidentiality at public hospitals. Abortions are usually performed by barber-midwives, who gain wide reputations and attract a clientele from villages throughout the region.

Results of the family planning program in Roothana Block may be summarized by the following measures:

	<u>1965</u>	<u>1968</u>
General fertility rate	170	130
Marital fertility rate	224	185
Resident birthrate	35	28
Conception rate	240	195
Pregnancy rate	41	34
Live-birth pregnancy	36	N. A.
Closed interval parity (months)	37	37
Open interval parity (months)	43	50

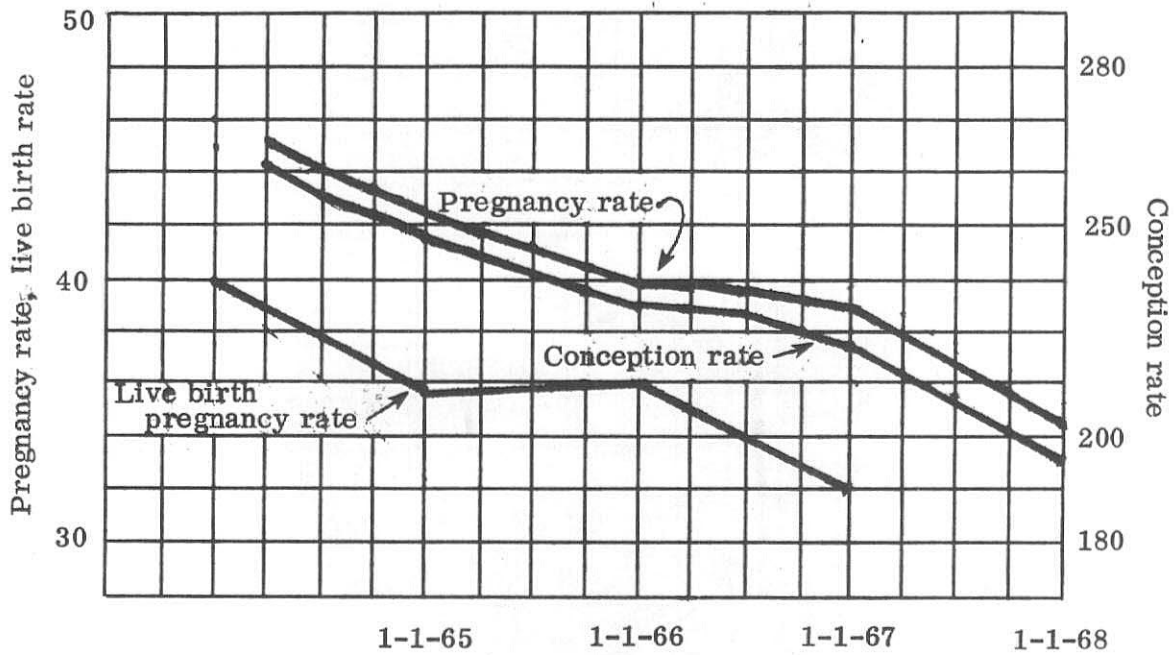
(See Figures 6 and 7 for trends in indices based on live-births and pregnancies; see also Table 75.)

Figure 6. TRENDS IN INDICES BASED ON LIVE-BIRTHS



(a) Resident Birthrate: number of resident births per 1,000 population in a year; (b) General Fertility Rate: number of births in a year per 1,000 women of child-bearing age (15-44); (c) Marital Fertility Rate: number of children born in a year per 1,000 married women of child-bearing age (15-44).

Figure 7. TRENDS IN INDICES BASED ON PREGNANCIES



(a) Conception Rate: number of conceptions in a specific period of time, usually a calendar year, per 1,000 married women of child-bearing age (15-44); (b) Pregnancy Rate: number of pregnancies in a given year for 100 years of exposure for married women of child-bearing age (15-44); (c) Live Birth Pregnancy Rate: number of pregnancies that terminate as live births for 100 years of exposure in a specific period of time.

APPENDIX

TABLES ON FAMILY PLANNING
IN LIMAT AND IN ROTHANA BLOCK

LIST OF TABLES

- Table 1: Family Planning Units in Service in Limat, 1972
- Table 2: Family Planning Service Institutions in Limat, 1968
- Table 3: Expenditures on Limat's Family Planning Program, 1965-1968
- Table 4: Health Services and Family Planning Budget for Limat, 1971-1972
- Table 5: Public Health Budget for Limat, 1971-1972
- Table 6: Trend in Cost/Birth Averted: Regional Data, 1958-1969
- Table 7: Sterilization Operations in Limat from 1956 to 1968
- Table 8: Sterilizations and IUCD Insertions in Limat, 1967 and 1968
- Table 9: Vasectomized Patients at Limat General Hospital by Age, 1967 and 1968
- Table 10: Vasectomized Patients at Limat General Hospital by Number of Living Children, 1967 and 1968
- Table 11: Vasectomized Patients at Limat General Hospital by Income, 1967 and 1968
- Table 12: Vasectomized at Government General Hospital, Limat City, by Religion of Patient, 1967
- Table 13: Vasectomies at Government General Hospital, Limat City, by Occupation of Patient, 1967 and 1968
- Table 14: Current Attitudes of Vasectomized Patients by Stated Reasons for Undergoing Vasectomy--Sample Villages in Limat, 1965 and 1966
- Table 15: Health Changes Attributed to Vasectomy by Patients and Their Wives: Limat City and Sample Areas of Tiruchi State, 1970
- Table 16: Health Changes Attributed to Tubectomy and IUCD Insertions, Limat City and Sample Areas of Tiruchi State, 1970
- Table 17: Reasons Given by Dropouts in Limat Oral Contraceptive Pilot Project, 1971

- Table 18: Contraceptive Services Provided by the Family Planning Program in Limat, 1966-1971
- Table 19: Type and Number of Personnel Trained at Regional Training Centers and Duration of Program
- Table 20: Persons Trained in Family Planning Methods
- Table 21: Number of F.P. Personnel Trained, Limat, 1970-71
- Table 22: Attitude Toward Family Planning by Sex and Age, Roothana Block, 1960
- Table 23: Reasons for Favorable Attitude by Sex and Income, Roothana Block, 1960
- Table 24: Reasons for Unfavorable Attitude by Sex and Income, Roothana Block, 1960
- Table 25: Attitude Towards Family Planning by Literacy & Age Group, Roothana Block, 1960 (Hindus)
- Table 26: Attitude Towards Family Planning by Literacy & Age Group, Roothana Block, 1960 (Muslims)
- Table 27: Attitude Towards Family Planning by Literacy & Age Group, Roothana Block, 1960 (Christians)
- Table 28: Attitude by Number of Children Born by Age Group, Roothana Block, 1960
- Table 29: Years of Spacing Desired--by Sex and Literacy, Roothana Block, 1960
- Table 30: Attitude by Need Felt and Age Group, Roothana Block, 1960
- Table 31: Willingness Towards Family Planning by Sex, Attitude and Age Group, Roothana Block, 1960
- Table 32: Awareness of the Community About Depot Holders Working in their Village, Roothana Block
- Table 33: Attitude of the Community Towards Depot Holder System and Reason, Roothana Block

- Table 48: Sterilization Progress (Tubectomy) from 1961 to August 31, 1971, Roothana Block
- Table 49: Tubectomy Operations in Program Villages of Roothana Block, 1963-1968
- Table 50: Age at Time of Tubectomy, Roothana Block, 1967-1970
- Table 51: Age by Living Children Distribution by the Wives of Vasectomised Persons and of Salpinjectomized Women
- Table 52: Progress of IUCD from 1965 to August 31, 1971, Roothana Block
- Table 53: IUCD Insertions in Program Villages of Roothana Block, 1965-1968
- Table 54: IUCD Acceptors by Number of Insertions and Status, Roothana Block
- Table 55: Life Table Analysis for IUCD Acceptors, Roothana Block
- Table 56: Percentage Distribution of IUCD Acceptors and Acceptance Rates by Parity, Roothana Block, 1966
- Table 57: Percentage Distribution of IUCD Acceptors and Acceptance Rates by Parity, Roothana Block, 1966
- Table 58: Average Parity of IUCD Acceptors and Married Women in General Population by Age Groups, Roothana Block, 1966
- Table 59: Percentage Distribution of IUCD Acceptors and Acceptance Rates by the Number of Living Children, Roothana Block, 1966
- Table 60: Percentage Distribution of IUCD Acceptors and Acceptance Rates by Educational Status of Acceptors, Roothana Block, 1966
- Table 61: Percentage Distribution of IUCD Acceptors by Their Husbands' Education, Roothana Block, 1966
- Table 62: Percentage Distribution of IUCD Acceptors by Their Occupation, Roothana Block, 1966
- Table 63: Percentage Distribution of IUCD Acceptors by Their Husbands' Occupation, Roothana Block, 1966
- Table 64: Percentage Distribution of IUCD Acceptors by Annual Household Income, Roothana Block, 1966

- Table 34: Factors to be Considered in Selecting Depot Holders and their Respective Importance as Perceived by the Community, Roothana Block
- Table 35: Awareness of Possibility of Postponement of Pregnancy by Sex and Family Size in Number and Percent, Roothana Block, 1965
- Table 36: A Comparison of the Number and Percent of Men and Women Informed About Family Planning Methods in Five Villages, Roothana Block, 1962 and 1966
- Table 37: Awareness About the Various Family Planning Methods Among the Sample Population by Sex and Type of Method, Roothana Block, 1965
- Table 38: Knowledge of Family Planning Methods by the 75 Men and 60 Women Interviewed
- Table 39: Communication About Family Planning by Sex, Age and Literacy, Roothana Block, 1965
- Table 40: Sources of Knowledge of Family Planning, Roothana Block
- Table 41: Contraceptive Usage in Roothana Block, 1965
- Table 42: Age at Time of Vasectomy, Roothana Block, 1960-1970
- Table 43: Sterilization Progress (Vasectomy) from 1961 to August 31, 1971, Roothana Block
- Table 44: Vasectomy Operations in Program Villages of Roothana Block, 1963-1968
- Table 45: Demographic Characteristics of Vasectomized Persons at Time of Vasectomy, Four Sample Blocks in Maders, 1966-67
- Table 46: First Source of Information about Vasectomy Operation Classified by the Educational Status of Marital Status of Vasectomised Persons, Four Blocks in Madera State, 1966-1967
- Table 47: First Source of Information about Vasectomy Operation Classified by Consultation with Wife, Motivating Factors for Undergoing Vasectomy Operation, Current Attitude Towards Vasectomy Programme (in percentage), Four Blocks in Madera State, 1966-67

- Table 65: The Percentage Distribution of IUD Acceptors and Acceptance Rates by Religion, Roothana Block, 1966
- Table 66: Reason for Choosing IUCD by Age Group of Acceptors, Roothana Block
- Table 67: Reason Stated for Choosing IUCD by the No. of Living Children of Acceptors, Roothana Block
- Table 68: Distribution of IUCD Acceptors by the Use of One or Other of the Contraceptives
- Table 69: Reasons Stated by the IUCD Acceptors for Removal
- Table 70: Trend of Condom Use from 1963 to 1969, Roothana Block
- Table 71: Distribution of Condoms in Program Villages of Roothana Block, 1963-1968
- Table 72: Foam Tablets Distributed in Program Villages of Roothana Block, 1963-1966
- Table 73: Incidence of Induced Abortions, Average Parity and Month of Pregnancy at Which Aborted, by Women of Different Age Groups, Chinnala Survey, 1960-1963
- Table 74: Incidence of Induced Abortions, Average Parity and Month of Pregnancy at Which Aborted, by Women of Different Age Groups, Chinnala Survey, 1960-1963
- Table 75: Family Planning Program Achievements as of August 31, 1971, Roothana Block

TABLE 1

Family Planning Units in Service in Limat
1972

State Family Planning Bureaus	15 (includes Limat City)
Urban Family Planning Clinics	231
Rural Family Planning Clinics	374
Subcenters	2992
Mobile Units	27
Other Units (for sterilization)	46

TABLE 2

Family Planning Service Institutions in Limat
1968

	<u>Government</u>	<u>PHC</u>	<u>Private</u>	<u>Railway</u>	<u>Plantation</u>	<u>Local Body Hospital or Dispensary</u>
Limat	10	..	9	..	..	..
Chingla*	11	18	..	1	..	..
South Arcana	10	16	1	1	..	..
North Arcana*	17	23	3	2	..	..
Salem*	14	7	..	..	1	1
Coimba*	25	27	1	2	8	..
Ramana	22	28	..	..	..	..
Madera*	15	27	2	1	..	..
Tirunel*	13	26	1	..	..	..
Thania	28	27	..	..	..	..
Tiruchi*	15	27	1	1	..	..
Kania	6	8	..	..	..	..
Nilgri	6	4	..	..	..	..
Darma	6	6	..	..	..	1

*The following family welfare planning urban units are in operation: Tiruchi, 4 units; Salem, 4 units; Madera, 8 units plus 1 city bureau plus the (private) Institute for Rural Medical Service Unit [this institute has done family planning work for the past 25 years]; and Kanchee, Chingla, Tirunel, Coimba, North Arcana, and Cuddalore, 1 unit apiece.

TABLE 3

Expenditures on Limat's Family Planning Program

1965 to 1968

	1965	1966	1967	1968 (6 months) \$
Medical research on subfertility	\$ 1,616	\$ 1,908	\$ 1,630	\$ 1,112
Family Planning Clinics	75,640	78,463	57,516	31,717
Family Planning Institute	3,534	8,026	9,230	5,296
Presidency Hospitals (Crash Programme--FP)	60,587	97,689	54,420	17,056
State Headquarters Hospitals	201,040	180,444	97,292	49,363
Local Headquarters Hospitals	469,244	720,751	298,512	98,603
IUCD Program	...	...	...	130
Public Health--Family Planning				
(i) National Family Planning Bureau	95,129	626,324	465,550	169,797
(ii) Establishment of Family Planning Training Centre	...	5,947	16,373	15,493
(iii) Re-organized pattern of Family Planning Programme	...	275,485	478,574	307,682
TOTAL	\$906,790	\$1,995,038	\$1,479,098	\$696,587

TABLE 4

Health Services and Family Planning

Budget for Limat, 1971-1972

	Expendi- tures:	Budget Estimate:
By Program:	1971	1972
1. Direction, Supervision and Policy	\$ 49,223	\$ 43,005
2. Hospitals and Dispensaries	804,262	814,330
3. Drugs Control	10,674	12,033
4. Leprosy, Tuberculosis and Cancer	29,774	42,991
5. Grants-in-Aid	46,558	46,087
6. Employees State Insurance	464,868	448,635
7. Family Planning and Propaganda	652,904	638,637
8. Laboratory Services	8,372	8,305
By Object:		
1. Establishment	\$1,001,505	\$1,067,324
2. Travel	8,089	8,157
3. Diet	115,823	118,515
4. Medicine and Hospital Supplies	360,984	382,439
5. Other Charges	240,274	276,993
6. Stipends	215	700
7. Motor Vehicles	6,367	20,540
8. Buildings	265,956	98,944
9. Grants-in-Aid	67,421	80,410
TOTAL	\$2,066,635	\$2,054,023

TABLE 5

Public Health Budget for Limat

1971-1972

	Expendi- tures:	Budget Estimate:
By Program:	1971	1972
1. Direction, Supervision and Policy	\$ 50,542	\$ 47,877
2. Maternity and Primary Health Centers	243,895	258,917
3. Communicable Diseases and Laboratories	37,298	37,473
4. Implementation of Regional Programs	278,030	283,185
5. School Health Services	9,207	8,762
6. Research, Training, Publicity	47,016	49,990
7. Grants-in-aid	65,012	60,947
By Object:		
1. Establishment	\$442,067	\$447,222
2. Travel	20,540	2,073
3. Diet	498	16,596
4. Medicine and Hospital Supplies	54,648	54,648
5. Other Charges	139,378	145,018
6. Stipends	2,086	2,073
7. Buildings	754	--
8. Grants-in-aid	65,012	60,947
TOTAL	\$730,003	\$747,151

TABLE 6

Trend in Cost/Birth Averted: Regional Data

1958-1969

<u>Year</u>	<u>Cost</u>
1958	\$ 8.75
1959	8.25
1960	10.00
1961	8.75
1962	12.00
1963	8.75
1964	17.00
1965	9.25
1966	8.25
1967	9.50
1968	12.00
1969	17.50

TABLE 7

Sterilization Operations in Limat from 1956 to 1968

Year	Urban Hospitals			Rural Hospitals			Grand Total
	Vasec- tomy	Salpin- gectomy	Total	Vasec- tomy	Salpin- gectomy	Total	
1956	5	430	435	20	240	260	695
1957	76	584	660	155	989	1,144	1,804
1958	325	879	1,204	661	985	1,646	2,850
1959	436	855	1,291	894	1,158	2,052	3,343
1960	2,148	1,191	3,339	3,036	1,481	4,517	7,856
1961	11,202	1,021	12,223	11,218	1,894	13,112	25,335
1962	25,574	1,025	26,599	20,890	2,014	22,904	49,503
1963	9,751	1,167	10,918	14,253	2,067	16,320	27,238
1964	6,832	1,361	8,193	21,180	2,542	23,722	31,915
1965	7,869	1,370	9,239	104,158	3,531	107,689	116,928
1966	21,506	1,473	22,979	223,924	3,840	227,764	250,743
1967	10,019	1,891	11,010	116,519	5,315	121,834	133,744
1968 (6 months)	3,714	1,539	5,253	68,395	5,215	73,610	78,863
Total	99,457	14,786	114,243	585,303	31,271	616,574	730,817

TABLE 8

Sterilizations and IUCD Insertions in Limat, 1967 and 1968

	1970 Population (1,000's)	ICUD		Sterilizations			
		Annual Average/ 1,000 Population		Annual Average/ 1,000 Population			
		1967	1968	1967	1968		
Limat	39,738	9,542	25,358	0.44	128,166	113,534	3.04
Limat City	2,039	3,245	6,442	2.38	9,707	9,119	4.62
Chingla	2,591	1,254	2,584	0.74	4,081	16,564	3.98
South Arcana	3,596	234	640	0.12	7,944	7,894	2.20
North Arcana	3,712	754	1,779	0.34	10,804	10,431	2.86
Darma	NA	35	257	NA	9,073	5,448	NA
Salem	4,486	1,148	3,649	0.53	8,154	8,877	1.90
Coimba	4,196	712	2,769	0.41	12,560	8,114	2.46
Nilgri	485	117	258	0.39	3,331	1,905	5.40
Thania	3,831	337	2,288	0.34	10,821	5,672	2.15
Tiruchi	3,763	139	433	0.08	10,962	8,630	2.60
Madera	3,787	1,243	2,843	0.54	21,121	20,115	5.44
Ramana	2,857	27	149	0.03	3,730	3,196	1.21
Tirunel	3,219	101	498	0.09	8,547	3,422	1.86
Kania	1,176	196	769	0.41	7,331	4,147	4.88

NA = Not Available

TABLE 9

Vasectomized Patients at Limat General Hospital by Age
1967 and 1968

<u>Age of Patient</u>	<u>1967</u>	<u>1968</u>	<u>Age of Wife</u>	<u>1967</u>	<u>1968</u>
25-26	--	0.1%	20-21	--	0.2%
27-28	0.2%	0.6	22-23	0.5%	1.2
29-30	7.1	12.7	24-25	18.6	20.4
31-32	15.3	10.3	26-27	21.3	13.8
33-34	7.3	8.3	28-29	17.1	14.9
35-36	29.3	24.6	30-31	28.6	30.2
37-38	8.4	9.7	32-33	6.9	6.8
39-40	16.3	13.6	34-35	4.4	5.5
41-42	3.4	3.9	36-37	1.9	1.2
43-44	2.0	2.5	38-39	0.4	1.2
45-46	6.9	7.8	40-41	0.2	0.5
47-48	3.2	2.3	42-43	--	0.1
49-50	0.5	0.1	44-45	--	0.2
NA	0.1	3.5	NA	0.1	3.7
	<hr/>	<hr/>		<hr/>	<hr/>
	100.0%	100.0%		100.0%	100.0%
	(N=2336)	(N=1120)		(N=2336)	(N=1120)

NA=Not Available

TABLE 10

Vasectomized Patients at Limat General Hospital
by Number of Living Children
1967 and 1968

<u>Number of Children</u>	<u>Number of patients</u>	
	<u>1967</u>	<u>1968</u>
2	1	4
3	1,616	717
4	455	197
5	170	110
6	58	52
7	22	15
8	8	16
9	1	1
	<hr/>	<hr/>
	2,331	1,112

TABLE 11

Vasectomized Patients at Limat General Hospital by Income
1967 and 1968

	1967		1968	
	<u># of Patients</u>	<u>%</u>	<u># of Patients</u>	<u>%</u>
Below \$6/mo.	256	11.0%	105	9.4%
\$6-\$12/mo.	1,753	75.0	705	62.9
\$12-\$18/mo.	117	5.0	72	6.4
\$18-\$25/mo.	48	2.1	69	6.2
Above \$25/mo.	118	5.0	101	9.0
Unemployed	2	0.1	17	1.5
NA	42	1.8	51	4.6
	—————	—————	—————	—————
	2,336	100.0%	1,120	100.0%

TABLE 12

Vasectomies at Government General Hospital, Limat City,
by Religion of Patient
1967

<u>Religion</u>	<u># of Patients</u>	<u>%</u>
Hindu	2,103	90.4%
Muslim	103	4.4
Christian	100	4.3
Other	30	0.9
	<hr/>	<hr/>
	2,336	100.0%

TABLE 13

Vasectomies at Government General Hospital, Limat City,
by Occupation of Patient
1967 and 1968

<u>Occupation</u>	Number of Vasectomies	
	<u>1967</u>	<u>1968</u>
Doctors, engineers, officials	41	24
Clerks, journalists, businessmen	175	173
Agriculturists	80	41
Skilled and semiskilled workers	209	165
Unskilled workers	1,785	679
Not known	46	38
	<hr/>	<hr/>
Total	2,336	1,120

TABLE 14

Current Attitudes of Vasectomized Patients by Stated Reasons for
Undergoing Vasectomy--Sample Villages in Limat
1965 and 1966

<u>Reasons</u>	Total	<u>Current Attitude Toward Vasectomy</u>			<u>Effect on Marital Relations</u>			
		Favorable	Neutral	Unfavorable	Unchanged	Better	Worse	N.A.
Economic incentive	68	26	18	24	21	0	21	26
Limit families	62	39	12	11	25	0	33	4
Economic and F.P.	8	2	4	2	4	0	1	3
Vague and other	26	15	7	4	5	1	4	16
Health of mother	2	1	1	0	1	0	1	0
Total	166	83	42	41	56	1	60	49

TABLE 16

Health Changes Attributed to Tubectomy and IUCD Insertions

Limat City and Sample Areas of Tiruchi State

1970

	<u>#</u>	<u>#</u>	<u>Better</u>	<u>Worse</u>	<u>#</u>	<u>#</u>	<u>Better</u>	<u>Worse</u>	<u>#</u>	<u>Better</u>	<u>Worse</u>
Tubectomies	Report Changes	General Health	IUCD	Report Changes	General Health	Report Changes	General Health	Report Changes	General Health	Report Changes	General Health
Rural Tiruchi	0	--	--	--	4	3	--	--	3	--	3
Urban Tiruchi	27	6	--	6	17	5	--	--	5	--	5
Limat City	32	3	--	3	164	34	--	--	31	--	31

TABLE 17

Reasons Given by Dropouts
in
Limat Oral Contraceptive Pilot Project
1971

N=273 dropouts among 718 acceptors

<u>Reasons</u>	<u>#</u>	<u>%</u>
Side-effects	124	45.4
Nausea, vomiting and dizziness	(112)	(90.4)
White discharge	(5)	(4.0)
Break-through bleeding	(3)	(2.4)
Burning sensation	(1)	(0.8)
Itching all over body	(1)	(0.8)
Chest pain	(1)	(0.8)
General weakness	(1)	(0.8)
Lost to follow-up	99	36.3
Planned pregnancy	21	7.7
Lack of confidence in drug	10	3.6
Husband objected	5	1.8
Vasectomy	3	1.1
Doctor's advice	2	0.7
Unknown	2	0.7
Unplanned pregnancy	1	0.4
Adverse publicity	1	0.4
Husband sick or away	1	0.4
Others	4	1.5
	273	100.0%

TABLE 18

Contraceptive Services Provided by the Family

Planning Program in Limat

1966-1971

<u>Year</u>	<u>Sterilizations</u>	<u>IUCD Insertions</u>	<u>Equivalent Conventional Contraceptive Users</u>
1966	248,242	5,295	29,232
1967	128,166	9,542	16,499
1968	113,534	25,358	24,185
1969	87,430 ^a	31,320 ^a	35,388 ^a
1970	70,030	53,596	71,187
1971	270,285 ^b	43,230 ^b	115,421 ^b

^aEstimate Based on 5 month experience^bEstimate based on 9 month experience

TABLE 19

Type and Number of Personnel Trained at Regional Training Centers
and Duration of Program

	<u>Number</u>	<u>Limat/Government</u>		<u>Private</u>	
		<u>Gemro</u> <u>Duration</u>	<u>Rayda</u> <u>Duration</u>	<u>Madera</u> <u>Duration</u>	
Medical officers	273	3 weeks	10	NA	...
Nurses	193	15 days	...	...	...
Social workers	49	NA*	...	...	...
Health visitors	298	15 days	192	10 days	...
Pupil health visitors	...	...	105	7 days	...
Nonmedical personnel	258	15 days	...	...	...
ANM's	106	2 months	72	10 days	...
House surgeons	138	NA	...	...	...
Pupil midwives	53	NA	...	...	...
Paramedical personnel	14	NA	...	...	...
State family planning officers	12	NA	...	...	...
Welfare workers	15	NA	...	...	...
State extension educators (EEs)	1	NA	25	15 days	...
District EEs	...	...	61	15 days	30 days
Family planning health inspectors	...	...	258	NA	15 days
Basic health workers	...	...	289	NA	...
Maternity assistants	...	...	78	NA	...

*NA= information not available

TABLE 20

Persons Trained in Family Planning Methods

	before 1958	1958	1959	1960	1961
Medical Officers	150	11	9	3	5
Nurses	43	63	46	34	6
Social Workers	6	4	23	11	5
Health Visitors	--	29	129	29	81
Non-medical Personnel	29	49	81	29	42
Women Welfare Officers	--	--	15	--	--

TABLE 21

Number of F.P. Personnel Trained in Limat

1970-71

	1970	1971 (5 months)
Doctors	330	68
State Extension Educators	10	--
Block Extension Educators	90	19
Health Visitors	256	67
Mass Education and Information Officers	3	--
Family Planning Health Inspectors	671	64
Auxiliary Nurse Midwives	77	1
Medical Social Workers	--	18
Others	44	90
Field Workers	17	23
Nursing Students	28	--
Family Planning Educators	--	4
Artist-Photographer	12	--
Family Planning Health Inspectors:	91	--
Emergency Training - 30 days		

TABLE 22

Attitude Toward Family Planning by Sex and Age

Roothana Block, 1960

Age	Males				Females			
	No.	% pro	% con	DK	No.	% pro	% con	DK
15-24	20	60	35	5	28	57	25	18
25-34	67	76	21	3	72	67	24	9
35-44	61	57	34	9	52	65	17	18
45 and above	93	66	23	11	62	60	26	14
TOTAL	241	66	26	8	214	63	23	14

TABLE 23

Reasons for Favorable Attitude by Sex and Income
Roothana Block, 1960

Reasons:	Males		Females		Total
	<\$14	>\$14	<\$14	>\$14	
(a) economic conditions	71	7	49	1	128
(b) small family is good	58	7	34	1	100
(c) health of mother and child	17	4	22	0	43
(d) others	1	1	1	0	3
	(N=146)	(N=13)	(N=133)	(N=2)	(N=294)

TABLE 24

Reasons for Unfavorable Attitude by Sex and Income
Roothana Block, 1960

Reasons:	Males		Females		Total
	<\$14	>\$14	<\$14	>\$14	
(a) religious objections	1	0	5	0	6
(b) can afford large family	1	0	1	0	2
(c) affects health	7	1	5	0	13
(d) amounts to infanticide	9	1	4	0	14
(e) others	8	0	4	0	12
	(N=50)	(N=2)	(N=37)	(N=1)	(N=90)

TABLE 25

Attitude Towards Family Planning by Literacy & Age Group
Roothana Block, 1960

HINDUS

Literacy	Illiterate						Elementary						High School & Higher Education						Total					
	F	NF	DK	T	F	NF	DK	T	F	NF	DK	T	F	NF	DK	T	F	NF	DK	T				
Age groups	No.																							
15-24	14	6	3	23	9	2	1	12	3	2	...	5	26	10	4	40								
	%	60.9	26.1	13.0	100.0	75.0	8.3	100.0	60.0	40.0	...	100.0	65.0	25.0	10.0	100.0								
25-34	57	17	9	83	25	10	...	35	5	1	...	6	87	28	9	124								
	%	68.7	20.5	10.8	100.0	71.4	...	100.0	83.3	16.7	...	100.0	70.2	22.6	7.2	100.0								
35-44	39	19	8	66	20	6	2	28	4	1	1	6	63	26	11	100								
	%	59.1	28.8	12.1	100.0	71.5	7.1	100.0	66.7	16.7	16.7	100.0	63.0	26.0	11.0	100.0								
45 and above	59	26	14	99	27	6	5	38	5	1	...	6	91	33	19	143								
	%	59.6	26.3	14.1	100.0	71.1	13.1	100.0	83.3	16.7	...	100.0	63.6	23.1	13.3	100.0								
Total:	No.	169	68	34	271	81	8	113	17	5	1	23	267	97	43	407								
	%	62.4	25.1	12.5	100.0	71.7	7.1	100.0	73.9	21.7	4.4	100.0	65.6	23.8	10.6	100.0								

F: Favourable; NF: Not Favourable; DK: Don't know; T: Total

TABLE 26

Attitude Towards Family Planning by Literacy & Age Group
Roothana Block, 1960

MUSLIMS

Literacy	Illiterate						Elementary						High School & Higher Education						Total					
	F	NF	DK	T	F	NF	DK	T	F	NF	DK	T	F	NF	DK	T	F	NF	DK	T				
Age groups																								
15-24	No.	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
	%			
25-34	No.	1	1	...	2	...	2	...	2	...	...	2	...	...	...	2	5	1	...	...	6
	%	50.0	50.0	...	100.0	...	100.0	...	100.0	...	100.0	100.0	...	...	...	83.3	16.7	...	...	...	100.0
35-44	No.	1	...	...	1	...	1	...	1	...	...	1	...	1	...	3	2	2	1	...	5
	%	100.0	...	...	100.0	...	100.0	...	100.0	...	100.0	33.3	33.3	33.3	100.0	40.0	40.0	20.0	...	...	100.0
45 and above	No.	1	...	1	2	...	...	...	...	...	...	...	...	1	...	1	1	1	1	...	3
	%	50.0	...	50.0	100.0	...	100.0	...	100.0	...	100.0	...	100.0	100.0	...	33.3	33.3	33.3	...	...	100.0	
Total	No.	3	1	1	5	2	1	...	3	2	1	...	3	2	1	6	8	4	2	...	14			
	%	60.0	20.0	20.0	100.0	66.7	33.3	...	100.0	50.0	33.3	16.7	100.0	57.1	28.6	14.3	...	...	...	...	...

F: Favourable; NF: Not Favourable; DK: Don't know; T: Total.

TABLE 27

Attitude Towards Family Planning by Literacy & Age Group
Roothana Block, 1960

CHRISTIANS

Literacy	Illiterate						Elementary				High School & Higher Education				Total			
	F	NF	DK	T	F	NF	DK	T	F	NF	DK	T	F	NF	DK	T		
Age groups	No.																	
	%																	
15-24	2	4	2	8	...	...	...	...	...	...	...	...	2	4	2	8
	25.5	50.0	25.0	100.0	...	...	...	...	...	...	...	...	25.0	50.0	25.0	100.0
25-34	5	1	...	6	2	1	...	3	...	...	...	...	7	2	...	9
	83.3	16.7	...	100.0	66.7	33.3	...	100.0	...	...	...	...	77.8	22.2	...	100.0
35-44	2	1	...	3	1	...	1	2	1	1	...	2	4	2	1	7		
	66.7	33.3	...	100.0	50.0	...	50.0	100.0	50.0	50.0	...	100.0	57.1	28.6	14.3	100.0		
45 and above	4	1	...	5	2	2	...	4	...	...	...	...	6	3	...	9
	80.0	20.0	...	100.0	50.0	50.0	...	100.0	...	...	...	...	66.7	33.3	...	100.0
Total	No.	13	7	22	5	3	1	9	1	1	...	2	19	11	3	33		
	%	59.1	31.8	100.0	55.6	33.3	11.1	100.0	50.0	50.0	...	100.0	57.6	33.3	9.1	100.0		

F: Favourable; NF: Not Favourable; DK: Don't know; T: Total.

TABLE 28

Attitude by Number of Children Born by Age Group
Roothana Block, 1960

No. of children		0					1					2					3 & above				
		F	NF	DK	T		F	NF	DK	T		F	NF	DK	T		F	NF	DK	T	
Age groups																					
15-24	No.	9	5	3	17		14	3	2	19		3	5	1	9		2	1	0	3	
	%	53.0	29.4	17.6	100.0		73.7	15.8	10.5	100.0		33.3	55.6	11.1	100.0		66.7	33.3	...	100.0	
25-34	No.	19	10	2	31		18	7	2	27		25	3	2	30		37	11	3	51	
	%	61.2	32.3	6.5	100.0		66.7	25.9	7.4	100.0		83.3	10.0	6.7	100.0		72.5	21.6	5.9	100.0	
35-44	No.	9	4	4	17		6	5	1	12		14	1	2	17		39	20	7	66	
	%	53.0	23.5	23.5	100.0		50.0	41.7	8.3	100.0		82.3	5.9	11.8	100.0		59.1	30.3	10.6	100.0	
45 and above	No.	19	6	6	31		16	5	1	22		11	8	4	23		52	18	9	79	
	%	61.2	19.4	19.4	100.0		72.7	22.7	4.6	100.0		47.8	34.8	17.4	100.0		65.8	22.8	11.4	100.0	
Total:		No.	56	25	15	96	54	20	6	80	53	17	9	79	130	50	19	199			
	%	58.3	26.1	15.6	100.0	67.5	25.0	7.5	100.0	67.1	21.5	11.4	100.0	65.3	25.1	9.6	100.0				

F: Favourable; NF: Not Favourable; DK: Don't know; T: Total.

TABLE 29

Years of Spacing Desired - by Sex and Literacy
Roothana Block, 1960

Sex	Men											Women					
	1 Yr	2 Yrs	3 Yrs	4 Yrs	5 Yrs	6 Yrs	Total	Ave- rage	1 Yr	2 Yrs	3 Yrs	4 Yrs	5 Yrs	6 Yrs	Total	Ave- rage	
Literacy	Years of spacing desired																
	No.	2	18	71	18	4	2	115	3.1	...	24	93	43	13	...	173	3.3
	%	1.7	15.7	61.7	15.7	3.5	1.7	100.0		...	13.9	53.8	24.8	7.5	...	100.0	
	No.	3	20	59	9	5	1	97	3.0	...	3	11	7	4	...	25	3.5
	%	3.1	20.6	60.8	9.3	5.2	1.0	100.0		...	12.0	44.0	28.0	16.0	...	100.0	
	No.	...	4	14	3	4	...	25	3.3	...	...	1	...	2	...	3	4.3
%	...	16.0	56.0	12.0	16.0	...	100.0		...	...	33.3	...	66.7	...	100.0		
Total	No.	5	42	144	30	13	3	237	3.1	...	27	105	50	19	...	201	3.3
	%	2.1	17.7	60.7	12.7	5.5	1.3	100.0		...	13.4	52.2	24.9	9.5	...	100.0	

Non-respondents-4 males, 12 Females

TABLE 30

Attitude by Need Felt and Age Group
Roothana Block, 1960

Attitude		Favourable			Not Favourable			Don't know			Total		
		Yes	No	Total	Yes	No	Total	Yes	No	Total	Yes	No	Total
15-24	No.	4	24	28	1	13	14	1	5	6	6	42	48
	%	14.3	85.7	100.0	7.1	92.9	100.0	16.7	83.3	100.0	12.5	87.5	100.0
25-34	No.	25	73	98	1	30	31	...	9	9	26	112	138
	%	25.5	74.5	100.0	3.1	96.9	100.0	...	100.0	100.0	18.8	81.2	100.0
35-44	No.	24	45	69	3	27	30	2	11	13	29	83	112
	%	34.8	65.2	100.0	10.0	90.0	100.0	15.4	84.6	100.0	25.9	74.1	100.0
45 and above	No.	16	81	97	5	32	37	1	19	20	22	132	154
	%	16.5	83.5	100.0	13.5	86.5	100.0	5.0	95.0	100.0	14.3	85.7	100.0
Total	No.	69	223	292	10	102	112	4	44	48	83	369	452
	%	23.6	76.4	100.0	8.9	91.1	100.0	8.3	91.7	100.0	18.4	81.6	100.0

Non-respondents-2

TABLE 31

Willingness Towards Family Planning by Sex, Attitude and Age Group
Roothana Block, 1960

Age Groups	Men						Women						Total											
	F		NF		DK		Total		F		NF		DK		Total									
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%								
15-24	4	33.3	12	1	14.3	7	...	1	5	25.0	20	6	37.5	16	3	42.9	7	...	5	9	32.1	28		
25-34	29	56.9	51	...	...	14	...	2	29	43.3	67	20	41.7	48	3	17.6	17	...	7	23	31.9	72
35-44	17	48.6	35	1	4.8	21	2	40.0	5	20	32.8	14	41.2	34	1	11.1	9	2	25.0	17	33.3	51		
45 & above	17	27.9	61	21	1	9.1	11	18	19.4	93	
Total	67	42.1	159	2	3.2	63	3	15.8	19	72	29.9	241	40	40.8	98	7	21.2	33	2	10.0	20	49	32.5	151

F: Favourable; NF: Not Favourable; DK: Don't know.

- Note: Among Women
1. With favourable attitude 37 have not expressed whether they are willing or not.
 2. With not favourable attitude 16 have not expressed whether they are willing or not.
 3. With 'No attitude' (Don't know) 9 have not expressed whether they are willing or not.

TABLE 32

Awareness of the Community About Depot Holders
Working in their Village
Roothana Block

	Men	Women	Total
Not aware	3.8% (4)	3.5% (4)	3.7% (8)
Aware of one depot holder only	26% (27)	16.5% (19)	21% (46)
Aware of two depot holders	48.1% (50)	40% (46)	43.8% (96)
Aware of three and more depot holders	22.1% (23)	40% (45)	31.5% (65)

TABLE 33

Attitude of the Community Towards Depot
Holder System and Reason
Roothana Block

FACTORS	Men (104)		Women (115)		Total (219)	
	No.	%	No.	%	No.	%
Favourable	99	95.2	74	64.3	173	79
Reduction of population	76	73.1	53	46.1	129	58.9
Govt. sponsored programme	15	14.4	21	18.3	36	16.4
Social Work	8	7.7	1	0.9	9	4.1
Helps in spacing of births	--	--	6	5.2	6	2.7
Protects mother's health	--	--	3	2.6	3	1.4
General welfare of the family	18	17.3	3	2.6	21	9.8
Unfavourable	5	4.9	6	5.3	11	5
Affects health	1	1	2	1.7	3	1.4
Looks mean job	1	1	--	--	1	0.5
Against religion	3	2.9	1	2.6	4	1.8
Aids immorality	1	1	3	2.6	4	1.8
Govt. Programme	--	--	5	4.3	5	2.3
Neutral	0	--	35	30.4	35	16.0

(Note: More than one reason was given by the respondents)

TABLE 34

Factors to be Considered in Selecting Depot Holders
and their Respective Importance as Perceived by the
Community
Roothana Block

FACTORS		Number of respondents reporting important					
		Men No.	(104) %	Women No.	(115) %	Total No.	(219) %
Age	Below 30	--	--	4	3.5	4	1.8
	30 - 45	24	23.1	81	70.4	105	47.9
	More than 45	3	2.9	7	6.1	10	4.6
Desirability of having depot holders of each sex		39	37.5	115	100	154	70.3
Married person		77	74	115	100	192	87.7
Social status		76	73.1	25	21.7	101	46.1
Castewise representation		34	32.6	56	48.7	90	41.1
Availability of the depot holder		30	28.8	113	98.3	143	65.3
Example setter		87	83.7	60	52.2	147	67.1
Education		42	40.4	75	65.2	117	53.4
Good conduct		62	59.6	75	65.2	137	62.6
Ability to explain about family planning		26	25	37	32.2	63	28.8
Commanding respect		9	8.7	1	0.9	10	4.6

TABLE 35

Awareness of Possibility of Postponement of Pregnancy by Sex
and Family Size in Number and Percent
Roothana Block, 1965

Sex	MEN			WOMEN			TOTAL		
	Inter- viewed	No.	%	Inter- viewed	No.	%	Inter- viewed	No.	%
Small (3 or less)	161	142	88.8	166	96	57.8	327	238	72.8
Large (4 or more)	94	87	91.6	79	62	78.5	173	149	85.6
Total	225	229	89.8	245	158	64.5	500	387	77.4

TABLE 36

A Comparison of the Number and Percent of Men and Women Informed About Family Planning

Methods in Five Villages

Roothana Block, 1962 and 1966

F. P. Methods	Men 1962			Men 1966			Women 1962			Women 1966		
	No. interviewed	No. aware of the method	%	No. interviewed	No. aware of the method	%	No. interviewed	No. aware of the method	%	No. interviewed	No. aware of the method	%
Condom	75	20	26.7	57	50	87.7	60	16	26.7	55	28	50.9
Foam tablets	75	15	20.0	57	48	84.2	60	17	28.3	55	21	38.2
IUCD	75	—	—	57	14	24.6	60	—	—	55	2	3.6
Sterilization	75	51	68.7	57	56	98.2	60	36	60.9	55	47	85.5
Rhythm	75	15	20.0	57	39	66.7	60	10	16.7	55	10	18.4
C. interruptus	75	17	22.8	57	29	50.9	60	9	15.0	55	13	23.6

TABLE 37

Awareness About the Various Family Planning Methods Among the
Sample Population by Sex and Type of Method
Roothana Block, 1965

Methods	Men		Women		Total	
	(Total 255) No. aware of the method	%	(Total 245) No. aware of the method	%	(Total 500) No. aware of the method	%
Condom	224	89.4	152	62.0	376	75.2
Foam tablets	209	82.0	128	52.2	337	67.4
Rhythm	180	70.6	38	15.5	218	43.6
Coitus Interruptus	168	65.8	70	28.6	238	47.6
Sterilization	251	98.4	218	89.0	469	93.8
I. U. C. D.	59	23.1	9	3.7	68	13.6

TABLE 38

Knowledge of Family Planning Methods Out of the
75 Men and 60 Women Interviewed

Method	Men		Women	
	No.	Percent	No.	Percent
Withdrawal	17	22.8	9	15.0
Safe period	15	20.0	10	16.7
Foam tablet	15	20.0	17	28.3
Condom	20	26.7	16	26.7
Diaphragm	15	20.0	10	16.7
Jelly	6	8.0	12	20.0
Vasectomy	52	69.3	34	56.7
Salpingectomy	51	68.0	39	65.0
Induced abortion	2	2.7	7	11.7
Other indigenous methods	4	5.3	7	11.7

TABLE 39

Communication About Family Planning

by Sex, Age and Literacy

Roothana Block, 1965

	Men (N=255)		Women (N=245)		Total (N=500)	
	# aware of F.P.	% talked to others	# aware of F.P.	% talked to others	# aware of F.P.	% talked to others
Age						
Below 25	13	38.5%	48	4.2%	61	11.5%
25-34	80	31.3%	104	13.5%	184	21.2%
35-44	95	34.7%	53	11.3%	148	26.4%
45 & above	63	27.0%	13	23.1%	76	26.3%
Literacy						
Illiterate	79	21.5%	183	10.9%	262	14.1%
Elementary	126	30.2%	18	22.2%	144	29.2%
Secondary & higher	46	54.4%	17	5.9%	63	41.3%
	251	31.9%	218	11.5%	469	22.4%

TABLE 40

Sources of Knowledge of Family Planning
Roothana Block

Percentage distribution of women reporting different sources of knowledge of family planning.

	By self experience	Friends	Relatives	Official health & F.P. workers	From sterilized persons	Other source: newspapers, meetings, etc.	No answer (can't tell the source)
Withdrawal	22.2	---	11.1	44.4	---	22.2	---
Safe period	---	20.0	20.0	30.0	---	30.0	---
Foam tablet	---	23.5	5.9	47.1	---	17.6	5.9
Condom	---	25.0	6.3	43.7	---	18.8	6.3
Diaphragm	---	40.0	---	30.0	---	20.0	10.0
Jelly	---	33.3	8.3	33.3	---	16.7	8.3
Vasectomy	---	20.6	5.9	38.2	11.8	17.7	5.9
Salpingectomy	---	18.0	2.6	35.8	20.5	18.0	5.1
Induced abortion	42.9	42.9	---	---	---	---	14.2
Other indigenous methods	---	57.2	14.2	---	---	---	28.5

Percentage distribution of men reporting different sources of knowledge of family planning.

Withdrawal	11.8	35.3	---	23.5	---	23.5	5.9
Safe period	6.7	26.6	6.7	26.6	---	26.6	6.7
Foam tablet	---	20.0	13.4	40.0	---	26.6	---
Condom	---	20.0	10.0	50.0	---	25.0	---
Diaphragm	---	20.0	13.4	46.7	---	33.3	---
Jelly	---	33.3	16.7	33.3	---	16.7	---
Vasectomy	---	28.9	3.8	30.8	13.4	23.0	---
Salpingectomy	---	29.5	3.9	29.5	13.7	23.5	---
Induced abortion	---	100.0	---	---	---	---	---
Other indigenous methods	75.0	25.0	---	---	---	---	---

TABLE 41

Contraceptive Usage in Roothana Block

1965

	# informed of at least one method	Users of temporary methods	Sterilized	Not used any method
Parity				
3 or fewer children	297	19.2% (57)	1.2% (3)	79.8% (237)
4 or more children	172	18.6% (32)	11.1% (19)	70.3% (121)
Income				
Below \$240/year	408	17.9% (73)	4.2% (17)	77.9% (318)
Above \$240/year	61	26.2% (16)	8.2% (5)	65.6% (40)
Education				
Illiterate	259	16.2% (42)	3.5% (9)	80.3% (208)
Elementary	132	20.5% (27)	6.1% (8)	73.4% (97)
Secondary or higher	78	25.6% (20)	6.4% (5)	68.0% (53)
	469	19.0% (89)	4.7% (22)	76.3% (358)

TABLE 42

Age at Time of Vasectomy
Roothana Block, 1960-1970

Age	#	%
20-24	12	1.2
25-29	113	11.0
30-34	197	19.1
35-39	314	30.5
40-44	193	18.8
45-49	103	10.0
above 50	35	3.4
unknown	62	6.0
TOTAL	1,029	100.0

The data refer to vasectomized patients who were listed in the eligible couples register in September, 1970.

TABLE 43

Sterilization Progress (Vasectomy)

from 1961 to August 31, 1971

Roothana Block

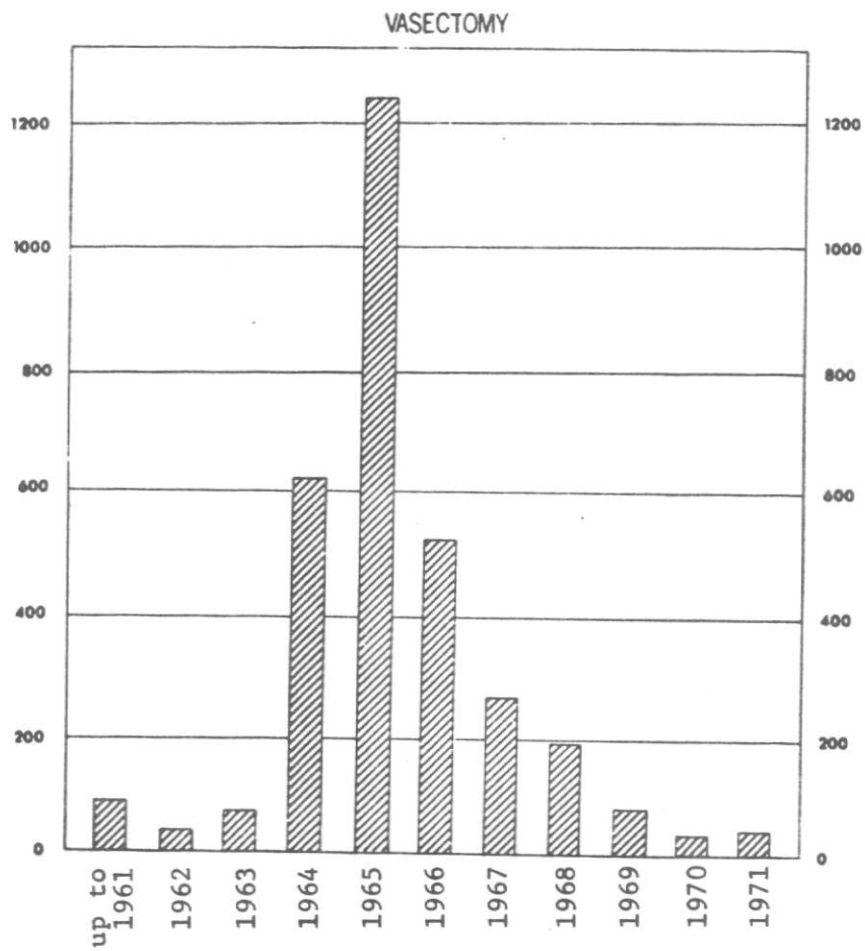


TABLE 44

Vasectomy Operations in Program Villages of Roothana Block

1963-1968

<u>Program Began</u>	<u>No. of Villages</u>	<u>Population (1967 Estimate)</u>	<u>Vasectomies</u>						
			<u>1963</u>	<u>1964</u>	<u>1965</u>	<u>1966</u>	<u>1967</u>	<u>6 months 1968</u>	<u>Total</u>
1962	7	14,165	24	66	129	52	12	3	286
1963	21	24,223	23	170	177	80	33	6	489
1964	12	12,800	5	192	125	51	55	7	435
1965	22	29,040	5	112	601	299	106	16	1139
1966	24	25,487	--	46	143	90	46	24	349
TOTAL	86	106,215	57	586	1175	572	252	56	2698

TABLE 45

Demographic Characteristics of Vasectomized Persons
 at Time of Vasectomy
 Four Sample Blocks in Madera, 1966-67

[N=297]

	%	N
Proportion with living wife	83.8	249
Proportion with living wife in childbearing ages (15-45)	63.3	188
Proportion with wife 15-45 and three or more children	38.0	113
Average age		45.75
Average number living children		3.4
Average age of wife		39.5
Average parity of wife		4.8
Average number living children per wife		3.2
Average time elapsed since last live birth to wife (in years)		5.7

TABLE 46

First Source of Information about Vasectomy Operation Classified by the Educational Status
and Marital Status of Vasectomised persons
Four Blocks in Madera State, 1966-67

First Source of Information about Vasectomy Operation to Vasectomised Person	Sample Number	Educational Status			Marital Status and No. of living children to living wives					
		Illiterate	Literate	1-5 years of schooling	More than 5 years of schooling	Not married	Widowed, Divorced, Separated	2 or less children	3-5 children	6 or more children
Canvasser	144	75.7	13.2	9.7	1.4	2.8	15.3	31.9	41.0	9.0
Village Officials	8	62.5	25.0	12.5	0.0	0.0	0.0	25.0	62.5	12.5
Other Vasectomised persons	52	86.5	1.9	9.6	1.9	7.7	9.6	25.0	46.2	11.5
Health Staff	29	62.1	20.7	6.9	10.3	3.4	0.0	24.1	55.3	17.2
Public	59	72.9	15.3	10.2	1.7	1.7	18.6	27.1	40.7	11.9
Persons unidentified	5	80.0	20.0	0.0	0.0	0.0	0.0	20.0	80.0	0.0
Total	297	75.4	12.8	9.4	2.4	3.4	12.8	28.6	44.4	10.8

TABLE 47

First Source of Information about Vasectomy Operation Classified by Consultation with Wife, Motivating Factors for Undergoing Vasectomy Operation, Current Attitude Towards Vasectomy Programme (in percentage)

Four Blocks in Madera State, 1966-67

First Source of Information about Vasectomy Operation to Vasectomised Person	Sample Number	Consultation with wife				Motivating Factor for Undergoing Vasectomy Operation							Current Attitude Towards Vasectomy Programme		
		Consulted	Not consulted	No living wife	Not married	For Money	To limit the family size	Health Reasons	Promised Medical help and no prior information given	Canvasser compelled	For Money and to limit the size of family	Unfavourable	Neutral	Favourable	
Canvasser	144	37.5	45.1	14.6	2.8	47.9	31.2	2.8	5.5	6.3	6.3	6.3	31.3	18.7	50.0
Village Officials	8	62.5	37.5	0.0	0.0	25.0	50.0	12.5	0.0	0.0	12.5	0.0	0.0	12.5	87.5
Other Vasectomised persons	52	38.5	44.2	9.6	7.7	46.2	34.6	3.8	9.6	0.0	5.8	0.0	32.7	11.5	55.8
Health Staff	29	65.5	31.0	0.0	3.4	17.2	69.0	3.4	0.0	0.0	10.3	0.0	10.3	10.3	79.3
Public	59	37.3	42.4	18.6	1.7	40.7	42.4	5.1	5.1	3.4	3.4	3.4	16.9	32.2	55.9
Person unidentified	5	20.0	80.0	0.0	0.0	60.0	0.0	0.0	0.0	0.0	40.0	0.0	20.0	40.0	40.0
Total	297	40.7	43.4	12.5	3.4	42.8	37.7	3.7	5.4	3.7	6.7	6.7	24.6	19.5	55.9

TABLE 48

Sterilization Progress (Tubectomy) from 1961 to August 31, 1971

Roothana Block

TUBECTOMY

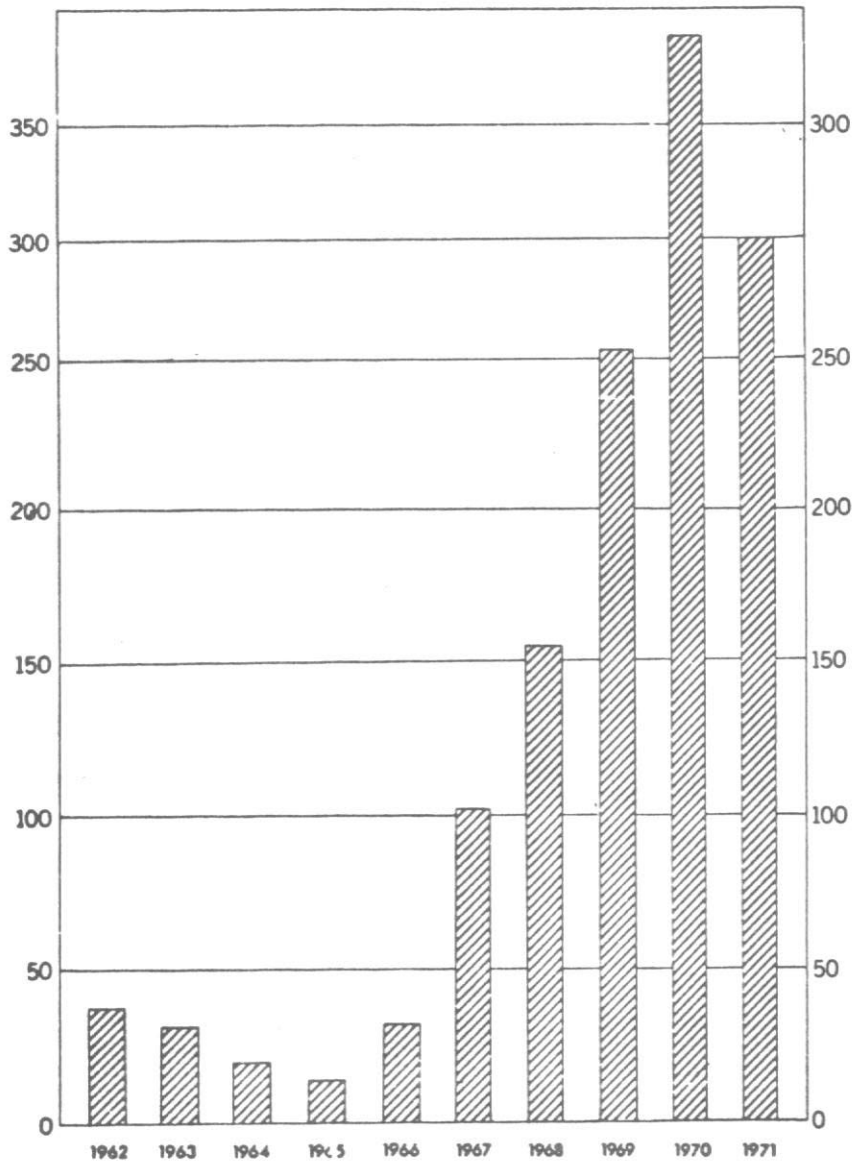


TABLE 49

Tubectomy Operations in Program Villages of Roothana Block

1963-1968

Program Began	No. of Villages	Population (1967 Estimate)	Through 1962	<u>Tubectomies</u>						Total
				1963	1964	1965	1966	1967	6 months 1968	
1962	7	14,165	3	1	--	1	1	2	4	12
1963	21	24,223	2	1	4	--	2	4	4	17
1964	12	12,800	1	--	--	--	1	4	8	14
1965	22	29,040	57	27	14	12	12	71	54	247
1966	24	25,487	4	3	3	--	4	16	6	36
TOTAL	86	106,215	67	32	21	13	20	97	76	326

TABLE 50

Age at Time of Tubectomy

Roothana Block, 1967-1970

Age		
15-19	1	0.1
20-24	37	4.6
25-29	359	45.0
30-34	259	32.5
35-39	114	14.3
40-44	17	2.1
45-49	1	0.1
above 50	--	--
unknown	10	1.3
Total	798	100.0

TABLE 51

Age by Living Children Distribution by the Wives of
Vasectomised Persons and of Salpinjctomised women

No. of living children Age	0	1	2	3	4	5	6	7	8	9	Total
20 - 24			3	21	8						32
25 - 29		1	6	574	203	36	11	1			832
30 - 34	1		6	483	456	176	56	21	3	1	1203
35 - 39		2	2	307	340	141	91	23	12	3	921
40 - 44				33	45	32	32	7	4	1	144
45 - 49					2		1				3
	1	3	17	1418	1054	385	181	52	19	5	3135

TABLE 52

Progress of IUCD from 1965 to August 31, 1971

Roothana Block

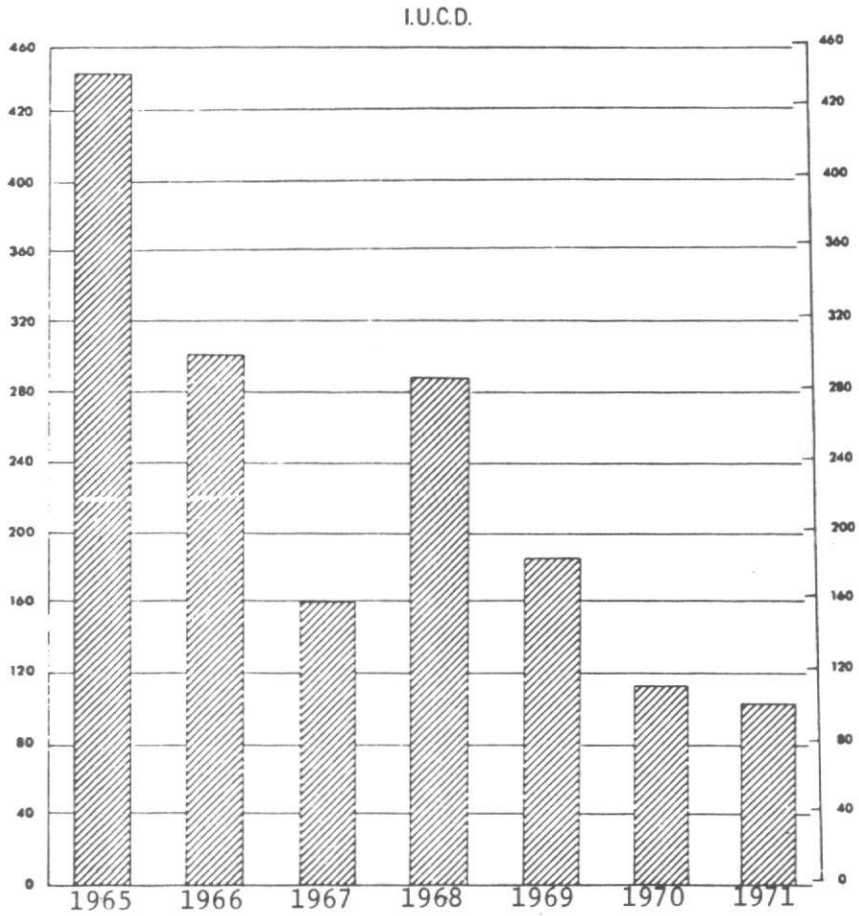


TABLE 53

IUCD Insertions in Program Villages of Roothana Block
1965-1968

<u>Program Began</u>	<u>No. of Villages</u>	<u>Population (1967 Estimate)</u>	<u>IUCD Insertions</u>			<u>6 months 1968</u>
			<u>1965</u>	<u>1966</u>	<u>1967</u>	
1962	7	14,165	31	22	24	22
1963	21	24,223	34	43	20	7
1964	12	12,800	15	13	7	45
1965	22	29,040	204	109	23	31
1966	24	25,487	82	39	45	27
TOTAL	86	106,215	366	226	119	132

TABLE 54

IUCD Acceptors by Number of Insertions and Status
Roothana Block

Number of Insertions	Presently User	Removed	Expelled	Unknown	Total
One insertion	122	198	97	10	427
Two insertions	---	7	15	---	22
Three insertions	---	1	4	---	5
Four insertions	--	---	2	---	2
Total	122	206	118	10	456

TABLE 55

Life Table Analysis for IUCD Acceptors

Roothana Block

<u>No. of months</u>	<u>Users</u>	<u>Removed or expelled</u>
1	418	36
2	382	19
3	363	18
4	345	16
5	323	17
6	312	19
7	293	10
8	283	9
9	274	12
10	262	11
11	251	9
12	242	12
13	230	14
14	216	14
15	202	7
16	195	11
17	184	6
18	178	6
19	172	2
20	170	5
21	165	2
22	163	5
23	158	10
24	148	5
25	143	3
26	140	4
27	136	2
28	134	2
29	132	2
30	130	4
31	126	1
32	125	1
33	124	2
34	122	--

TABLE 56

Percentage Distribution of IUCD Acceptors and Acceptance Rates
by Age Groups
Roothana Block, 1966

N=541

Age groups	Percentage of IUD Acceptors	Acceptance rate per 1000 married women*
15-19	3.3	8.9
20-24	22.6	29.7
25-29	35.7	46.8
30-34	22.0	37.2
35-39	13.3	26.5
40-44	3.1	10.6
Total	100.0	30.4

*Wherever the acceptance rates are calculated it is assumed that there are 160 married women in the age group 15-44 per 1000 population. The percentage distribution of the married women in general population is obtained from the unpublished data of the Standard Fertility Survey completed in 1970 in Roothana Block on a probability sample of 3000 households. These base figures relate to 1-1-1966.

TABLE 57

Percentage Distribution of IUCD Acceptors and Acceptance Rates
by Parity
Roothana Block, 1966

N=541		
Parity	Percentage of IUD Acceptors	Acceptance rate per 1000 married women
1 or less	5.2	6.1
2	11.8	24.1
3	15.3	31.5
4	18.7	47.7
5	17.2	45.9
6	12.8	44.1
7	8.3	42.2
8	7.0	82.2
9+	3.7	35.1
Total	100.0	30.4

TABLE 58

Average Parity of IUCD Acceptors and Married Women
in General Population by Age Groups
Roothana Block, 1966

Age	Average parity	
	IUCD Acceptors	General Population
15-19	1.7	0.6
20-24	2.7	2.7
25-29	4.3	3.3
30-34	6.0	4.5
35-39	6.5	5.5
40-44	7.0	5.7

TABLE 59

Percentage Distribution of IUCD Acceptors and Acceptance Rates
by the Number of Living Children
Roothana Block, 1966

N=541

No. of living children	Percentage of IUCD Acceptors	Acceptance rate per 1000 married women
1 or less	7.4	6.7
2	17.4	26.8
3	24.2	43.8
4	22.4	53.1
5	12.8	40.8
6	8.5	57.5
7+	7.4	97.8
Total	100.0	30.4

TABLE 60

Percentage Distribution of IUCD Acceptors and Acceptance Rates
by Educational Status of Acceptors
Roothana Block, 1966

N=541

Educational Status	Percentage of IUD Acceptors	Acceptance rate per 1000 married women
Illiterate or literate with no formal education	60.6	23.1
Five or less years of schooling	23.3	55.8
6 - 8 years of schooling	12.8	62.6
More than 8 years of schooling	3.4	84.3
Total	100.0	30.4

TABLE 61

Percentage Distribution of IUCD Acceptors
by Their Husbands' Education
Roothana Block, 1966

N=541

Educational Status of Husband	Percentage
Illiterate or literate with no formal education	24.6
Five or less years of schooling	27.7
6-8 years of schooling	30.7
More than 8 years of schooling	17.0
Total	<u>100.0</u>

TABLE 62

Percentage Distribution of IUCD Acceptors
by Their Occupation
Roothana Block, 1966

N=541

OCCUPATION	PERCENTAGE
Unskilled Labour - Agriculture and others	44.9
Teacher, maternity assistant and cultivator	7.4
Housewife	39.9
Unknown	7.8
Total	<u>100.0</u>

TABLE 63

Percentage Distribution of IUCD Acceptors
by Their Husbands' Occupation
Roothana Block, 1966

N=541

Occupation	Percentage
Unskilled labour-Agriculture and others	28.8
Skilled-driver, wireman, carpenter	3.1
Officials-postmaster, teachers, clerks etc.	10.2
Cultivator-owner and tenant	17.4
Weavers and traders	37.5
Others	3.0
Total	<u>100.0</u>

TABLE 64

Percentage Distribution of IUCD Acceptors
by Annual Household Income
Roothana Block, 1966

N=541

Annual household	Percentage
Less than \$80	32.5
\$80 - \$160	46.2
More than \$160	20.0
Unknown	1.3
Total	<u>100.0</u>

TABLE 65

The Percentage Distribution of IUD Acceptors
and Acceptance Rates by Religion
Roothana Block, 1966

N=541

Religion	Percentage of IUD acceptors	Acceptance rates per 1000 married women
Hindu	89.7	32.1
Muslim	8.5	57.5
Christian	1.8	5.3
Total	<u>100.0</u>	<u>30.4</u>

TABLE 66

Reason for Choosing IUCD by Age Group of Acceptors

Roothana Block

	Did not know any other method	Spacing	Limiting the no. of chil- dren	Convenience	Not Collected	Total	Percen- tage
15-19	1	15	2	-	-	18	3.35
20-24	6	86	28	3	1	124	22.91
25-29	7	82	98	4	2	193	35.57
30-34	3	18	94	2	1	118	21.79
35-39	3	7	61	-	1	72	13.21
40-44	1	1	15	-	-	17	3.17
Total	21	209	298	9	5	542	100.00
Percentage*	3.91	38.91	55.50	1.68		100.	

*Percentage does not include 'not collected' group.

TABLE 67

Reason Stated for Choosing IUCD by the No. of Living Children

of Acceptors

Roothana Block

	Did not know any other method	Spacing	Limiting the no. of children	Convenience	Unknown	Total	Percentage
0	-	4	-	-	1	5	0.74
1	2	31	2	-	-	35	6.52
2	4	66	22	2	-	94	17.50
3	2	63	63	2	2	132	24.21
4	4	41	75	2	-	122	22.72
5	5	3	60	-	1	69	12.66
6	4	1	39	1	-	45	8.38
7	-	--	28	1	1	30	5.40
8	-	--	8	1	-	9	1.68
9	-	--	--	-	-	-	-
10	-	--	--	-	-	-	-
11 or more	-	--	1	-	-	1	0.19
Total	21	209	298	9	5	542	100.00
Percentage	3.91	38.92	55.49	1.68		100	

TABLE 68

Distribution of IUCD Acceptors by the Use of One or Other
of the Contraceptives

Less than 1	Months						Years			Not used	Total
	1 - 3	3 - 6	6 - 9	9 - 12	1 - 3	3 - 6	3 - 6	Unknown			
7	34	18	10	--	59	3	3	408	3	542	
Numbers											
Percentage	1.29	6.27	3.32	1.85	--	10.89	0.55	75.28	0.55	100	

TABLE 69

Reasons Stated by the IUCD Acceptors for Removal
Roothana Block

<u>Reason for Removal</u>	<u>No. of Times Reported</u>
1. Bleeding	76
2. White discharge	35
3. Pain	76
4. Weakness	55
5. Menstruation troubles	34
6. Pregnancy with loop "in situ"	3
7. Fear	12
8. To have a baby	6

TABLE 70

Trend of Condom Use from 1963 to 1969

Roothana Block

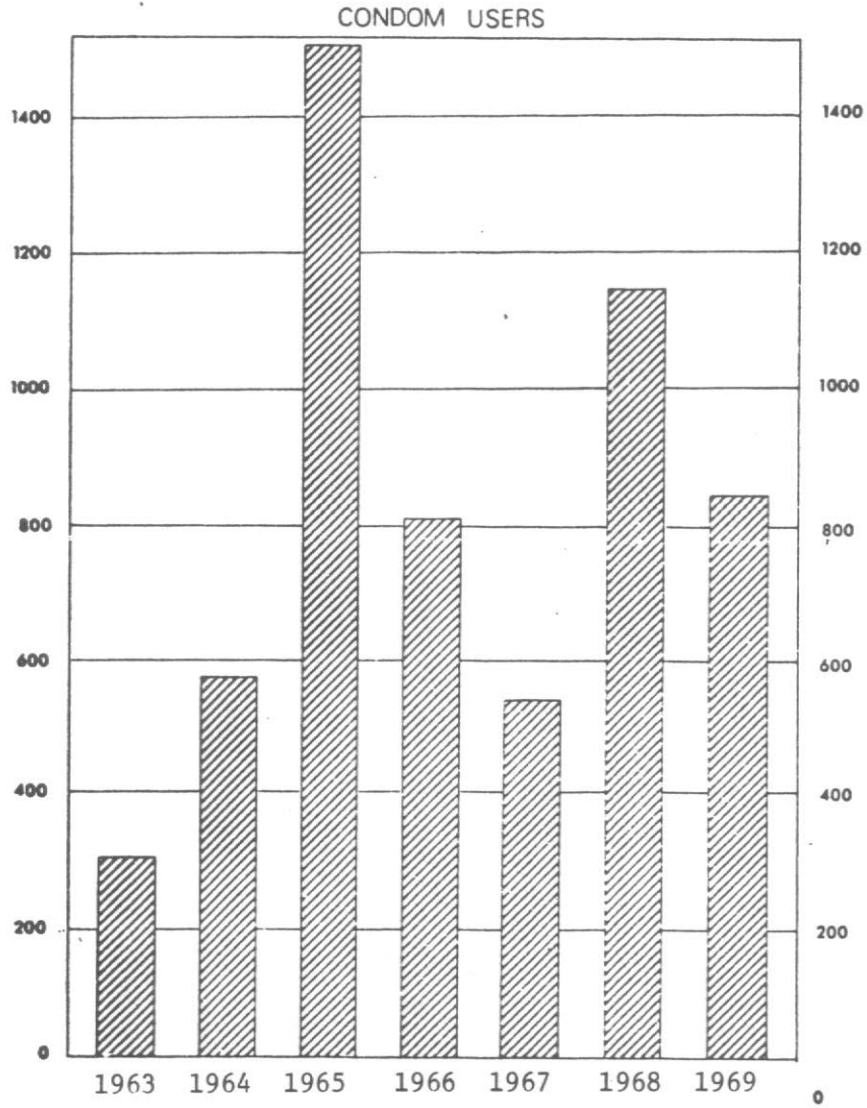


TABLE 71

Distribution of Condoms in Program Villages of Roothana Block

1963-1968

Program Began	No. of Villages	Population (1967 Estimate)	Packets Distributed*					6 months 1968
			1963	1964	1965	1966	1967	
1962	7	14,165	1042	2302	3634	4132	1727	580
1963	21	24,223	299	1787	5893	7065	2867	1249
1964	12	12,800	43	1420	4540	4855	2104	118
1965	22	29,040	5467	3711	11668	10899	2844	782
1966	24	25,487	--	208	1588	3562	2213	903
TOTAL	86	106,215	6851	6428	26323	30513	11755	3632

*Each packet contains three condoms.

TABLE 72

Foam Tablets Distributed in Program Villages of Roothana Block

1963-1966

<u>Program Began</u>	<u>No. of Villages</u>	<u>Population (1967 Estimate)</u>	<u>Tubes Distributed*</u>			
			<u>1963</u>	<u>1964</u>	<u>1965</u>	<u>1966</u>
1962	7	14,165	221	376	179	14
1963	21	24,223	82	426	248	29
1964	12	12,800	11	84	195	119
1965	22	29,040	56	3	25	39
1966	24	25,487	--	--	4	196
TOTAL	86	106,215	370	889	653	397

*Each tube contains twelve foam tablets.

TABLE 73

Incidence of Induced Abortions, Average Parity and Month of Pregnancy at
Which Aborted, by Women of Different Age Groups

Chinnala Survey, 1960-1963

Age group of women	No. in the sample	No. of live births for these women from 1.1.60	No. of induced abortions reported from 1.1.60	Incidence* rate of in- duced abor- tions	Average** parity of abortion	Average month of pregnancy at the time of abortion
20-22	9	9	1	11.1	3.0	3.0
23-25	15	18	5	27.8	4.0	2.4
26-28	26	37	2	5.4	7.0	2.5
29-31	20	23	11	47.8	6.5	2.5
32-34	6	4	4	100.0	8.5	3.0
35-37	13	9	2	22.2	9.0	2.0
38-40	11	5	7	140.0	10.4	3.1
Total	100	105	32	30.5	7.3	2.7

*Expressed in relation to 100 live births.

**Parity defined as order of conception including live births, still births and abortions.

TABLE 74

Incidence of Induced Abortions, Average Parity and Month of Pregnancy at Which Aborted, by Women of Different Age Groups

Chinnala Survey, 1960-1963

Age group of women	No. in the sample	No. of live births for these women from 1.1.60	No. of induced abortions reported from 1.1.60	Incidence* rate of induced abortions	Average** parity of abortion	Average month of pregnancy at the time of abortion
20-22	9	9	2	22.2	3.0	3.5
23-25	15	18	1	5.6	4.0	4.0
26-28	26	37	5	13.5	5.6	3.0
29-31	20	23	4	17.4	5.5	3.5
32-34	6	4	3	75.0	8.0	3.7
35-37	13	9	1	77.8	8.3	2.4
38-40	11	5	1	20.0	11.0	2.0
Total	100	105	23	21.9	6.7	2.8

*Expressed in relation to 100 live births.

**Parity defined as order of: conception including live births, still births and abortions.

TABLE 75

Family Planning Program Achievements as of
August 31, 1971
Roothana Block

Family Planning	Achievements	Percentage of coverage to eligible couples
Vasectomy	3,130	15.88
Tubectomy	1,422	7.21
I.U.C.D.	1,612	8.18
Condom-using couples	607	3.08
Block Total	6,771	34.35

Population: 123,138; Eligible Couples: 19,714.

THE EAST-WEST CENTER is a national educational institution established in Hawaii by the U.S. Congress in 1960 to “promote better relations and understanding between the United States and the nations of Asia and the Pacific through cooperative study, training and research.”

Each year the East-West Center brings together more than 1,500 men and women from the many nations and cultures of these regions. They work and study together while exchanging ideas and experiences in cooperative programs seeking solutions to important problems of mutual concern to East and West. For each participant from the United States in Center programs, two participants are sought from the more than 60 countries and territories in Asia and the Pacific area.

Five institutes with international, interdisciplinary academic and professional staffs conduct the East-West Center’s problem-oriented programs. East-West areas on which Center programs are focused include communication across national barriers, culture and language learning, food systems, population dynamics, and technological adaptation in developmental processes aimed at improving the quality of life. Each year the Center awards a limited number of Open Grants for graduate degree education and innovative research by Senior Fellows in areas not encompassed by institute programs.

The Center is directed by an international Board of Governors of a public, non-profit educational corporation—known as the “Center for Cultural and Technical Interchange Between East and West, Inc.”—created by the Hawaii State Legislature in 1975. The United States Congress provides basic funding for Center programs and for the variety of scholarships, fellowships, internships and other awards. Because of the cooperative nature of Center programs, financial support and cost-sharing arrangements are also provided by Asian and Pacific governments, regional agencies, private enterprise and foundations. The Center is situated on land adjacent to and provided by the University of Hawaii, which conducts classes and grants degrees for degree-seeking East-West Center students who also are involved in the Center’s problem-oriented programs.

THE EAST-WEST COMMUNICATION INSTITUTE concentrates on the use of communication in economic and social development and in the sharing of knowledge across cultural barriers. The Institute awards scholarships for graduate study in communication and related disciplines, primarily at the University of Hawaii; conducts a variety of professional development projects for communication workers in specialized fields of economic and social development; invites Fellows and visiting scholars to the Center for study and research in communication and to help design projects; offers Jefferson Fellowships for Asian, Pacific, and U.S. journalists for a semester at the Center and the University of Hawaii; conducts and assists in designing and carrying out research; arranges conferences and seminars relating to significant topics in communication; conducts a world-wide Inventory-Analysis of support, services and country program needs in communication programs; assembles relevant communication materials with emphasis on Asian and Pacific material and makes these available for students, scholars, and practitioners at the Center and elsewhere; and publishes papers, reports, newsletters, and other materials emanating from the above activities.