1985 CHOGORIA COMMUNITY HEALTH SURVEY

Report of Principal Findings
October 1987

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I. INTRODUCTION AND BACKGROUND

During August 1985, the Community Health Department of Chogoria Hospital in central Kenya carried out a survey of women of childbearing age throughout the area in which it provides services. This survey, the Chogoria Community Health Survey (CCHS), covered a variety of topics related to maternal and child health and the use of health services. It was designed to gauge various aspects of the health status and needs of the population in the catchment area and, thus, to suggest appropriate strategies and directions for future interventions. The survey also documents the current situation in an area that is reported to be one of the most successful in rural sub-Saharan Africa in regard to maternal and child health and family planning.

The Chogoria Hospital Catchment Area and its Population

The Chogoria Hospital catchment area was established in the early 1920s in consultation with other missionary groups working in the district. Despite the fact that Chogoria Hospital is operated by the Presbyterian Church of East Africa (PCEA), it serves the entire community, regardless of denominational affiliation. The catchment area now served stretches roughly 30 miles (50 kms) from North to South and 35 miles (60 kms) from East to West and contains between 300,000 and 400,000 people. (A more precise estimate is unavailable, because of rapid population growth since the last census in 1979 and difficulty in classifying exactly which people are in the catchment area.) The catchment area can be divided into three zones, according to elevation. The high altitude zone, primarily a tea-growing area, is the best off economically and healthwise. The middle zone is a coffee-growing area and is only slightly less well-off than the high zone in most respects. The

semi-arid low zone (also locally referred to as the Tharaka area) is a much poorer area with poorer health conditions, less fertile soil, and lower population density. The population has been growing rapidly despite the adverse conditions there, mainly due to increased pressure on the land in the higher elevations.

The catchment area is completely rural with relatively little of the population living in towns or large villages. Most houses are surrounded by small holdings of land owned by the father or male household head. Available land in the high-altitude, tea-growing area and the middle-altitude, coffee-growing area, is becoming increasingly scarce. With each passing generation, the family-holding (or "shamba") is split up amongst the legitimate sons of the landowner. Daughters do not normally inherit land as they marry and join the family of their husband, but they may be given some land if they remain unmarried. Illegitimate sons or daughters do not normally inherit any land.

Increasing pressure on the land in the high and middle altitude zones is causing many families to move into the semi-arid, low altitude zone. Infrastructure and basic services, such as health and education, are lacking in the low zone and will take some time to catch up with the growing population. Despite the easy availability of land there, the land is mostly of low potential and cannot well support the relatively large numbers of people now moving into the area.

As the whole of the catchment area is within Meru District, the hospital serves, almost exclusively, people from the Meru tribe. There are small

groups of Kikuyu and Embu, but these are a small percentage of the total population served. The Meru is a Bantu tribe closely related to the Kikuyu.

Chogoria Hospital

Chogoria Hospital was established in 1922 as a Church of Scotland (Presbyterian) Mission Station. Since 1962, the hospital has been managed by the PCEA. It is situated on the lower eastern slopes of Mount Kenya at a altitude of approximately 5,000 feet in the Meru District of Kenya's Eastern Province, about 200 kilometres north of Nairobi.

The hospital was completely rebuilt in 1969 through community fund-raising efforts, supplemented by overseas donations. At the same time, the Community Health Department (CHD) was constructed and opened in 1970 with a total of four staff. The hospital now has 294 beds in surgical, medical, paediatric, and maternity wards. There is an antenatal hostel for high risk expectant mothers, a special care nursery for premature babies, and three surgical theatres. Recently completed dental and ophthalmic units have increased the scope of the services offered. There is an Enrolled Community Nurse Training School, currently with 140 pupils and various support services such as workshops, kitchen, pharmacy, and laboratory.

The hospital's operating expenses are covered by charging patients fees for the services offered. The Government of Kenya, through the Ministry of Health, gives an annual grant (currently 12 percent of all hospital expenditures) to offset the charges, and the hospital receives grants in the form of subsidized expatriate personnel from overseas agencies in Scotland and The Netherlands.

The CHD is now the largest department of paid staff in the hospital with 120 staff members. The hospital has been involved in outreach work from its early days, concentrating on the centres of population in the high and middle altitude zones. Recently, with the population growing in the low altitude zone, services have extended into the low zone as well. Initially, the outreach work was curative in nature, with little concentration on preventive services, but later Chogoria Hospital began to emphasize the importance of preventing as well as curing disease. It was one of the first institutions in Kenya to offer and promote family planning services.

The CHD now offers integrated maternal-child health and family planning (MCH/FP) and curative services at 27 daily static clinics and 6 once-monthly mobile clinics. At the static clinics, all services are offered every day by one Integrated Nurse, assisted by one or two clinic helpers, depending on the number of patients. The nurse offers all the services, both preventive and curative daily, so the patient needs to see only one staff member and queue only once for all the services required.

Health Problems

The incidence of infectious diseases has decreased with improved sanitation, water quality, and health services. Diarrhoeal and respiratory diseases are still major causes of death among young children, though. Malaria remains an important health problem, especially in the low altitude zone, but increasingly in the higher zones as well. The problem of malaria resistant to chloroquine is a new and growing one. Undernutrition among children, particularly in the low zone, contributes directly and, more importantly,

indirectly to mortality rates. Lack of clean water and good sanitation are major contributors to the incidence of many infectious diseases, making improvements in these areas a high priority in the catchment.

Measles and other infectious childhood diseases remain a problem, but their incidence is gradually decreasing as immunization programmes become more successful. Tetanus, especially neonatal tetanus, is now rare.

Other significant problems include road accidents, home accidents (including burns), intestinal worms, and accidental poisoning from insecticides. Sexually transmitted diseases are becoming major problems, particularly resistant strains of gonorrhoea caused by the indiscriminate use of antibiotics.

Available Health Services

In addition to the health services provided by Chogoria Hospital, the catchment area also receives services from the Ministry of Health (MOH) and the Kenya Catholic Church. There is one clinic operated by the Anglican Church and a large number of private clinics.

Most health services, other than those operated by the MOH, are provided on a fee-for-service basis. MOH services are free-of-charge, but the Government is finding it increasingly difficult to offer free services, faced with the rapidly growing population. Allocations of drugs and commodities have not been able to keep up with the demand for services. Fees at the various church-related clinics are relatively low, since these are nonprofitmaking facilities. Fees at the private clinics are high and the quality of service

often questionable. Private clinics do not offer preventive services (MCH/FP). The Catholic clinics do not offer family planning services.

In the high and middle altitude areas there are many clinics, with almost every home lying within 5 kilometres of a daily clinic. Services for family planning are not so readily available on a daily basis, except at the Chogoria clinics. In the low altitude area, clinics are fewer, and the distance from centres of population to the nearest clinic are greater. Most homes in the low zone are within 10 kilometres of a daily clinic, but in some areas residents still have to travel 15-20 kilometres for a daily service.

Not all health services are clinic-centred, and the CHD has been involved in developing a programme of community-based activities, which is designed to promote health and prevent disease at the community level. The programme aims to help local communities become more responsible for protecting their own health and for taking action to prevent diseases.

Community participation is not a new concept at Chogoria, as almost all of the static clinics (and staff houses for clinic staff) have been erected through community fund-raising efforts. Local Dispensary Committees have been involved in building facilities for many years, but it is only recently that the scope of these committees has been extended to take a wider view of health and to encourage the committee members to get involved in disease prevention and health promotion. By renaming the Dispensary Committees as "Area Health Committees" (AHCs) and retraining the members for their extended role, it has been possible to make local communities much more active in protecting their

own health. Almost all the AHCs have selected suitable local people for training as volunteer Community Health Workers (CHWs) and Traditional Birth Attendants (TBAs). As of 1987, some 550 CHWs and 250 TBAs had been trained. They work closely with clinic staff identifying people who need services and encouraging those in need to visit the clinic. In turn, the clinic staff are able to refer high risk cases for additional home visits by the trained volunteer. Volunteers also recruit potential family planning clients and distribute commodities. CHWs and TBAs have regular meetings and in-service training sessions with clinic staff, thus promoting the cooperation and support that is essential for the programme to succeed.

In addition, Chogoria has established a Youth Education Programme specifically directed towards the 60-70 percent of people in the area who are under the age of 25 years. The programme trains school teachers, community and church leaders (of all denominations), and peer group leaders to teach young people various health education and sex education lessons. Teenage pregnancy is considered a major problem in the area and is one which the programme addresses. The youth are a crucial target group, and the programme seeks to reach them with education before they adopt behaviour patterns which could be harmful.

Reasons for Conducting This Survey

Family Planning International Assistance (FPIA) allocated funds to the CHD in 1975 to develop services, particularly the family planning service. In 1983, at the end of FPIA funding for clinic services, a full-scale evaluation was requested by the United States Agency for International Development (USAID) to assess what results had been achieved. This was conducted in November 1983 by

a team from the Division of Reproductive Health, Centers for Disease Control, Atlanta, Georgia, U.S.A.

One of the principal recommendations from the evaluation report was that a survey be conducted to confirm whether the apparent high levels of uptake for preventive services, particularly family planning, were a reality. Levels of uptake seemed remarkably high, as indicated by Chogoria's clinic records and details of commodities distributed, but a more detailed survey was needed to verify the accuracy of the initial findings.

Another important reason for conducting this survey was to assess progress at Chogoria Hospital since the last survey, a small-scale survey conducted in the high and middle zones in late 1978. Since that time, major changes in CHD's method of operation and a significant increase in the size of the hospital's catchment area have taken place. Also, with the intention to develop work in the low altitude zone, survey results in that area could be used as baseline data to determine current needs there and to assess progress later.

Permission to conduct the survey was requested from and kindly granted by the District Commissioner, Meru District. The survey greatly benefited from the cooperation and assistance of the Kenya Ministry of Health, both at the national level and in Meru District. The Kenyan Central Bureau of Statistics (KCBS) assisted by proiding the necessary maps of the survey area. It was financed by the Swedish International Development Agency (SIDA) and FPIA. Technical assistance for the planning, implementation, data processing and data analysis of the survey was provided by the Division of Reproductive

Health of the United States Centers for Disease Control, funded by a pre-existing agreement with the U.S. Agency for International Development (USAID).

II. DESCRIPTION OF THE SURVEY

The Chogoria Community Health Survey (CCHS) consisted of interviews with a probability sample of 1880 women of childbearing age (15-44) living in the Chogoria Hospital catchment area. The sample was intended to be representative of all women eligible for interview living in that area. The questionnaire covered a number of topics relating to MCH/FP and the use of MCH and FP services, and will be discussed in greater detail later in this chapter.

Survey Planning and Implementation

The CCHS was originally conceived by the Chogoria CHD during 1984 to accomplish the objectives described in Chapter I. A questionnaire was drafted, modified and then pretested during April of 1985. Following that pretest, the questionnaire was revised further and a final survey instrument printed.

Interviewers were recruited from among school teachers living in the vicinity of Chogoria Hospital, since they constituted the only large group of females capable of carrying out the necessary task in that rural area who were known to be available for the assignment. Field supervisors were selected primarily from among the full-time staff of the CHD.

Training of interviewers and supervisors took place at Chogoria Hospital for a 2-week period in late July and early August of 1985. Five interview teams, each consisting of four interviewers and a supervisor, were assembled for the survey fieldwork. The training consisted of instructing interviewers in interviewing techniques, the flow and content of the questionnaire, selection

of households, and other relevant tasks. Since four closely related, yet distinct, Kimeru dialects (Kimwimbi, Kichuka, Kimenti, and Kitharaka) are spoken in the catchment area, training included making sure that interviewers could conduct interviews in each of the dialects. Each interviewer was provided with a master questionnaire in each of the four dialects.

Immediately following the training and practice interviewing fieldwork began. Fieldwork took place over a 4-week period during August. The short time span alloted for fieldwork was due to the fact that the interviewers were available only until early September, when they had to return to school. However, despite the short time available, all selected areas were visited at least twice and nonresponse rates were low (see below).

Coding of the questionnaires and manual editing of forms took place at Chogoria Hospital following which the forms were shipped to CDC for data entry, final editing, and data analysis owing to the lack of data processing equipment in Chogoria. Unfortunately, during shipment to the United States, three cartons of questionnaires, containing about 5 percent of the total number of questionnaires were lost due to airline negligence and never recovered. The lost forms came from sectors throughout the catchment area giving no reason to expect that the presence of those forms would have significantly affected the overall findings.

Sample Design

A two-stage cluster sampling design was employed in the survey. In the first stage, 80 enumeration areas (EAs) were selected systematically, with probability of selection proportional to population estimates made by UNICEF

in 1984, based on 1979 census populations and estimated growth rates. Unfortunately, populations for individual EAs were not available. Populations of sublocations (the smallest admninistrative unit) and the number of EA, within each sublocation were available. It was necessary to assume that all EAs within a given sublocation were of approximately equal size in order to select EAs for the sample.

Forty-eight EAs were chosen in the high and middle zones combined, while 32 were selected from the low altitude zone. This represented an intentional oversampling of the population of the low zone, in order to ensure a large enough sample to obtain reliable results for this zone. All results given in this report for the total catchment area are weighted for zone of residence because of the oversampling.

The second stage of selection consisted of selecting a cluster of households for interview within each EA chosen. Since neither household maps nor listings were available for EAs, innovative means had to be used for choosing the households to be surveyed. A pair of coordinates (one east-west and one north-south) was randomly chosen within each selected EA. The interview team started its interviewing at the dwelling deemed to be nearest to the point corresponding to those coordinates within the EA. The interviewers then proceeded in a systematic manner until 25 households had been chosen*. Within

*This use of random coordinates to select a starting point is likely, if anything, to have slightly biased the sample toward more sparsely populated areas of the catchment, since population is not equally distributed over all areas within EA's. Thus, any bias arising from this sampling approach probably leads to underestimates of health status and use of services, since we assume that health status tends to be worse among those living in the greatest isolation.

each selected household all women between the ages of 15 and 44 who had ever lived in a marital or consensual union or had ever had a live birth were eligible to be respondents. Virtually all women not home at the first visit and all households with no one home at the first visit were revisited at least once.

Questionnaire

There were two questionnaires used in the survey. In each household visited a short household questionnaire was administered to any adult in residence. This questionnaire identified and included a small amount of information on each women of childbearing age living there. It also included a section on home environment, which dealt with such topics as sanitation, water sources and treatment, and the cultivation of food crops. Overall, 2,021 household questionnaires were analyzed.

The respondent questionnaire was a much longer instrument, taking an average of about 45 minutes to complete. This questionnaire covered a number of topics related to MCH/FP and the use of MCH and FP services. The broad topics included in the interview were: socioeconomic and demographic characteristics; fertility, pregnancy, and childbirth; family planning; knowledge of health practices; use of health services; and child health. Within each of these topics several more specific issues were addressed. In all, 1,879 individual questionnaires were analyzed.

Response Rates

Response rates at both the household and individual levels were very high, as shown in Table 2.1. Overall, 98.6 percent of households visited yielded

completed questionnaires, with little difference between the three altitude zones. About 9 percent of households reportedly contained no females eligible for the individual questionnaire. It was rare that no one was found to be at home. It was even rarer for residents to refuse to provide information to the interviewers.

About 96 percent of eligible women identified as living in selected households were successfully interviewed. Most of the remaining 4 percent were never found at home. Refusals, as at the household level, were very infrequent. Differences in response between the altitude zones appear inconsequential. Despite the fact that it was necessary to conclude the fieldwork within 1 month of its start, it was still possible to make revisits to all sample points to interview those not at home at the initial visit, helping greatly to keep nonresponse rates very low.

TABLE 2.1

Percent Distributions of Final Interview Status for Household and Individual Interviews
1985 Chogoria Community Health Survey

Interview Result	Total	Zone		
		High	Middle	Low
Potential Household Interviews				
Complete--list of eligible women obtained	89.4	88.6	88.0	92.2
Complete--no eligible women	9.2	9.5	10.3	7.2
No one at home	0.9	0.8	1.2	0.6
Refusal	0.4	1.1	0.4	0.0
Other	0.1	0.0	0.2	0.0
Total	100.0	100.0	100.0	100.0
Number of households	(2039)*	(367)	(1044)	(628)
Potential Respondent Interviews				
Completed	95.8	96.2	94.7	97.4
Partially completed	0.1	0.0	0.1	0.0
Women absent	3.6	2.6	4.7	2.4
Women refused	0.5	1.2	0.5	0.2
Total	100.0	100.0	100.0	100.0
Identified eligible women	(1959)	(341)	(996)	(622)

*Does not include approximately 100 lost questionnaires (see page 11).

III. HOME ENVIRONMENT

The household questionnaire from the CCHS served in part to collect information on the home environment of sampled households. Whereas most of the survey was designed to provide health-related information at the individual level for women and children, the home environment section yields data on health-related characteristics of households. The data collected in the household questionnaire dealt with the dwelling itself, water sources and treatment, toilet facilities, cooking facilities, and cultivation of food crops at home.

Interviewers noted the materials of which the walls and roof were made in each home selected. The degree to which modern materials were used in construction served as a useful socioeconomic status indicator for the analysis of the survey data. It also allowed determination of the proportion of the population living in substantial or "modern" housing in the catchment area.

A three-way classification of houses was created as follows:

1. All modern--Both the walls and the roof were constructed of permanent materials (bricks, tile, concrete, corrugated iron, and so forth).
2. Semimodern--Either the roof or the walls were constructed of permanent material. In practice, this meant that it was the roof rather than the walls that was built of permanent material.
3. Nonmodern--Both the walls and the roof were constructed of nonpermanent material (thatch, mud, and wattle, and so forth).

Table 3.1 shows that only about 1 in every 10 houses throughout the catchment area could be classified as all modern according to the above definition, while 38 percent were nonmodern. Table 3.1 bears out the fact that altitude is associated with socioeconomic status. Whereas 24 percent of high zone homes are modern, only 4 percent of low zone homes are in that category. Likewise, the proportion of nonmodern homes increases dramatically from 9 percent to 63 percent as one descends from high to low altitude. (It should be noted that every indicator of socioeconomic status available from the survey data, whether for households or individuals, is associated with elevation.)

Access to a safe water supply should be one of the highest priorities in the development of almost any African community health program. Use of clean, uncontaminated water is extremely important in the prevention of many serious diseases. The household form was used to enquire into several aspects of water source and cleanliness.

The safest water sources are considered to be piped into homes or public taps, rainwater tanks, and protected wells (i.e., wells with walls around them). The sources considered particularly unsafe are unprotected wells and rivers, streams, pools, standing water, and so forth. Table 3.2, which shows distributions of primary water sources during the rainy season, reveals that approximately two-thirds of households in the catchment area still use water predominantly from unclean sources. Over half of households depend on water from rivers, streams, and so forth. The situation deteriorates rapidly as one proceeds from high to low elevations. The proportion using unsafe water sources is 34, 51, and 91 percent, in the high, middle, and low zones, respectively.

Results for the dry season are not presented but are very similar to those for the rainy season. The major difference is that most households using a rainwater tank during the rainy season use streams and rivers in the dry season. Thus, the proportion obtaining water primarily from less sanitary sources increases from 66 percent in the rainy season to 75 percent in the dry season. Therefore, for much of the year the health risk posed by potentially contaminated water is even greater than it appears in Table 3.2.

Interviewers noted (or asked about) the presence of rainwater tanks at sampled homes. The use of such tanks is encouraged, since they collect clean water, especially if the tanks are equipped with a cover and strainer to keep the water uncontaminated. Table 3.3 shows that 22 percent of households have rainwater tanks. The proportion is about twice as high in the upper altitude zones as in the low zone. About half of all tanks have covers on them to prevent mosquitoes from breeding and to keep out foreign matter when it is not raining. Only 20 percent of tanks have strainers over them to protect the water inside.

When asked whether they did anything to their water before consuming it, respondents at slightly over half of households reported that they boiled their water (data no shown). This figure was slightly higher in the dry season than in the rainy season. Since these results are based on respondent reports and not on observation, there is a possibility of misreporting.

The use of pit latrines or flush toilets is an important public health measure. These toilet facilities provide an important barrier to the

transmission of many infectious and parasitic diseases. The CHD's health education programme has strongly advocated the digging of pit latrines. One of the most encouraging findings of the survey is the exceptionally high prevalence of pit latrines. Table 3.4 shows that, overall, 90 percent of households have flush toliets or pit latrines. In the high zone this figure approaches 100 percent, and even in the low zone almost 4 of every 5 homes has a pit latrine.

Not only do most homes have latrines, but over 90 percent were found to be more than 30 feet away from the house, as recommended. The year preceding the survey saw a sharp increase in the number of newly dug latrines: 20 percent were dug during this period. This unusual rise may have come about, in part, as a reaction by the population to a recent cholera epidemic which affected mainly people living in the lower elevations.

The use of raised fireplaces in homes has been advocated by the hospital's health education programme for many years. This advice stems from the concern about the high incidence of burns of young children and others who are at risk of falling into the fire especially during cooler weather. Overall, 85 percent of households still use the traditional three stones on the ground, with a wood fire in the centre, as their cooking place. Usually this type of cooking place, which can present a health hazard, is found in a corner of the house or hut or in the lower areas just outside the entrance. Even in the more developed higher zones 78 percent of households employ the traditional type of cooking place.

It has become clear that many households have abandoned the raised fireplace for the traditional one, because of the warmth and comfort it offers during the cooler months of the year. One lesson drawn from these findings could be a need to concentrate on encouraging protecting fireplaces, rather than raising them. Recommendations to raise fireplaces have obviously not been well accepted, especially in the cooler, high altitude zone.

Over 96 percent of households in the catchment area reportedly grow food crops. In the high zone, this figure is only 88 percent, indicating less reliance on home grown food crops, and greater influence of the "regular economy." This corresponds with the higher rates of paid labour found in the high zones. Self-sufficiency in food is reported by just under half of all households. Although in the low zone more than 98 percent of households grow food crops, fewer than half generally produce enough to last through the year. In contrast, in the high zone, where 88 percent of the households raise food crops, 80 percent produce sufficient amount to sustain them through the year.

One of the emphases of the health education programme has been the advocacy of keeping a kitchen garden for growing vegetables all the year round, thus providing a more balanced diet, richer in important vitamins and minerals that could otherwise be lacking. Kitchen gardens were found at 45 percent of high zone homes, dropping to 30 percent in the middle, and only 10 percent in the low zones. It should be noted, however, that due to the much more restricted availability of water for irrigation, it takes more effort to maintain a sucessful kitchen garden in the lower areas.

TABLE 3.1

Percent Distribution* of Type of House**
According to Residence Zone
1985 Chogoria Community Health Survey

House Type	Total	Zone		
		High	Middle	Low
Modern	9.9	24.2	11.8	3.5
Semimodern	52.3	66.5	66.7	34.0
Nonmodern	37.8	9.3	21.5	62.5
Total	100.0	100.0	100.0	100.0
Number of households	(2021)	(364)	(1033)	(624)

*Percentages in this table and all subsequent tables are weighted according to zone of residence. Numbers of households or respondents refer to unweighted cases in all tables.

**House type is defined according to the materials of which each house's roof and walls were constructed: Modern--both roof and walls made of permanent materials; semimodern--only the roof made of modern materials; nonmodern--neither the roof nor walls made of modern materials.

TABLE 3.2
Percent Distribution of Primary Water Source
during Rainy Season
According to Residence Zone
1985 Chogoria Community Health Survey

Primary Water Source	Total	Zone		
		High	Middle	Low
Safe water sources	34.4	65.7	50.6	8.7
Piped to home	17.5	47.3	25.1	0.8
Rainwater tank	9.8	10.7	12.3	7.1
Public tap	2.8	4.7	4.8	0.2
Protected well	4.3	3.0	8.4	0.6
Unsafe water sources	65.7	34.3	49.4	91.3
Unprotected well	12.8	4.4	12.8	15.5
River, stream, pool, other	52.9	29.9	36.6	75.8
Total	100.0	100.0	100.0	100.0
Number of households	(2021)	(364)	(1033)	(624)

NOTE: In this and other tables, some distributions may not add to 100 percent, due to rounding.

TABLE 3.3

Percent Distribution of Presence of Rainwater Tanks and Presence of Covers and Strainers for Tanks according to Residence Zone
1985 Chogoria Community Health Survey

	Total	Zone		
		High	Middle	Low
Presence of Rainwater Tank				
Yes	21.7	24.5	29.8	12.8
No	78.3	75.5	70.2	87.2
Total	100.0	100.0	100.0	100.0
Total number of households	(2021)	(364)	(1033)	(624)
Cover on Rainwater Tank				
Yes	52.9	50.6	55.8	47.5
No	47.1	49.4	44.2	52.5
Total	100.0	100.0	100.0	100.0
Total number of households	(477)	(89)	(308)	(80)
Strainer on Rainwater Tank				
Yes	19.9	25.8	21.1	13.8
No	80.1	74.2	78.9	86.2
Total	100.0	100.0	100.0	100.0
Total number of households	(477)	(89)	(308)	(80)

TABLE 3.4

Percent Distribution of Household Toilet Facilities according to Residence Zone
1985 Chogoria Community Health Survey

Toilet Facility	Total	Zone		
		High	Middle	Low
Flush toilet	0.7	0.3	1.6	0.0
Pit latrine	89.3	99.2	97.2	78.5
No toilet facility	10.0	0.5	1.2	21.5
Total	100.0	100.0	100.0	100.0
Number of households	(2021)	(364)	(1033)	(624)

IV. SOCIOECONOMIC AND DEMOGRAPHIC CHARACTERISTICS

The CCHS questionnaire included information on selected socioeconomic and demographic characteristics of repsondents and their husbands. This included information on age, marital status, education, and employment. These data allow comparison of segments of the population with different characteristics according to health and family planning-related variables. It also permits comparison of the catchment area with Kenya as a whole for some characteristics.

Table 4.1 reveals that the age distributions of 15-44-year-old females living in selected households was very similar in the CCHS and the 1984 nationwide Kenya Contraceptive Prevalence Survey (KCPS), except for a substantial deficit of 15-19-year-olds in the CCHS. Among the possible explanations for this are: 1) There are proportionately far fewer 15-19-year-olds in the catchment than nationwide; 2) there was substantial misreporting of ages for females actually 15 to 19 years-old; or 3) the household listings often excluded 15-19-year-olds livings in selected households; or 4) many 15-19-year-olds are temporarily absent for school or other reasons.

Table 4.2 presents the distributions of reported age, martial status, educational attainment, and employment status for all survey respondents for each altitude zone. The only noteworthy differences between zones are in education and employment status. Educational attainment falls sharply with elevation. Overall, 24 percent of respondents never attended school (or have only attended adult literacy classes), ranging from 14 percent in the high zone to 34 percent in the low zone. As altitude decreases fewer women have

paid employment. Meanwhile, the likelihood of doing casual labour (e.g., picking coffee seasonally) rises as altitude declines.

Patterns of husband's education according to zone closely parallel those for respondents, with educational attainment falling with altitude (Table 4.3). Educational levels among husbands appear only slightly better than among respondents. About 45 percent of husbands were not engaged in any kind of paid labour and 39 percent were engaged in wage labour.

Table 4.4 displays proportions of women ever married from the CCHS household form and the 1984 KCPS. Marriage is virtually universal both in the catchment area and nationwide. However, marriage tends to occur at a later age in the catchment area. Data from the CCHS and for members of the Meru and Embu groups from the KCPS show virtually identical proportions ever married at ages 15-19 and 20-24, providing confirmation that catchment area women do indeed marry later than others in Kenya. The similarity is also encouraging as it reflects on the data quality in the CCHS (Almost all CCHS respondents were Meru).

Table 4.5 consists of a comparison of reported educational attainment among respondents in the CCHS and the KCPS. In every age cohort a much larger proportion of women attended school in the catchment area than nationwide. Only 6 percent of 20-24-year-olds interviewed in the CCHS had received no formal education. However, the proportions who went on to secondary school or beyond are only slightly higher in the catchment are than in Kenya as a whole.

Finally, the questionnaire included a section on the type of income-producing activities in which respondents were engaged. This information is useful

because of the relationships which exist between women's status and variables such as fertility, use of family planning, and maternal and child health. It is possible that women who work at income-producing activities, especially in capacities other than casual labour and agriculture, are more likely to have some control over their monetary resources and have a larger voice in affairs affecting themselves and their children than their counterparts. Table 4.6 shows that in the survey area as a whole about 16 percent of respondents are engaged in income-producing activities, such as their own or family business or doing labour for wages. About 7 percent report having their own or family businesses and 2 percent are in professional occupations, activities that are the most likely to put them in control of their own resources. Another 53 percent of women are engaged in casual labour such as working in coffee factories or selling their own products, mainly agricultural products. The most noteworthy difference between zones is that the percentage of women in casual labour increases as elevation decreases.

TABLE 4.1

Percent Distribution of Age of All Women*
Living in Selected Households
1985 Chogoria Community Health Survey (CCHS)
1984 Kenya Contraceptive Prevalence Survey (KCPS)

Age	1985 CCHS	1984 KCPS
15-19	18.2	27.8
20-24	24.1	21.1
25-29	18.6	17.0
30-34	15.8	13.7
35-39	11.5	11.3
40-44	11.3	9.1
Unknown	0.5	-
Total	100.0	100.0

*According to data on household forms.

TABLE 4.2

Percent Distribution of Selected Characteristics of Respondents by Residence Zone 1985 Chogoria Community Health Survey

Characteristics	Total	Zone		
		High	Middle	Low
Age				
15-19	5.8	3.1	6.2	6.3
20-24	24.6	28.1	24.9	23.1
25-29	22.0	27.7	23.0	19.3
30-34	19.4	17.7	18.2	21.2
35-39	14.0	12.2	13.8	14.7
40-44	14.2	11.3	14.0	15.4
Marital Status				
Married	82.3	82.9	81.8	82.5
Widowed	2.2	1.8	2.1	2.5
Divorced/Separated	4.8	3.4	4.1	5.9
Single	10.6	11.9	12.0	9.1
Education				
No school	11.5	3.7	6.5	18.5
Adult literacy only	12.9	10.1	11.4	15.2
Primary 1-4	23.4	19.2	19.2	28.4
Primary 5-8	36.7	46.0	41.7	29.3
Incomplete secondary	8.4	11.0	11.6	4.8
≥Complete secondary	7.0	10.1	9.6	3.8
Employment Status				
No paid labour	56.9	70.1	60.9	49.4
Casual labour	31.1	19.2	25.7	39.4
Wage labour	12.1	10.7	13.4	11.2
Total	100.0	100.0	100.0	100.0
N	(1880)	(328)	(945)	(607)

TABLE 4.3

Percent Distribution of Educational Attainment and Employment Status of Respondents' Current Husbands by Residence Zone 1985 Chogoria Community Health Survey

Husbands' Education and Employment	Total	Zone		
		High	Middle	Low
Education				
No school	12.5	7.3	9.7	16.3
Adult literacy	1.6	2.1	1.3	1.6
Primary 1-4	18.0	16.3	12.7	23.2
Primary 5-8	40.9	46.4	42.9	37.7
Secondary 1-3	6.5	7.6	9.3	3.8
Secondary 4	9.9	11.4	13.5	6.4
Any post-secondary	1.4	1.0	2.2	0.7
Unknown	9.2	8.0	8.4	10.3
Employment Status				
No paid labour	44.7	52.1	41.2	45.8
Casual labour	16.0	8.8	16.6	17.5
Wage labour	39.3	39.0	42.2	36.7
Total	100.0	100.0	100.0	100.0
N	(1673)	(289)	(832)	(552)

TABLE 4.4

Percent of Women 15-44-Years-Old Living in Selected Households Who Have Ever Been Married according to Current Age
1985 Chogoria Community Health Survey (CCHS)
1984 Kenya Contraceptive Prevalence Survey (KCPS)

	1985 CCHS	1984 KCPS	
Age		Total	Meru-Embu Only
15-19	12.9	26.2	12.9
20-24	60.7	76.5	62.3
25-29	86.6	93.8	*
30-34	95.9	96.4	*
35-39	98.4	97.9	*
40-44	99.7	99.5	*

*Not available.

TABLE 4.5

Percent Distribution of Educational Attainment
of 15-44-Year-Old Respondents by Age
1985 Chogoria Community Health Survey (CCHS) and
1984 Kenya Contraceptive Prevalence Survey (KCPS)

Age	Total	Educational Level				
		No school*	1-4 Years	5-8 Years	9+ Years	Not Stated
CCHS**						
20-24	100.0	6.0	16.0	50.7	27.3	-
25-29	100.0	15.8	21.2	43.2	19.8	-
30-34	100.0	28.5	26.8	32.6	12.0	-
35-39	100.0	43.0	29.1	20.6	7.1	-
40-44	100.0	54.3	29.5	14.1	2.0	-
KCPS						
20-24	100.0	23.1	14.9	37.2	24.5	0.3
25-29	100.0	37.7	16.4	27.9	17.9	0.1
30-34	100.0	45.6	20.4	24.4	9.4	0.2
35-39	100.0	54.1	21.3	18.4	5.9	0.3
40-44	100.0	69.2	19.0	9.6	2.1	0.1

*Includes women who took adult literacy courses.
**Does not include never married, childless women.

TABLE 4.6

Percent Distribution of Income Producing Activities of Respondents according to Residence Zone 1985 Chogoria Community Health Survey

Activity*	Total	Zone		
		High	Middle	Low
Have own business	4.6	2.7	5.2	4.6
Work in family business	1.9	1.2	2.3	1.7
Wage labour (professional)	2.0	1.8	3.9	0.3
Wage labour (not professional)	7.6	9.5	7.8	6.9
Casual labour	30.4	18.0	25.3	38.6
Sell own products	22.3	28.1	24.4	18.8
No income	31.2	38.7	31.0	29.2
Total	100.0	100.0	100.0	100.0
N	(1880)	(328)	(945)	(607)

*If respondent reported more than one type of activity she was placed in the category the highest on the list.

V. CHILD HEALTH

A primary focus of the survey was the health of children in the catchment area and the use of interventions to improve or maintain health status. Chogoria Hospital was interested in mortality, morbidity, immunization, and the use of oral rehydration solution (ORS) to treat diarrhoea, among other topics. Also, it has been suggested that increased use of family planning services in Africa depends to a large extent upon improved survival rates of children, providing an additional reason for interest in child health.

The survey was conducted shortly after the famine of late 1984 and early 1985, when there was particular concern for the nutritional status of young children and the effects of the famine on children's health in general. In the section of the questionnaire on child health, respondents were asked about the children living in their households who were at least 12 months old, but not yet 36 months old.

Immunizations

Mothers were asked whether each of their living 1- and 2-year-old children had received BCG, measles, and DPT-Polio vaccinations. World Health Organization (WHO) recommendations for these vaccinations are as follows:

1. BCG--one dose as early as possible;
2. Measles--one dose at 9 months;
3. DPT-Polio-three doses 1 month apart, starting at 3 months (to be followed up with boosters later on).

Therefore, all children at least 1 year of age should have received one dose of BCG, one dose of measles vaccine, and three doses of DPT-Polio vaccine.

Table 5.1 shows that among children 1-2 years-old coverage rates are high for all three types of vaccinations, but far better for BCG than for the other two. BCG coverage is assumed to be higher because it is usually given at birth, whereas the child must be taken to a health facility to receive the other vaccinations. For all three types of vaccines (especially measles and DPT-Polio), the low zone has by far the poorest coverage rates. Coverage increases with more modern housing, mother's level of education, and employment status. There is virtually no difference between the coverage rates for boys and girls, and only a small difference according to children's ages.

For confirmation of immunization status, interviewers first asked mothers to see the child's clinic card. If the card was available, interviewers used the immunization data on the card to record the types and number of immunizations the child had received. For BCG vaccinations, in the absence of a clinic card interviewers checked the child's arm for a scar.

Table 5.2 shows that for each type of immunization slightly under half of mothers interviewed were able to produce a card to confirm the child's immunization status. In the case of BCG, an additional 36 percent of children showed evidence of a scar. Thus, it is probably safe to assume that a minimum of 85 percent of children really had received a BCG vaccination, indicating a high degree of reliability in the immunization reports. Measles and DPT-Polio vaccinations leave no scars, but the proportion of reported vaccinations confirmed by health cards is similar to that for BCG. Thus, those reports are probably as reliable as BCG reports.

Table 5.3 presents the percent of children aged 1 and 2 years who are fully immunized and those who have received no immunizations. Overall, 70 percent of children are fully immunized, while only 5 percent have received no immunizations. The rates of full immunization are considerably higher than estimates for other populations in Sub-Saharan Africa for which data exist. There is, however, considerable variation in vaccination coverage between the residence zones, with the low zone having 59 percent of children 1-2 years fully immunized and 8 percent with no immunizations at all, compared to 82 percent and 1 percent, respectively, in the high zone. The data show that the percentage of children fully immunized increases dramatically with the mother's level of education, from 44 percent to 86 percent.

Mothers most commonly attributed failure to have a child fully vaccinated to the illness of the child (51 percent), as seen in Table 5.4. In some instances, mothers decided that their children were too ill to receive immunizations and in other cases, health staff used illness as a reason for not vaccinating the children. Thus, mothers and health facility staff may need to be educated regarding contraindications for receiving immunizations, since it is likely that most children who did not receive immunizations had only minor illnesses. Other important reasons given for not having children fully vaccinated were financial (12 percent), difficulty getting to the health facility (12 percent), and the health facility not having the needed vaccines (7 percent). It will be important to reduce occurrences of supply shortages if mothers are to view the facilities as credible sources of health services and supplies. In all three zones, mothers were most likely to report that their children did not receive vaccines because the child was ill. However,

not unexpectedly, mothers of low zone children were more likely to cite reasons related to cost and difficulties of access compared with high and middle zone mothers.

Measles

Table 5.5 presents information on children aged 1-2 years reported to have suffered measles. Overall, 13 percent of 1- and 2-year-olds have suffered measles. (The proportion of children reported to ever have suffered measles may be higher than in most years, however, since there was a measles epidemic in the Chogoria catchment area during 1985.) However, the reported proportion is still relatively low probably due, in large part, to the high overall rate of measles vaccination coverage (75 percent) among these children. Children in those subgroups of the population with the lowest measles vaccination coverage rates and the worst socioeconomic status, i.e., living in the low zone, with mothers involved in casual labour, and living in nonmodern houses, were the most likely to have had measles.

Recent Diarrhoea and Oral Rehydration

As shown in Table 5.6, about one in every five children aged 1-2 was reported to have suffered diarrhoea in the 2 weeks immediately preceding the survey. Diarrhoea incidence was greatest in the low zone and, regardless of altitude, was greatest among children of mothers with little education or doing casual labour (Table 5.7).

Reported diarrhoea was markedly less common among children whose mothers reported access to "safe" water sources compared with children of the same ages whose mothers reported using "unsafe" sources of water (Table 5.8). Among high and middle zone children, diarrhoea levels were found to be much

lower among children of mothers reporting access to safe water sources compared to children of mothers reporting use of less safe sources of water. Very few low zone mothers reported access to "safe" sources of water, which is very likely a major contributor to the high overall incidence of diarrhoea among children living in this zone.

Of great concern to the Chogoria CHD programme staff is whether or not mothers know how to treat diarrhoea using ORS and if they know how to prepare such a solution at home. Respondents were asked if they knew of a "special drink" to treat children with diarrhoea. Those claiming knowledge of such a drink were asked about its ingredients and the amounts of water, sugar, and salt (if mentioned) needed. Seventy-three percent of women claimed to know about a "special drink". Encouragingly, the correct ingredients were well-known. Of that 73 percent, 91 percent mentioned sugar as an ingredient and 90 percent mentioned salt. However, only 4 percent stated the correct amounts of sugar and salt in relation to water (Table 5.9).

The only incorrect combination that was at all commonly reported was too little sugar mixed with too much salt (61 percent), a recipe that could do more harm than good. No other combination was reported by more than 7 percent of respondents. Seventy percent of respondents familiar with a "special drink" gave a recipe that included too much salt, a solution which could further endanger the child's health. Seventy-five percent reported inadequate sugar amounts in their recipe. The proportion using too much salt and too little sugar increases sharply as altitude declines. However, even in the high altitude zone only 7 percent of respondents knew the correct ingredients and relative proportions.

Many respondents were confused or unsure as to the size of container to be used for making ORS at home. Most respondents stated that they had heard about the existence of ORS at a health facility, with health volunteers and field educators being the second most common source of information. It is clear that the basic message about ORS has been communicated (that a salt-sugar solution can be made at home to administer to children with diarrhoea), but much more work needs to be done to teach mothers how to prepare ORS correctly at home.

Table 5.10 shows that, of mothers with children suffering diarrhoea in the previous two weeks, 42 percent reported giving a solution of water with sugar and/or salt. This varied only slightly by zone and child's sex. However, reported use of the solution was strongly associated with level of mother's education--24 percent of women with no education or only adult literacy classes used it, compared with 49 percent of women with at least 5 years of schooling. The relative proportions of water, sugar, and salt in the solutions given are not known. However, based on the low percent of all women who could state the correct proportions for such a drink (4 percent), we would expect that most of the solutions used to treat recent bouts of diarrhoea were less than optimally effective.

Arm Circumference

The nutritional status of young children was of particular interest due to the 1985 African famine, which ended only a few months before the survey was initiated. An arm circumference measurement was taken on the youngest child aged 1-2 living in each household. As seen in Table 5.11, almost one-quarter of measured children were found to be undernourished with 20 percent mildly

and 4 percent severely undernourished. These conditions were most severe in the low zone. This was not surprising, since low zone families suffered the most during the famine due to poorer soil and lower rainfall. As with other health status variables, nutritional status was strongly associated with the mother's level of education, employment status, and type of housing. Both mild and severe undernutrition decreased with mother's level of education and was lowest for the children of mothers doing wage labour and those living in modern houses. In addition, males and children aged 2 were less likely to be mildly or severely undernourished than females and children aged 1. This is the only indication from the survey that males possibly receive preferential treatment affecting health status.

Child Mortality

It can be said with confidence that the health status of children in the catchment area is better than for the nation as a whole. Given the relatively high socioeconomic status of residents (by African standards), the high levels of use of maternal and child health services, and other positive health indicators in the area, it was not surprising to find that mortality among infants and children appears to be below that found in most of rural Africa. However, there are still many infant and childhood deaths, particularly in the low zone. Many of these could be avoided by use of readily available interventions (preventive, curative, and environmental.)

Infant and childhood mortality estimates, displayed in Table 5.12, were calculated using indirect methods of estimation*, utilizing reported numbers

*Mortality was estimated using the Brass technique of indirect estimation (which employes data on total numbers of living and dead children and the age of the respondent) and multipliers developed by Trussell).

of living and dead children and the mother's age. (Because, as in many developing countries, deaths appear to be underreported, indirect estimation is probably more reliable than direct mortality estimation). For the catchment as a whole, an estimated 52 of every 1000 children born alive die before their first birthday. This level compares very favorably with that reported for all of Kenya (72 per 1,000) and for all of Africa (118 per 1,000), according to the Population Reference Bureau. The rate is twice as high in the low zone (73 per 1,000) as in the remainder of the catchment area (37 per 1,000). This large difference according to altitude does not come unexpectedly, though, in light of other information on water sources, use of health services, and socioeconomic status.

Caregivers

The survey also collected data on the daily primary caregivers of children aged 1-2 with employed mothers (women who earn money from work done at home or away from home). Chogoria programme staff hypothesized that children aged 1-2, who had other children as their primary caregivers or nobody staying with them, would be more likely to be undernourished than children with adults as their primary caregivers. Among all children aged 1 and 2 with employed mothers, 32 percent were primarily cared for during the day by other children or nobody stayed with them (Table 5.13). This proportion was markedly higher for children living in the low zone and for children of mothers with no or little education. Of particular interest is the large number of children living in the low zone (26 percent) and those of mothers with minimal education (36 percent) who reportedly were primarily cared for by children aged less than 10 years or by nobody.

For all zones combined, as expected, children primarily cared for by children less than 16 years or by nobody were most likely to show evidence of mild or severe undernutrition (Table 5.14). However, children of employed women who "never" left their children at home were the second largest group to be undernourished. It may be that while these women do work at home, they may be too busy to perform adequate child care or to prepare adequate meals for their children. For children living in the high and middle zones, those with mothers who reported "never" leaving and those who were cared for by children less than 16 years or nobody, were equally likely to evidence undernutrition. Almost half of low zone children cared for by children less than 16 years or nobody were mildly or severely undernourished. These data demonstrate the importance of reemphasizing the need for adequate supervision of children in all zones. Unfortunately, it is not possible to determine the mechanism tying poor nutritional status to inadequate caregivers. There might be a direct causal relationship or the use of such caregivers could be proxy for other factors, such as inadequate knowledge of how to care for a child.

TABLE 5.1

Percent of Children 1-2-Years-Old Reported to Have Received BCG, Measles, and DPT-Polio Immunizations* According to Selected Characteristics 1985 Chogoria Community Health Survey

Characteristics	Immunization			N
	BCG	Measles	DPT-Polio**	
Total	94.5	74.6	78.9	(998)
Zone				
High	98.7	87.0	90.2	(154)
Middle	96.9	81.0	86.6	(510)
Low	91.3	65.9	69.7	(334)
House Type				
Modern	98.1	87.9	90.8	(98)
Semimodern	97.6	80.0	85.4	(575)
Nonmodern	90.0	65.5	68.7	(355)
Mother's Education				
No school	90.1	54.2	54.9	(88)
Adult literacy	87.1	66.7	71.0	(188)
Primary 1-4	91.8	67..4	70.3	(212)
Primary 5-8	97.6	82.3	87.0	(414)
Any secondary	99.4	86.9	94.9	(165)
Mother's Employment				
No Paid labour	96.6	76.7	83.7	(580)
Casual labour	89.4	68.7	68.6	(305)
Wage labour	98.8	91.6	85.1	(113)
Child's Sex				
Male	95.3	74.3	78.7	(542)
Female	93.5	75.0	79.2	(456)
Child's Age				
1 year	93.8	71.2	77.8	(473)
2 years	95.2	78.3	80.7	(524)

*Either reported by mother, reported on health card, or presence of a scar (for BCG).
**3 or more doses.

TABLE 5.2

Percent of Children 1-2-Years-Old Reported to Have Received BCG, Measles, and DPT-Polio Immunizations, by Type of Immunization Confirmation Source 1985 Chogoria Community Health Survey

Confirmation Source	BCG	Measles	DPT-Polio
Reportedly Immunized	94.5	74.6	91.1*
Card seen	49.2	44.0	51.2
Scar seen	36.2	--	--
Neither card nor scar	9.1	30.6	39.9
Reportedly Unimmunized	5.5	25.4	8.9
Total	100.0	100.0	100.0

*At least one dose.

TABLE 5.3

Percent of Children 1-2-Years-Old Fully Immunized* and Percent Completely Unimmunized, by Selected Characteristics 1985 Chogoria Community Health Survey

Characteristics	Fully Immunized	Completely Unimmunized	N
Total	69.5	4.7	(996)
Zone			
High	82.4	0.7	(153)
Medium	78.2	2.4	(510)
Low	58.6	7.8	(333)
House Type			
Modern	84.3	1.0	(98)
Semimodern	76.6	2.1	(544)
Nonmodern	58.1	8.6	(354)
Mother's Education			
No school	43.8	9.9	(88)
Adult literacy	61.6	10.6	(117)
Primary 1-4	58.9	6.3	(218)
Primary 5-8	78.2	2.2	(414)
Any secondary	86.4	0.6	(165)

*Have received BCG, measles vaccine, and at least three doses of DPT-Polio vaccine, according to reports by mother, reported on health card, or presence of a scar (for BCG).

TABLE 5.4

Percent Distribution of Reason Given* for 1-2-Year-Old Children Not Having Been Fully Immunized, by Residence Zone
1985 Chogoria Community Health Survey

Reason for Not Being Immunized	Total	Zone	
		High/Middle	Low
Child has been ill	51.2	68.0	41.8
Financial reasons	12.4	4.8	17.2
Difficult to go to facility	12.3	8.6	14.2
Health facility did not have vaccine	7.3	6.9	7.5
Thinks child is fully immunized	3.1	3.1	3.0
Child had measles before vaccination	2.5	1.6	3.0
Lack knowledge about necessary vaccinations	2.5	1.6	3.0
Other reasons	8.8	5.5	10.5
Total	100.0	100.0	100.0
N	(260)	(142)	(118)

*Respondents were asked to give the most important reason only.

TABLE 5.5

Percent of Children 1-2-Years-Old Reported to Have Ever Had Measles, by Selected Characteristics
1985 Chogoria Community Health Survey

Characteristics	%	N*
Total	13.0	(1,006)
Zone		
High	5.8	(154)
Middle	11.6	(516)
Low	16.1	(336)
House Type		
Modern	11.7	(100)
Semimodern	11.7	(548)
Nonmodern	14.9	(358)
Mother's Education		
No school	12.4	(88)
Adult literacy	15.0	(118)
Primary 1-4	14.9	(215)
Primary 5-8	11.5	(416)
Any secondary	12.1	(168)
Mother's Employment		
No paid labour	11.9	(586)
Casual labour	15.2	(306)
Wage labour	12.0	(114)
Child's Sex		
Male	14.1	(542)
Female	12.0	(456)
Child's Age		
1 year	12.1	(473)
2 years	14.1	(524)

*Figures for some categories do not add to overall total because of missing information.

TABLE 5.6

Percent of Children 1-2-Years-Old Reported to Have Had Diarrhoea during the Previous 2 Weeks, by Selected Characteristics
1985 Chogoria Community Health Survey

Characteristics	%	N*
Total	19.6	(1,006)
Zone		
High	11.7	(154)
Middle	14.5	(516)
Low	26.2	(336)
House Type		
Modern	19.3	(100)
Semimodern	17.1	(548)
Nonmodern	22.8	(358)
Mother's Education		
No school	28.3	(88)
Adult literacy	21.2	(118)
Primary 1-4	24.6	(215)
Primary 5-8	15.8	(416)
Any secondary	15.1	(168)
Mother's Employment		
No paid labour	18.0	(586)
Casual labour	24.9	(306)
Wage labour	12.5	(114)
Child's Sex		
Male	20.1	(542)
Female	19.4	(456)
Child's Age		
1 year	22.0	(473)
2 years	17.7	(524)

*Figures for some categories do not add to overall total because of missing information.

TABLE 5.7

Percent of Children 1-2-Years-Old Reported to Have Had Diarrhoea in the Previous 2 Weeks According to Residence Zone, by Mother's Education and Employment
1985 Chogoria Community Health Survey

Characteristics	Zone			
	High/Middle		Low	
	%	N	%	N
Total	13.9	(670)	26.2	(336)
Mother's Education				
No school/Adult lit.	17.2	(100)	28.3	(106)
Primary 1-4	16.8	(119)	30.2	(96)
Primary 5-8	12.9	(310)	20.8	(106)
Any secondary	11.4	(141)	25.9	(27)
Mother's Employment				
No paid labour	12.3	(424)	26.5	(162)
Casual labour	20.5	(166)	27.9	(140)
Wage labour	8.7	(80)	17.7	(34)

TABLE 5.8

Percent of Children 1-2-Years-Old Reported to have Had Diarrhoea During the Previous 2 Weeks, according to Residence Zone, by Water Source
1985 Chogoria Community Health Survey

	Total		Zone			
			High/Middle		Low	
Water Source	%	N	%	N	%	N
All sources	19.6	(1006)	13.9	(670)	26.2	(336)
"Safe" sources						
Piped to home	13.1	(198)	12.4	(196)	*	(2)
Rainwater tank	15.3	(101)	11.2	(81)	*	(20)
Protected well	10.4	(53)	8.1	(50)	*	(3)
"Unsafe" sources						
Unprotected well	22.6	(135)	17.8	(78)	26.3	(57)
River, stream	21.7	(452)	15.8	(214)	24.8	(238)
Other	25.7	(67)	15.8	(51)	*	(16)

*Fewer than 25 cases.

TABLE 5.9

Percent of Women Reporting Knowledge of an Oral Rehydration Solution (ORS) for Children with Diarrhoea, according to Knowledge of Proportions of Salt and Sugar in Relation to Water
1985 Chogoria Community Health Survey

ORS Ingredients and Amounts	%
Correct Amounts of Sugar and Salt	3.7
Incorrect Combinations	96.3
Too little sugar, too much salt	60.6
Too little sugar, correct salt	7.2
Neither sugar nor salt mentioned	5.6
Other combinations	22.9
Total	100.0
Salt Amount	
Correct	11.3
Too much	70.0
Too little	2.4
Don't know amount	6.2
Salt not mentioned	10.1
Total	100.0
Sugar Amount	
Correct	7.9
Too much	2.0
Too little	75.3
Don't know amount	5.6
Sugar not mentioned	9.3
Total	100.0
N	(1190)

TABLE 5.10

Percent of Children with Diarrhoea During the Previous 2 Weeks Who Were Administered A Solution of Water with Sugar and/or Salt by Selected Characteristics
1985 Chogoria Community Health Survey

Characteristics	%	N
Total	42.0*	(181)
Zone		
High/Middle	43.8	(93)
Low	40.9	(88)
Mother's Education		
No school/ Adult literacy	23.8	(47)
Primary 1-4	36.3	(49)
Primary 5-8/ Any secondary	48.7	(85)
Child's Sex		
Male	40.4	(99)
Female	44.1	(82)

*Forty percent of women treated their children with a drink of water, sugar, and salt. Two percent used a drink without either salt or sugar.

TABLE 5.11

Percent Distribution of Nutritional Status as Measured by Arm Circumference Among 1-2-Year-Old Children*, by Selected Characteristics
1985 Chogoria Community Health Survey

Characteristics	Total	Nutritional Status			N
		Good	Mild Under-nutrition	Severe Under-nutrition	
Total	100.0	76.0	19.6	4.4	(954)**
Zone					
High	100.0	87.3	11.3	1.3	(150)
Middle	100.0	80.4	17.1	2.5	(490)
Low	100.0	69.1	23.9	7.0	(314)
House Type					
Modern	100.0	87.1	12.9	0.0	(96)
Semimodern	100.0	81.8	16.1	2.1	(525)
Nonmodern	100.0	66.5	25.3	8.2	(333)
Mother's Education					
No school	100.0	62.3	25.3	12.4	(83)
Adult literacy	100.0	68.3	27.0	4.7	(117)
Primary 1-4	100.0	76.4	21.0	2.6	(204)
Primary 5-8	100.0	76.8	18.4	4.8	(390)
Any secondary	100.0	89.2	10.2	0.6	(159)
Mother's Employment					
No paid labour	100.0	77.0	19.1	3.9	(555)
Casual labour	100.0	70.5	23.5	6.0	(293)
Wage labour	100.0	88.1	9.8	2.1	(106)
Child's Sex					
Male	100.0	79.3	17.6	3.1	(516)
Female	100.0	71.8	22.1	6.1	(432)
Child's Age					
1 year	100.0	71.4	23.5	5.0	(464)
2 years	100.0	80.1	16.1	3.8	(483)

*Measurements were taken on the youngest child aged 1-2 living in each household.
**Fifty-two children were not present at time of interview and were not measured.

TABLE 5.12

Probablility of Dying* Before Ages 1, 2, and 5 Years
According to Residence Zone
1985 Chogoria Community Health Survey

Age	Total	Zone	
		High/ Middle	Low
1	.052	.037	.073
2	.059	.041	.087
5	.068	.046	.102

*Estimated using indirect techniques based on reported number of live births and living children reported for each woman.

TABLE 5.13

Percent Distribution of Primary Caregiver of 1-2-Year-Old Children with Employed Mothers, according to Residence Zone and Mother's Education
1985 Chogoria Community Health Survey

Characteristics	Total	Primary Caregiver						
		Father	Other Adult	Mother Never Leaves*	Child Under 10/ 11-15	Child Nobody	Unknown	N
Total	100.0	12.8	40.0	12.0	12.6	19.2	3.4	(449)
Zone								
High/Middle	100.0	10.6	50.5	14.0	10.2	11.4	3.3	(273)
Low	100.0	14.8	30.7	10.2	14.8	26.1	3.4	(176)
Education								
No school/ Adult literacy	100.0	14.1	18.2	12.5	17.4	35.7	2.2	(111)
Primary 1-4	100.0	18.5	27.9	15.3	14.9	20.3	4.1	(96)
Primary 5-8	100.0	12.1	53.4	12.3	8.3	10.5	3.4	(162)
Any secondary	100.0	3.6	68.3	5.8	10.7	7.3	4.4	(79)

*Women who earn wages for work done at home or who keep children with them when working.

TABLE 5.14

Percent Distribution of Nutritional Status as Measured by Arm Circumference Among 1-2-Year-Old Children* of Employed Mothers, according to Residence Zone and Primary Caregiver When Mother is Away
1985 Chogoria Community Health Survey

Zone & Caregiver	Total	Nutritional Status			N
		Good	Mild Under-nutrition	Severe Under-nutrition	
All Zones					
Total	100.0	75.8	19.4	4.8	(425)
Father	100.0	84.0	11.7	4.8	(54)
Other adult	100.0	85.4	13.3	1.2	(186)
Mother never leaves**	100.0	74.4	20.2	5.4	(56)
Child under 16/ nobody	100.0	61.0	24.2	7.2	(129)
High/Middle					
Total	100.0	86.5	10.8	2.7	(260)
Father	100.0	90.1	9.9	0.0	(29)
Other adult	100.0	92.5	6.8	0.8	(134)
Mother never leaves**	100.0	76.2	18.5	5.3	(38)
Child under 16/ nobody	100.0	77.8	15.3	6.9	(59)
Low					
Total	100.0	66.1	27.3	6.7	(165)
Father	100.0	80.0	12.0	8.0	(25)
Other adult	100.0	75.0	23.1	1.9	(52)
Mother never leaves**	100.0	***	***	***	(18)
Child under 16/ nobody	100.0	52.9	37.1	10.0	(60)

*Measurements were taken for the youngest child aged 1-2 living in each household.
**Mothers who earn wages for work done at home or who keep children with them when working.
***Fewer than 25 children.

VI. INFANT FEEDING PRACTICES

The survey collected information on breast-feeding of recently born children, the time of initiation of nonmaternal milk, and breast-feeding practices when a young child has diarrhoea.

Breast-feeding

There are two reasons for examing breast-feeding in a survey such as the CCHS. First, it is well documented that, at least in developing countries, breast-fed infants tend to be healthier than babies who are not breast-fed. At least three factors are felt to be responsible for this: the passing on of maternal antibodies, guaranteed provision of necessary nutrients, and avoidance of contaminants ingested in nonmaternal milk or formula. Secondly, breast-feeding works as a contraceptive during the period when it is practiced intensively.

Table 6.1 presents survey data on the incidence and duration of breast-feeding in the catchment area. Breast-feeding remains virtually universal, with 99 percent of recently born child breast-fed for at least some period of time. This proportion does not vary according to zone of residence. Not only are almost all children breast-fed, but most are breast-fed for a considerable length of time. Using life table techniques, it is estimated that almost 99 percent of children are still being breast-fed at 6 months of age (of those surviving that long) and 93 percent at their first birthday, with relatively little difference between zones. Even after 2 years, almost half of children were reportedly still being breast-fed, with the proportion much lower in the high zone (25 percent). Both the mean and median durations of breast-feeding are about 24 months.

A comparison of the CCHS results with those from the KCPS of 1984 shows that breastfeeding tends to last slightly longer in the catchment area than in rural Kenya as a whole. It is possible that this difference contributes in a small way to the fertility differences discussed in Chapter VII.

Not only is breast-feeding duration important, but so too are the ages at which nonmaternal milk and solid foods are initiated. The top panel of table 6.2 indicates that nonmaternal milk is rarely started before 3 months of age in the catchment area. After 3 months, the initiation of milk supplements increases rapidly, such that more than three-fourths of 6-to-11-month-olds are regularly receiving them. This, no doubt, dilutes the health and contraceptive effects of breast-feeding.

Initiation of Solid Foods/Weaning

Currently, most physicians recommend that solid food be initiated at 4-6 months of age, and most infants in the survey area seem to start receiving food within this range. However, one of every five babies was receiving solids before 3 months and a small proportion did not start until after 6 months (Table 6.2). Starting solid food at too early an age appears to be more of a problem in the higher altitudes and among the higher socioeconomic segments of the population. These results indicate a need for better dissemination of information for mothers regarding timing of the initiation of solid food.

Administration of Liquids During Diarrhoea

Table 6.3 presents data on how much respondents felt a child with diarrhoea should be breast-fed relative to normal breast-feeding. It was not encouraging to find that 4 of every 10 respondents did not know that it is

best to continue breast-feeding normally. Eight percent advocated the dangerous step of stopping breast-feeding. It appears that knowledge decreases as education increases, for reasons as yet unexplained.

In a related question, respondents were asked how much liquid, relative to normal, should be given to a child with diarrhoea. Table 6.4 shows that about two-thirds correctly knew that liquid intake should be increased. However, about 15 percent thought that less liquid than usual should be given, and 2 percent actually said no liquids should be given. Thus, greater efforts should be undertaken to teach parents the danger involved in cutting back on liquids for children with diarrhoea.

TABLE 6.1

Selected Information on Breast-feeding Incidence and Duration
1985 Chogoria Community Health Survey and
1984 Kenya Contraceptive Prevalence Survey (KCPS)

	Chogoria Survey				KCPS (Rural Only)
	Total	High	Middle	Low	
Percent Ever Breast-fed*	99.0	98.7	99.2	99.0	NA
Percent Still Breast-fed at:**					
6 months	98.5	97.4	98.4	99.0	95.9
12 months	92.7	88.9	93.4	93.3	83.5
24 months	46.8	24.9	47.8	54.7	29.0
Median Duration of Breast-feeding*** (months)	24.4	20.1	24.7	25.5	NA
Mean Duration of Breast-feeding (months)	23.6	21.9	23.8	25.0	20.6

*Of all children born alive.
**Of all children surviving to the given age. Determined using current status data.
***Based on the "Prevalence/Incidence" Method:

$$\frac{\text{Children Now Breast-fed}}{\text{Children Born in Last 24 months}} \times 23.5$$

TABLE 6.2

Percent of Children Who Receive Nonmaternal Milk Regularly or Solid Food Regularly According to Current Age and Residence Zone 1985 Chogoria Community Health Survey

Age in Months	Zone		
	Total	High/Middle	Low
Milk Supplements			
<3	5.6	6.9	4.0
3-5	42.9	39.2	48.0
6-11	78.7	79.9	76.9
12-23	84.9	88.06	80.9
Solid Food			
<3	20.3	26.6	12.0
3-5	88.3	85.6	92.0
6-11	99.3	98.8	100.0

TABLE 6.3
Percent Distribution of Responses as to How Much a Young Child with Diarrhoea Should be Breastfed by Residence Zone and Mother's Education
1985 Chogoria Community Health Survey

Zone and Education	Total	Amount Child Should Be Breastfed: As Normal	Less Than Normal	Stop Breastfeeding	Other/Unknown	N
Total	100.0	60.5	29.1	8.0	2.4	(1,624)
Zone						
High	100.0	63.1	24.6	8.2	4.1	(268)
Middle	100.0	56.3	34.6	6.5	2.6	(820)
Low	100.0	63.4	25.4	9.3	1.9	(536)
Education						
No school	100.0	69.5	20.1	10.0	0.4	(158)
Adult literacy	100.0	62.8	26.7	10.5	0.0	(191)
Primary 1-4	100.0	60.5	29.1	8.6	1.8	(337)
Primary 5-8	100.0	59.9	29.4	7.0	3.7	(642)
Any secondary	100.0	53.2	36.9	6.4	3.6	(295)

TABLE 6.4

Percent Distribution of Responses as to How Much Liquid Children with Diarrhoea Should be Given Relative to Normal by Residence Zone and Mother's Education
1985 Chogoria Community Health Survey

Zone and Education	Total	Amount of Liquid That Should be Given: More Than Usual	Same as Usual	Less Than Usual	Nothing	Other/ Unknown	N
Total	100.0	68.3	13.0	14.5	1.9	2.3	(1,624)
Zone							
High	100.0	65.7	14.2	13.8	3.7	2.6	(268)
Middle	100.0	67.8	11.8	15.9	1.8	2.7	(820)
Low	100.0	69.4	13.8	13.4	1.5	1.9	(536)
Education							
No school	100.0	61.7	19.6	12.3	2.0	4.5	(158)
Adult literacy	100.0	67.7	12.8	14.1	3.3	2.2	(191)
Primary 1-4	100.0	64.2	18.8	13.7	1.4	1.9	(337)
Primary 5-8	100.0	71.5	9.3	15.2	1.9	2.1	(642)
Any secondary	100.0	71.2	9.6	15.9	1.5	1.8	(295)

VII. CHILDBEARING

The CCHS questionnaire included information on each respondent's childbearing, the use of certain health services in connection with her most recent pregnancy and delivery and the planning status of the most recent pregnancy. Using these data, one can estimate fertility levels and how ante-natal and delivery services are being used by the populations in the surveyed area.

Ante-natal Examinations

The data indicate that this is a population which is very aware of the value of examinations during pregnancy and, with only a few exceptions, receives such examinations. Table 7.1 shows that a remarkably high 96 percent of respondents pregnant after 1979 report receiving at least one ante-natal clinic exam during their most recent pregnancy. Unfortunately, this figure could not be confirmed via clinic cards because those cards are generally collected by health facilities after the delivery of the baby. In addition to the 96 percent who reportedly received clinic exams, about 1 percent of respondents were examined by traditional birth attendants (TBAs), but never in health facilities.

These data are encouraging not only because of the high overall proportion of women examined, but also because they reveal that even in the least well-off segments of the population the vast majority of women tend to receive at least one examination during pregnancy. Ninety-nine percent of high zone respondents report having received clinic exams. But even in the low zone the figure was 94 percent. As one might expect, the likelihood of receiving an ante-natal clinic examination increased with socioeconomic status, but the lowest figure

for any group was 89 percent among those who never attended school. We also note that the probability of being examined decreases with increasing age and parity (data not shown), a possible indication that levels will increase even more in the coming years.

These figures on ante-natal exams represent a tremendous success for all health providers (not just Chogoria) throughout the area. Those providers have stressed the importance of ante-natal care to their staffs and to local communities. This attention seems to have paid off in a level of ante-natal care far exceeding what is found throughout most of Africa. It is likely that these efforts have been a factor in reducing infant mortality to the relatively low level found in the survey. Since ante-natal exam levels are already so high it has now become debatable whether it would be worthwhile for health care providers to invest resources into increasing those levels even further or whether it would be more beneficial to direct those resources toward other activities.

There is some room for improvement, however, in the timing of initial ante-natal exams (Table 7.2). Only one of every eight women report that they were first examined less than four months into their pregnancy, the time when the first exam is recommended. Sixteen percent of women wait until the final trimester of pregnancy before receiving an examination. Inexplicably, the most poorly educated group is less likely to wait until the last trimester. Otherwise, the likelihood of waiting decreases with increasing education.

It is recommended that all women receive a tetanus toxoid injection during pregnancy, in order to prevent newborns from contracting neonatal tetanus. Reported levels of coverage of this vaccine were high (not shown), 87 percent overall. Coverage was somewhat lower in the low zone (82 percent), among residents of nonmodern houses (81 percent), and among the poorly educated than among other groups. There was little difference according to age, number of living children, or the year in which the pregnancy occurred.

Location of Births

Each respondent who had a baby since the end of 1979 was asked where her most recent birth occurred. If the delivery did not take place at a health facility she was asked who assisted at the delivery. Table 7.3 indicates that just over half of deliveries took place in hospitals, while an additional 15 percent occurred at smaller health facilities. It is most remarkable that in the high and middle zones between 85 and 90 percent of births took place in health facilities. Overall, about 3 out of every 10 respondents' most recent deliveries took place outside of health facilities. Most of these reportedly were at the respondent's home or at the home of a relative or neighbor.

The fact that 30 percent of deliveries were home deliveries is not as much of a concern as the fact that all but a small proportion of home deliveries were said to occur without the presence of anyone described as specially trained in assisting deliveries. The lack of anyone in attendance who is trained to deal with emergencies and to ensure the most sanitary possible conditions can contribute to both maternal and infant morbidity and mortality.

In the low altitude zone about half of deliveries occur outside of health facilities and 44 percent took place with no trained person to assist. Among

women who have received no formal education only about one-third of deliveries occur at health facilities and fully 60 percent are attended by either untrained individuals or nobody. Among the best educated and those in modern houses only about 7 percent of births are not assisted by trained attendants. The problem of unattended deliveries is clearly one of lower socioeconomic segments of the population, even in the more prosperous parts of the catchment area, indicating it may be less a problem of access to services and more one of getting women or couples to utilize available services.

Only 11 percent of women reported that they had been visited by a trained health or medical worker for a postpartum check (Table 7.4). Most of these checks were performed by field health educators or volunteer health workers. The proportion receiving these visits increased slightly with education.

Fertility

Table 7.5 displays current fertility rates from the CCHS and the KCPS from one year earlier. Fertility in every age group is substantially lower in the CCHS than in the KCPS. The differences are proportionately greatest in the early (15-24) and late (35-44) years of childbearing. The difference at 15-24 could arise from later marriage and Chogoria Hospital Youth Programme effects. The total fertility rate (TFR)* for the whole catchment area is 5.2 births per woman, far below the 7.7 births reported by the KCPS for the entire country. If only rural areas are considered the TFR from the KCPS increases to 8.1 births per woman. Thus, at current rates women in the Chogoria catchment area are bearing almost 3 fewer children apiece than rural women throughout Kenya. This difference fits well with what will be demonstrated in the next chapter

*The number of children each women would have in her lifetime if she bore children according to the age-specific rates currently in effect.

regarding large differences in use of family planning between the survey area and Kenya as a whole.

Table 7.5 also shows that fertility is higher in the low zone than in the upper zones. Again the relative differences are greatest at the extreme ages of childbearing. In the low zone women average about one more child apiece than at the higher altitudes. However, even in the low zone, women average two fewer children than other Kenyan women.

On a worldwide scale, an average of 5.2 births per women is certainly not considered low fertility. However, in the context of present-day Kenya and sub-Saharan Africa it represents a low rate of childbearing. Table 7.6 presents fertility rates from surveys carried out in a variety of African countries in recent years. The TFR for the Chogoria catchment area is far below the rates for all other countries with available recent data. Women in Zimbabwe and Botswana, perhaps the two sub-Saharan nations with the most successful family programmes, average over one child more apiece than Chogoria women. According to the Population References Bureau's World Population Data Sheet (1986) the only mainland sub-Saharan African countries with a TFR of less than 5.2 are Gabon (a small country whose fertility rate is depressed by extremely high levels of infertility) and South Africa (where low fertility among whites keeps the national TFR down to 5.0). The World Population Data Sheet estimates the TFR for all of eastern Africa to be 6.8 births per woman.

Table 7.7 shows distributions of the number of children ever born according to current age and zone of residence. (The figures presented are for all women regardless of marital status. Respondent data were adjusted by the proportion

of women not eligible for interview, i.e., those who never married or had a live birth.) Few women have not borne a child by the time they are 25 years old.

The finding that less than 1 percent of women over 30 have supposedly never borne a child tempts one to conclude that primary infertility is extraordinarily low and should not be considered a problem, since "normal" levels of infertility are thought to be at least 3-4 percent. We do not know to what extent women unable to bear children have left the area, probably to go to the larger cities, because of the considerable stigma attached to infertility. Therefore, we cannot conclude what the true level of infertility in the population is without further investigation. It is probably safe to assume, though, that primary infertility is not especially widespread in the survey area, not warranting the attention it has received in some other parts of Africa. The KCPS of 1984 found a level of primary infertility of 3 percent nationwide, a figure which would fall in the "normal" range.

A considerable portion of women in the catchment's older cohorts have had a large number of children. Over half of 40-44-year-olds and one-third of 35-39-year-olds have had at least 8 live births. Likewise, very few women in those older cohorts have had fewer than 4 live births. Viewed in conjunction with the currently prevailing desire for about 4 children in total, the data in Table 7.7 reveal the magnitude of the recent changes in childbearing rates and intentions. The data also reconfirm the finding that fertility in the low zone is appreciably higher than at higher elevations.

Table 7.8 displays mean numbers of children ever born by current age of respondent according to the CCHS and the 1984 KCPS. The comparison between

the two surveys is quite revealing about the recency of fertility decline in the catchment area. There is no difference between the cumulative fertility of 40-44-year-old women in the catchment area and in the nation as a whole, indicating that until recently there was probably little or no difference in fertility. However cumulative fertility is substantially lower in the catchment area than it is nationwide among the youngest cohorts. Current fertility, as measured by the TFR, is one-third lower in the catchment area than elsewhere. These findings provide strong evidence that the decline in fertility has been quite rapid and that the gap between national levels and Chogoria levels is continuing to widen.

There are also indications that the relatively low level of fertility is not due to socioeconomic or cultural characteristics of the catchment's population. According to the KCPS the total fertility rate in 1984 was 8.0 for Eastern Province (Chogoria's province), 8.0 among women of the Meru-Embu groups (most of the respondents of the CCHS were Merus), and 7.8 among Protestants. Likewise, standardizing for educational attainment does little to eliminate the difference in fertility. This evidence supports the notion that the low fertility may be a phenomenon limited to the Chogoria catchment area and, therefore, is a result of activities undertaken by health and/or family planning providers, especially Chogoria Hospital.

There are some considerable differences in the mean reported number of children ever born between various socioeconomic categories. Mean parity is only slightly higher in the low zone than in the upper zones, especially when the means are standardized for age (Table 7.9). However, differences according to

women's education are large. Even after age standardization, mean parity is about 50 percent higher among unschooled women than among respondents who attended secondary school. (In this instance standardization is important in reducing a difference which at first appears huge, because of a strong correlation between age and education.) Parity, however, is not nearly as strongly related to house type. Differences according to zone, education, and house type persist across all ages from 20-24 to 40-44, although proportionately they appear greatest at ages 25-34 (probably because the older cohorts had most of their children in the years before family planning use became common).

The data indicate that, despite the fact that fertility has declined sharply and contraceptive use is common (see Chapter VIII), almost all couples want to have a child as soon as possible after marriage. Very few women, regardless of age, had never been pregnant. Among the youngest women interviewed most had already had a baby (Table 7.9 shows that mean parity among married 15-19-year-olds was 1.0) and most of those who had not had a child already were currently pregnant for the first time.

TABLE 7.1

Percent of Respondents Who Went to a Health Facility for an Ante-natal Examination during Their Most Recent Pregnancy* according to Zone of Residence, Level of Education, and Current Age
1985 Chogoria Community Heath Survey

Respondent Characteristics	Percent Examined at Health Facility	N
Total	96.0	(1402)
Zone		
High	99.1	(223)
Middle	97.6	(705)
Low	93.9	(474)
Education		
No school	89.0	(129)
Adult Literacy Only	93.8	(150)
Primary 1-4	95.5	(286)
Primary 5-8	97.6	(573)
Any Secondary	99.0	(263)
Age		
15-24	97.6	(502)
25-34	96.2	(502)
35-39	94.4	(160)
40-44	91.1	(116)

*Limited to women whose most recent pregnancy terminated in 1980 or later. Does not include current pregnancies.

TABLE 7.2

Percent Distribution of Number of Months Pregnant at the Time of First Ante-natal Clinic Examination* According to Zone of Residence and Level of Education 1985 Community Chogoria Health Survey

Residence and Education	Total	Months Pregnant at First Exam 0-3	4-6	7+	Unknown	N
Total	100.0	12.9	69.8	16.4	0.8	(1355)
Zone						
High	100.0	11.3	69.7	18.1	0.9	(221)
Middle	100.0	11.3	67.7	20.5	0.4	(688)
Low	100.0	14.8	71.8	12.3	1.1	(446)
Education						
No school	100.0	13.2	71.1	13.5	2.2	(115)
Adult literacy only	100.0	15.3	63.6	20.2	0.9	(142)
Primary 1-4	100.0	12.3	67.0	19.5	1.2	(276)
Primary 5-8	100.0	12.6	71.0	16.1	0.4	(561)
Any secondary	100.0	12.4	74.5	12.8	0.3	(260)

*Limited to women whose most recent pregnancy terminated in 1980 or later. Does not include current pregnancies.

TABLE 7.3

Percent Distribution of Place of Birth and Assistance at Most Recent Birth* According to Selected Characteristics 1985 Chogoria Community Health Survey

Characteristics	Total	Place of Delivery					N
				Not at Health Facility			
		Hospital	Hlth Ctr./Clinic/ Maternity Cottage	TBA	Other Trained Person	No Trained Person	
Total	100.0	53.9	15.4	2.8	0.6	27.3	(1355)
Zone							
High	100.0	59.7	28.1	1.4	0.0	10.9	(221)
Middle	100.0	63.7	20.1	1.5	0.4	14.4	(688)
Low	100.0	43.5	7.9	4.5	0.9	43.3	(446)
House Type							
Modern	100.0	74.7	15.8	2.7	0.0	6.9	(129)
Semimodern	100.0	62.7	19.6	1.5	0.6	15.6	(766)
Nonmodern	100.0	38.0	9.9	4.6	0.7	46.8	(460)
Education							
No school	100.0	27.1	5.6	67.4	1.0	59.9	(115)
Adult literacy	100.0	40.2	18.0	2.4	0.0	39.4	(142)
Primary 1-4	100.0	46.5	15.9	1.5	1.0	35.1	(276)
Primary 5-8	100.0	58.5	17.6	3.4	0.4	20.2	(561)
Any secondary	100.0	77.3	13.9	1.66	0.6	6.6	(260)

*Limited to women whose most recent pregnancy terminated in 1980 or later.

TABLE 7.4

Percent of Respondents Who Received a Postpartum Visit from a Health Educator, Volunteer, TBA or Other Health Worker Following Their Most Recent Birth according to Selected Characteristics 1985 Chogoria Community Health Survey

Characteristics	% Receiving Postpartum Visit	N
Total	11.4	(1355)
Zone		
High	10.0	(221)
Middle	12.9	(688)
Low	10.3	(446)
Education		
No school	9.5	(115)
Adult literacy	9.5	(142)
Primary 1-4	10.6	(276)
Primary 5-8	11.8	(561)
Any secondary	13.9	(260)
Age		
15-24	10.8	(490)
25-34	12.2	(604)
35-44	10.4	(260)

TABLE 7.5

Age-Specific Fertility Rates* and Other Fertility Measures* for Residence Zones
1985 Chogoria Community health Survey and
1984 Kenya Contraceptive Prevalence Survey (CPS)

	1985 Chogoria CHS			1984
		Zone		Kenya
Age	Total	High/Middle	Low	CPS
15-19	.083	.070	.105	.143
20-24	.246	.234	.264	.358
25-29	.277	.248	.317	.338
30-34	.244	.208	.244	.291
35-39	.145	.138	.153	.233
40-44	.069	.051	.081	.109
45-49	**	**	**	.066
Total Fertility Rate	5.2	4.8	5.8	7.7
General Fertility Rate	.191	.176	.209	-

*All rates for Chogoria Survey based on reports of births during the 24 months before interview.
**Survey did not include 45-49-year-olds.

TABLE 7.6

Total Fertility Rates from
Selected Recent Surveys in sub-Saharan Africa

Country	Year of Survey	Total Fertility Rate (TFR)
Rwanda	1984	8.5
KENYA (Total)	1977-78	8.3
KENYA (Rural only)	1984	8.1
KENYA (Total)	1984	7.7
Ivory Coast	1980-81	7.4
Benin	1981-82	7.1
Ghana	1979-80	6.5
Zimbabwe	1984	6.5
Botswana	1984	6.5
Mauritania	1981	6.2
CHOGORIA CATCHMENT	1985	5.2

TABLE 7.7

Percent Distribution of Number of Children Ever Born to All Women 15-44-Years of Age according to Age and Residence Zone 1985 Chogoria Community Health Survey

Age and Zone	Total	Children Ever Born							
		0	1	2	3	4-5	6-7	8-9	10+
All Women	100.0	20.5	13.2	11.3	9.7	19.0	14.3	8.3	3.7
Age									
15-19	100.0	77.3	19.2	3.4	0.2	0.0	0.0	0.0	0.0
20-24	100.0	22.4	32.2	25.8	12.3	7.0	0.3	0.0	0.0
25-29	100.0	4.5	7.1	17.8	24.3	36.9	6.9	2.0	0.3
30-34	100.0	0.8	1.0	5.1	10.7	41.1	33.1	6.9	1.4
35-39	100.0	1.4	1.4	1.5	2.9	24.0	36.6	24.3	8.0
40-44	100.0	0.5	1.4	1.2	1.1	9.1	30.5	35.9	21.1
Zone									
High/Middle	100.0	23.6	13.9	11.6	10.5	17.9	13.1	6.6	3.0
Low	100.0	16.3	12.2	10.8	8.8	20.5	16.0	10.6	4.8

TABLE 7.8

Mean Number of Children Ever Born
by Current Age of Women and Total Fertility Rate
1985 Chogoria Community Health Survey (CCHS)
and the 1984 Kenya Contraceptive Prevalence Survey (KCPS)

Age	Chogoria CHS, 1985	Kenya CPS, 1984	
		Total	Rural Only
15-19	0.26	0.35	0.36
20-24	1.52	1.96	2.03
25-29	3.41	3.96	4.18
30-34	5.14	5.70	5.90
35-39	6.49	7.04	7.32
40-44	7.84	7.84	8.01
Total Fertility Rate	5.2	7.7	8.1

TABLE 7.9

Mean Number of Children Ever Born Alive to Ever Married Women according to Selected Characteristics by Age
1985 Chogoria Community Health Survey

Characteristics	15-44		Age 15-19	20-24	25-29	30-34	35-39	40-44
Total	4.4		1.0	1.8	3.5	5.2	6.5	7.8
Zone								
High	3.9	(4.1)	*	1.8	3.2	4.7	6.3	7.5
Middle	4.2	(4.2)	1.1	1.8	3.3	5.0	6.5	7.7
Low	4.6	(4.5)	1.0	1.9	3.9	5.4	6.5	8.0
House Type								
Modern	3.8	(3.8)	*	1.6	2.98	4.4	6.0	6.8
Semimodern	4.4	(4.3)	1.0	1.8	3.5	5.2	6.5	7.9
Nonmodern	4.3	(4.5)	1.0	1.9	3.7	5.3	6.6	8.0
Education								
No school**	6.3	(4.9)	*	*	4.6	5.7	6.9	8.0
Primary 1-4	5.0	(4.6)	*	*	3.8	5.3	6.6	8.0
Primary 5-8	3.7	(4.1)	1.1	1.9	3.4	5.1	6.0	7.1
Any secondary	2.4	(3.3)	*	1.4	2.6	3.8	*	*

NOTE: Numbers in parentheses are standardized to the age distribution of the entire sample.

*Fewer than 25 cases.
**Includes adult literacy class only.

VIII. FAMILY PLANNING

The CCHS contained a lengthy module covering many aspects of family planning. Among the family planning topics included were knowledge and use of specific contraceptive methods, reasons for not using family planning methods, current desire to become pregnant, current source of contraception, knowledge of sources of contraception, interest in community-based distribution (CBD) of family planning, number of children desired, interest in tubal ligation, and method continuation rates.

Knowledge of Contraception

Each respondent was asked to name as many methods of family planning as she could. She was then asked if she had heard of each of the methods she had not mentioned. Table 8.1 reveals that pills and the IUD are the most widely known methods of contraception by a sizable margin, reportedly known by 96 and 92 percent of respondents, respectively. Very encouragingly, as shown in the second column of the table, most respondents reported knowledge of these two methods without prompting. All other supplied methods included in the questionnaire (injections, condoms, foam, and female sterilization), except for vasectomy, were known to a majority of women. Only 2 percent of respondents knew of no modern methods. Three of the four natural methods included were known to slightly over half of respondents, while the Billings method (also known as the cervical mucus method) was not widely known.

Table 8.2 consists of a comparison of knowledge of supplied methods between the CCHS and the 1984 KCPS. Levels of knowledge are about the same in the high and middle zones, but are slightly lower for every method in the low zone. Knowledge of at least one method is nearly universal in every zone.

Meanwhile, method knowledge is somewhat lower nationwide. Nationally, the pill is the most widely known family planning method, familiar to 78 percent of women as opposed to 96 percent in the Chogoria catchment area. Female sterilization is the only method included which the surveys show to be as widely known throughout Kenya as it is in the catchment area.

Use of Contraception

Table 8.3 presents the proportion of respondents in each zone who report ever having used each of the family planning methods listed. Just over half of women report ever using (past or present) a supplied method, led by the pill (42 percent) and the IUD (21 percent). Calendar rhythm was the natural method most used, having been employed by 8 percent of respondents at some time. Thirty-nine percent of low zone inhabitants report ever having used any supplied method, far below levels reported by high and middle zone residents (69 and 64 percent, respectively). This large difference appears for each of the supplied methods as well. There is little difference between zones in ever-use of nonsupplied methods, such as natural methods and withdrawal.

Table 8.4 compares the proportion of married women of childbearing age currently using any form of contraception in an assortment of recently surveyed African countries. Contraceptive prevalence in the Chogoria catchment exceeds all sub-Saharan African countries for which data exist for both all methods and modern methods. As will be discussed in greater detail later, 43 percent of married women use some form of family planning and 34 percent use a modern method. The only country listed with prevalence even approaching that of the catchment area is Zimbabwe, which has been recognized in recent years as having the most successful nationwide family planning programme in sub-Saharan

Africa. This table puts the progress within the catchment area in better perspective than the Chogoria numbers alone. Although on a worldwide scale, 43 percent prevalence would not be noteworthy, it stands out in sharp contrast to the rest of sub-Saharan Africa. Most African populations still have contraceptive prevalence rates not far removed from zero. Even most of the countries which have experienced increases in prevalence have not risen to a level approaching that in the Chogoria catchment area.

The contraceptive method mix for each of the altitude zones is displayed in Table 8.5. Overall, the pill and the IUD are by far the most widely used methods, employed by 16 and 11 percent of currently married women, respectively. These two methods account for about 60 percent of all contraceptive use and almost 80 percent of supplied method use. No other supplied method is used by more than 3 percent of married respondents. Among nonsupplied methods the highest prevalence is for rhythm, used by 5 percent of couples.

Contraceptive prevalence in the high and middle zones is over 50 percent, a level that, as far as is known, is far above what has been found in any other rural population in Africa. Even in the low zone, an area of considerable poverty and poor health status, 29 percent of married respondents use family planning methods, far higher than in most other parts of Kenya or Africa. The contraceptive method mix is very consistent from zone to zone, with the most notable difference being the relatively greater use of each of the nonsupplied methods, especially rhythm and postpartum abstinence, in the low zone.

Table 8.6 shows that contraceptive prevalence increases with the number of living children up to 4-5 children where just under half of women use. Of the 50 respondents with no living children, none were using family planning. This is a good indication that, despite the high contraceptive prevalence, couples still try to have a first child as soon as possible. However, one-third of women with only one living child are currently using a method of avoiding pregnancy, showing that many couples are concerned about adequate child spacing from an early age. Pills tend to constitute a smaller portion of the method mix as the number of children increases, but they remain the most prevalent method throughout. The IUD and, of course, sterilization are preferred by women with several children already.

Contraceptive prevalence increases substantially with increasing socioeconomic status, as seen in Tables 8.7 and 8.8. Prevalence rises from 28 percent to 60 percent from the most poorly to best educated groups and changes in a similar fashion with housing quality. Not only do 60 percent of married women of high socioeconomic status report using any method, but about one-half report using effective, modern methods, a figure not exceeded in many rural populations in the developing world. Not only does overall prevalence increase with socio-economic indicators, but the ratio of supplied to nonsupplied method use also increases. Thus, not only do more higher socioeconomic status couples use family planning, but they also use more effective methods. The only groups examined among which pills are not the most prevalent methods are those living in modern houses and those with any secondary education, where IUD use is equal to or greater than pill use.

Table 8.9 presents contraceptive prevalence rates according to house type, number of living children, and educational attainment by zone of residence, in order to see if any of the group differences noted stem from differences between zones or vice-versa. It is clear that the lower prevalence in the low zone is by no means primarily a function of socioeconomic status or family size; the zonal differences do not attenuate appreciably when we control for these factors. Likewise, the differences between socioeconomic and family size categories remain strong when zone is controlled, indicating that these factors operate on contraceptive prevalence independently of place of residence.

Table 8.10 compares contraceptive prevalence and method mix between the CCHS and the 1984 KCPS. It should be noted that Kenya is a nation which has outwardly expressed strong support for family planning for a number of years. It is also a country where a large amount of resources have gone into the establishment and support of family planning programmes. In spite of these inputs and governmental support, contraceptive prevalence is 2.5 times higher in the survey area than it is nationwide (and three times higher if the low zone is disregarded). Use of supplied methods is 3.5 times higher in the survey area. There is little difference in the prevalence of nonsupplied methods.

Pills and the IUD were the most commonly employed methods in both surveys, but were five times and three times more prevalent, respectively, in the catchment area than they were nationally. Of the supplied methods only female sterilization and injectables were as prevalent nationwide as in the survey area. These findings warrant further research aimed at determining what it is

about the Chogoria programme (and other area programmes) and/or the population of the catchment area that has led to such high use of family planning services.

Source of Contraception

As seen in Table 8.11 the predominant sources of all major methods of contraception in all three zones are clinics and health centres. Such facilities reportedly supply three-fourths of oral contraceptive users and two-thirds of IUD users in the catchment area. These figures are relatively consistent across zones. Hospitals account for all but a small proportion of the remaining IUD's as well as most oral contraceptives not obtained at health centres. Six percent of pills and slightly larger proportions of condoms and foam were reportedly distributed in the community by Chogoria's field health educators and volunteer family health workers. An examination of programme acceptor records indicate that the figures for community distribution are much higher. It may be that some respondents getting supplies from health educators or volunteers reported their source as the health facility at which the worker was based or where they go for their clinic exams.

Unfortunately data are not available on which health centres or clinics supply current users, so we cannot estimate the proportion supplied by the Chogoria system and other providers. Just under two-thirds of hospital-supplied pill and IUD users obtain their contraceptives from Chogoria Hospital, while just over one-fourth of each group receive supplies from the government-operated Meru Hospital in the district capital.

Table 8.12 presents the distribution of family planning sources which nonusers say they would be most likely to use if they were to begin contracepting. Responses are limited to those who consider it likely that they will use in the future. Twenty-nine percent of these women did not know a family planning source. This proportion was highest in the low zone and among the least well educated.

The survey included questions to determine the proportion of fecund respondents who would be interested in receiving contraceptives through a community-based distribution (CBD) system, that is, via an outlet or person in the local community rather than at a health facility. The responses indicated great receptiveness to such a system (Table 8.13). About four-fifths of respondents claimed that they would be interested in getting supplies through a CBD system. There was little variation in this figure according to zone, education, or whether currently using a method.

Reasons for Not Using Family Planning

All sexually active women in union not using any form of family planning were asked to give the single most important reason that they were not using contraception. Table 8.14 reveals that 79 percent gave reasons relating to pregnancy and subfecundity, with the most important of these being that women were postpartum or breast-feeding (30 percent) or currently pregnant (29 percent). Only 9 percent of nonusers were not using because they were trying to become pregnant. It is almost certain that many of those not using because they are breast-feeding are actually at substantial risk of an unintended pregnancy. Family planning providers should keep this in mind and take

appropriate actions to make the population aware of the necessity of using contraception to avoid pregnancy among many breast-feeding women, particularly those whose menses have resumed or who have started to reduce the number of breast-feeding episodes per day.

Only 21 percent of nonusers gave other reasons for not using contraception. The only reason given by a substantial proportion of respondents was lack of information regarding either family planning methods or sources (6 percent). Fear of side effects and opposition of husbands, although mentioned by a number of women, do not appear to be major barriers to adoption of family planning in the Chogoria area. The only notable difference between altitude zones was that lack of information was mentioned twice as often in the low zone as in the high and middle zones.

Table 8.15 displays distributions of the primary reason for discontinuing contraception among past users. By far the most prominent reason is that the women experienced physical problems or discomfort that they attributed to the method. Among pill users physical problems and alleged side effects accounted for 42 percent of discontinuation. Stopping use in order to become pregnant was the second most important reason overall and the most important one for IUD discontinuation (slightly ahead of side effects). Unintentional pregnancy was the third most common reason, but it was much more common among women using methods other than pills or the IUD. Husband's opposition was blamed by 6 percent of women for contraceptive discontinuation.

Pregnancy Intentions and Desired Family Size

All women who reportedly were able to have children and were sexually active were asked if they would like to become pregnant as soon as possible. As seen

in Table 8.16, 22 percent were currently pregnant, 6 percent of women reported wanting to get pregnant, while the remaining 72 percent said they definitely preferred not to become pregnant immediately. Not at all surprising is the fact that the proportion desiring to become pregnant, as well as the proportion currently pregnant, decreased quite sharply as the number of living children increased. There seems to be little change, though, beyond four living children. Respondents in the low zone and those living in nonmodern houses were the most likely to be pregnant and the least likely to want to avoid pregnancy.

Of all women interviewed about 14 percent reported being currently pregnant. This reduces to about 12 percent currently pregnant among all women 15-44-years-old when those women not eligible for interview are included. If women 45-49-years-olds are included this is further reduced to about 10.6 percent, compared with 11 percent obtained in the Kenya Contraceptive Prevalence Survey of 1984. If it is assumed that roughly about 80 percent of current pregnancies are recognized and reported and that about 5 percent of current pregnancies will not result in a live birth we arrive at a general fertility rate of .186 compared to the rate as estimated in the survey of .191, a very close match.

Displayed in Table 8.17 are distributions of the number of additional children desired according to the number of living children the respondent already had at the time of interview. Of all respondents purportedly capable of bearing more children, almost half, 46 percent, reported that they want to have no more children, an indication that the concept of limiting family size has become well diffused throughout the population. More than half of women with

four children and 93 percent of those with seven or more children claim that they are ready to stop childbearing. This should be viewed in contrast with the results of surveys in some other parts of Africa where a majority of women report wanting all the children possible or "as many as God sends". No women interviewed wanted as many children as possible and only a small proportion wanted to leave her childbearing up to God or fate. It appears that the rationale for family planning, that childbearing should be limited and/or well spaced, has gained widespread acceptance in the survey area.

The proportion wanting no more children was far higher than in the nationwide survey of 1984. That survey showed 17 percent of women with three children, 30 percent of those with four children, and 59 percent of those with five or more children wanting no more.

As shown in Table 8.18, among women with small families (0-1 children) or very large families (7 or more children) there is little difference between socio-economic and residential groups in the proportions wanting no more children. Among respondents with from two to six children the probability of wanting no more children generally increases with socioeconomic status and altitude. Even in the lowest socioeconomic categories, however, well over half of women with four to six children want no more children.

The survey can be used to investigate the extent to which the perceived need for having sons plays a part in whether respondents want more children. Since having at least one son is often cited as being of great importance to a family, it was expected that the data would show that women without any living sons would be more likely to want to continue childbearing than those without

any living daughters. The data do not support this hypothesis, though. Shown in Table 8.19 are the proportions of women wanting no more births according to the number of living sons and daughters at the time of interview. Ten percent of women who have no living sons reported that they wanted no more children. The proportion of women with no living daughters who were ready to stop childbearing was about the same, 11 percent. Twenty-one percent of women with only one live son are ready to stop. If these reports on desire to stop childbearing are reliable, then it implies that the felt need to have several sons is decreasing. This would constitute a reduction in what has been considered a major obstacle to greater family planning acceptance.

Table 8.20 presents the opposite end of the spectrum, the proportion of fecund respondents desiring to have at least four additional births. Overall, only six percent of women fall in that category, almost all of them with fewer than four children at the time of interview. Virtually all variation between groups occurs among women with from one to three children. For those women there is a strong relationship such that the likelihood of desiring a large number of additional children varies inversely with socioeconomic status and altitude.

The modal desired family size appears to be four children. Roughly three-fourths of women, regardless of the present number of children, claim to want to have 3-5 children ultimately. The proportion wanting more than five is very small.

Forty-nine percent of respondents reported that they had discussed the number of children they wanted with their spouse. Discussions were more likely to

have taken place the younger the respondent, the higher the altitude zone, and the higher the socioeconomic status. The fact that younger couples were the most likely to have had discussions points toward changes taking place in decision-making processes. This is a positive development because it indicates that more joint planning is involved in decisions affecting family size.

Table 8.21 shows that there is good agreement among spouses who discussed the issue regarding the number of children desired. From 65 to 89 percent of couples, depending on current family size, are in agreement. Where there is disagreement it appears that the husband is likely to favor more children than the wife. The majority of differences, though, are only by one child.

Planning Status of Pregnancies

The survey questionnaire included information on whether each respondent planned her most recent pregnancy. If a woman had ever been pregnant she was asked "At the time you last became pregnant did you want to become pregnant?" If the response was negative she was then asked, "Was it that you wanted no more children or that you just wanted to wait longer before another pregnancy?" In this way pregnancies could be classified as "planned," "mistimed" (wanted to wait longer), "unwanted" (wanted no more children), or "unknown/unsure". The mistimed and unwanted category can be combined into "unplanned" pregnancies. (It is important to keep in mind that the term "unwanted pregnancy" does not imply that the child resulting from that pregnancy is in any sense an unwanted child or unloved child. It simply means that at the time she became pregnant the woman would rather not have had any more children).

In spite of high contraceptive prevalence, 47 percent of pregnancies were described as unplanned (Table 8.22). Mistimed pregnancies were almost four times as common as unwanted pregnancies (41 versus 11 percent). Although the overall proportion of unplanned pregnancies varies relatively little according to the characteristics examined, the frequency of unwanted pregnancies does vary substantially. Unwantedness climbs sharply with the number of living children. Among those with fewer than 5 children unwantedness is quite rare, but 38 percent of those with more than 6 children report that their most recent pregnancy was unwanted. Unwantedness declines with education, such that only 2 percent of pregnancies among the best educated were described as unwanted. (However, some of this relationship stems from the fact that the best educated tend to be relatively young and of low parity.) Interestingly, there appears to be no relation between planning status and zone of residence.

Table 8.22 clearly shows that, in spite of the tremendous progress to date, more work needs to be done in family planning in the survey area. Not only do couples wanting to delay or limit childbearing need to use contraception, but there should also be an emphasis on getting current users to use their methods correctly and consistently.

Unmet Need for Family Planning Services

Women with unmet need for family planning services were defined as those who were married, fecund, not currently pregnant, and did not want to become pregnant at that particular time, but were not using any family planning method. As shown in Table 8.23, about 8 percent of ever married women fit this definition. This figure is low but indicates that there are still

approximately 3,500-4,000 women at risk of an unintended pregnancy (based on a population of 50,000 ever-married women of childbearing age in the catchment area). In addition, it is generally agreed that there are many single women (who were not in the survey population) at risk of unintended pregnancy. Thus, 3,500 women can be viewed as a minimum estimate of the total number of women exposed to the risk of an unintended pregnancy. In addition, these figures do not take into account women using relatively ineffective methods, many of whom have are at considerable risk of becoming pregnant.

The differences between groups in proportions of women in need are relatively small. The percentage in need for purposes of limiting (i.e. who want no more children) increases with the number of already living children, while the percentage in need for spacing (i.e., who want more children, but not immediately) decreases. Overall, about one-third of those in need of services want more children, but prefer to wait longer for their next child.

Contraceptive Sterilization

As was seen in Table 8.5, an estimated 2.5 percent of currently married women of reproductive age in the catchment area have been contraceptively sterilized, ranging from 5.2 percent in the high altitude zone to 1.4 percent in the low zone. (No husbands of respondents were reported to have undergone a vasectomy.) This would mean that approximately 900-1,200 women of childbearing age throughout the catchment area have undergone tubal ligation. (This estimate is based on a total population of 300,000-400,000, 12 percent of it married women 15-44-years-old.)

Table 8.24 presents the percent distribution of selected characteristics of women who have been sterilized and compares these characteristics with those

of all survey respondents. Seventy-eight percent of those sterilized had the operation at Chogoria Hospital, while the remainder attended one of an assortment of hospitals, led by the nearby government-operated facility in the district capital, Meru. Data on when the procedure took place give a strong indication that the incidence of sterilization has been gaining populairity rapidly. Fully one-third of operations were reported to have taken place less than a year before interview. Sixty percent took place within 2 years of interview. Only 13 percent occurred 4 or more years before interview, that is, prior to mid-1981.

Most operations were performed on women in their thirties (71 percent), with almost half between the ages of 30 and 34. Only 1 respondent was sterilized before age 25, and she had already had more than 1 live birth. Almost 70 percent of sterilized respondents had between 5 and 8 living children. It was rare to encounter sterilized women with fewer than 4 children or more than 8 children. High zone residents represent twice the proportion of sterilized women as they do of all respondents, while low zone residents are just the reverse. The educational distribution of sterilized women reflects fairly closely the distribution for the entire population, with the better educated slightly better represented among those undergoing the operation. House type, the survey's best indicator of economic status, shows that those in nonmodern houses are less than half as likely to have been sterilized (38 percent of the population versus 18 percent of those sterilized) as those in more modern houses.

Sixty-two percent of nonsterilized, fecund respondents who want no more children claim that they would be interested in undergoing sterilization

(Table 8.25). This percentage is highest in the low zone, at 70 percent. The proportion interested decreases substantially as one proceeds from low to high levels of education, despite the fact that sterilization prevalence increases with education. These results plus those in Table 8.24 lead one to conclude that Chogoria Hospital would be well advised to make low zone and less well-off residents more aware of the benefits and risks of sterilization as well as its availability.

Just under half of all women interested in undergoing sterilization report that they do not know where to go to have the operation or to receive information on it (Table 8.26). This reinforces the notion that Chogoria needs to broaden its informational activities regarding sterilization. Most respondents who know where to get the operation or information on it report that they would go to one of the appropriate hospitals in the area. As one might expect, the percentage familiar with where to go increases with increasing education and is highest in the high zone.

Table 8.27 displays the primary reasons stated for not being interested in sterilization among fecund women who want no more children. By far the chief reason, given by 40 percent of such women, was fear of the operation. In the high zone, fear is cited by 56 percent of women as being behind their lack of interest. A wide range of reasons shows up next on the list, led by satisfaction with current method, mentioned by 13 percent, and four other reasons grouped between 8 and 10 percent. Opposition of the husbands and the need to wait for the husband to decide account for about 12 percent of responses overall and 16 percent in the low zone. Another 4 percent say they need more information on the operation before they would be interested in it.

Table 8.28 reveals the distribution of reasons given for not having undergone sterilization among respondents who said they would be interested in the operation. Fully 44 percent of such women have not had the operation either because they must await their husband's approval or because their husband opposes the operation. In the high zone these reasons account for 51 percent of the total. An additional 15 percent of interested women claim to need more information regarding the procedure. Those giving reasons relating to husband's opposition or approval and the need for more information constitute a particularly important target group for Chogoria information and education activities. Different approaches, such as messages geared toward males and increased use of male health workers, may provide an added impetus to sterilization levels.

Method Continuation

The CCHS also collected information on duration of oral contraceptive and IUD use, which was used to estimate continuation rates for those methods. As seen in Table 8.29, about 60 percent of women starting on pills were still taking them 1 year later. However, after 3 years only 29 percent of those women were still taking pills, indicating a very large drop-off from 1 to 3 years after initiating pill use. This should not be a major concern if women were stopping in order to get pregnant. However, it is likely many women who did

not want to become pregnant discontinued the pills indicating that Chogoria might explore ways of increasing continuation rates. Continuation is particularly poor in the low zone, where only 45 percent of pill users still use after 1 year and only 13 percent continue for at least 3 years.

IUD continuation is far better. Eighty-five percent are still wearing their IUD 1 year after insertion, while 59 percent continue to use 3 years after insertion.

TABLE 8.1

Percent Distribution of Reported Knowledge of Various Contraceptive Methods, Ever-Married Women* 1985 Chogoria Community Health Survey

Method	Total	Know of Method			Don't Know Method
		Total	Spontaneous	Prompted	
Pill	100.0	96.4	88.7	7.7	3.6
IUD	100.0	92.3	75.4	16.9	7.7
Injections	100.0	81.3	30.9	50.4	18.7
Condoms	100.0	80.9	34.8	46.1	19.1
Foam	100.0	66.8	29.5	37.4	33.2
Female sterilization	100.0	56.8	14.8	42.0	43.2
Male sterilization	100.0	24.7	2.2	22.5	75.3
Any supplied method	100.0	97.9	90.5	7.4**	2.1
Rhythm	100.0	57.0	12.0	45.0	43.0
Postpartum abstinence	100.0	58.9	6.8	52.2	41.1
Withdrawal	100.0	53.3	4.9	48.3	46.7
Billings	100.0	22.2	2.4	19.9	77.8

N=1879

*Also includes never-married women who have ever had a live birth.
**Spontaneous knowledge of no methods, but prompted knowledge of at least one method.

TABLE 8.2

Percent of Ever-Married Women Who Report Knowledge of Specific Modern Family Planning Methods according to the 1985 Chogoria Community Health Survey (CHS), by Residence Zone and the 1984 Kenya Contraceptive Prevalence Survey (CPS)

Method	Chogoria CHS*			Kenya
	High	Middle	Low	CPS
Pills	97.3	98.3	94.4	77.5
IUD	95.4	96.3	87.8	60.7
Injections	84.8	83.2	78.6	65.0
Condoms	82.3	86.6	75.3	45.1
Foam/jelly	70.4	72.6	60.6	29.4**
Female sterilization	61.0	63.8	49.3	58.7
Male sterilization	28.7	27.7	20.8	19.0
Any supplied method	97.6	99.2	96.9	83.0

*Includes never-married women who have ever had a live birth.
**Includes the diaphragm.

TABLE 8.3

Percent of Ever-Married Women* Reporting
They Have Ever Used Various Contraceptive Methods,
by Residence Zone,
1985 Chogoria Community Health Survey

Method	Total	Zone		
		High	Medium	Low
Pills	42.1	53.4	50.5	31.1
IUD	21.2	37.5	26.7	11.4
Foam	9.4	10.1	12.4	6.4
Condoms	6.8	8.8	8.7	4.5
Female sterilization	2.5	4.6	3.0	1.2
Injections	0.9	1.5	0.7	0.8
Any supplied method	53.2	68.9	64.4	38.6
Rhythm	7.6	7.9	7.6	7.6
Postpartum abstinence	4.1	1.2	3.5	5.4
Withdrawal	3.7	3.1	4.5	3.1
Billings	0.4	0.0	0.5	0.5
N	(1879)	(328)	(944)	(607)

*Also includes never-married women who have ever had a live birth.

TABLE 8.4

Percent of Currently Married Women Aged 15-44 Using a Contraceptive Method in Selected African Populations

Population	Year	Using Any Method	Using Modern Methods*
CHOGORIA CATCHMENT	1985	43	34
Zimbabwe	1984	40	28
Botswana	1984	29	19
Benin	1981-82	20	1
KENYA, total**	1984	17	10
KENYA, rural	1984	16	8
Ghana	1979-80	10	4
Senegal	1986	10	3
Liberia	1986	7	6
KENYA, total	1977-78	7	4
Nigeria	1981-82	5	1
Ivory Coast	1980-81	3	1
Cameroon	1978	3	1
Somalia, urban	1983	1	1
Mauritania	1981	1	0

*Includes pills, IUD, injections, condoms, foam/cream/jelly, diaphragm, and sterilization.
**Ages 15-49

TABLE 8.5

Percent Distribution of Current Contraceptive Use
Among Women in Union, by Residence Zone
1985 Chogoria Community Health Survey

Current Method	Total	Zone		
		High	Middle	Low
Using any Method	42.5	54.4	54.0	28.7
Supplied Methods	33.6	48.2	45.7	18.4
Pills	15.7	22.1	21.6	8.6
IUD	10.6	16.2	15.5	4.6
Sterilization	2.5	5.2	3.0	1.4
Foam	2.5	2.6	2.7	2.2
Condoms	1.7	1.8	2.2	1.2
Injections	0.5	0.4	0.7	0.4
Nonsupplied Methods	9.0	6.3	8.3	10.4
Rhythm	4.5	4.0	3.9	5.2
Postpartum abstinence	2.1	0.4	1.9	2.8
Withdrawal	1.7	1.5	1.8	1.6
Billings	0.1	0.0	0.1	0.2
Other methods	0.5	0.4	0.5	0.6
Not Currently Using	57.5	45.6	46.0	71.3
Total	100.0	100.0	100.0	100.0
N	(1545)	(272)	(772)	(501)

TABLE 8.6

Percent Distribution of Current Contraceptive Use
Among Women in Union, by Number of Living Children
1985 Chogoria Community Health Survey

Current Method	Total	Living Children				
		0	1	2-3	4-5	6+
Using Any Method	42.5	0.0	33.3	40.3	48.9	46.9
Supplied Methods	33.6	0.0	21.9	33.9	40.3	34.5
Pills	15.7	--	15.7	17.7	17.6	13.9
IUD	10.6	--	2.7	9.7	15.3	10.7
Sterilization	2.5	--	0.0	0.7	2.7	5.5
Foam	2.5	--	1.5	2.8	2.7	2.6
Condoms	1.7	--	2.1	2.6	1.7	0.9
Injections	0.5	--	0.0	0.4	0.5	0.9
Nonsupplied Methods	9.0	0.0	10.4	6.4	8.6	12.4
Rhythm	4.5	--	5.4	3.2	4.2	6.3
Postpartum abstinence	2.1	--	2.9	2.1	1.8	2.5
Withdrawal	1.7	--	2.2	0.9	1.3	2.8
Billings	0.1	--	0.0	0.0	0.2	0.3
Other methods	0.5	--	0.0	0.2	1.1	0.5
Not Curently Using	57.5	100.0	67.7	59.7	51.1	53.1
Total	100.0	100.0	100.0	100.0	100.0	100.0
N	(1545)	(50)	(154)	(440)	(459)	(442)

TABLE 8.7

Percent Distibution of Current Contraceptive Use
among Women in Union, by Education of Respondent
1985 Chogoria Community Health Survey

Current Method	Total	Education				
		No School	Adult Literacy	Primary 1-4	Primary 5-8	Any Secondary
Using any Method	42.5	27.8	30.8	36.8	49.5	59.6
Supplied Methods	33.6	16.6	23.1	27.6	41.2	50.8
Pills	15.7	7.5	9.4	12.3	22.0	19.9
IUD	10.6	4.7	7.5	9.1	11.3	20.3
Sterilization	2.5	2.0	2.3	1.7	3.1	3.4
Foam	2.5	2.0	2.1	2.6	2.4	3.1
Condoms	1.7	0.0	0.4	1.1	2.4	4.0
Injections	0.5	0.4	1.4	0.8	0.0	0.4
Nonsupplied Methods	9.0	11.2	7.8	9.3	8.4	8.8
Rhythm	4.5	3.9	3.2	5.2	4.9	4.2
Postpartum abstinence	2.1	3.0	1.8	2.3	1.9	1.4
Withdrawal	1.7	3.5	2.4	1.0	0.9	2.6
Billings	0.1	0.0	0.0	0.0	0.4	0.0
Other methods	0.5	0.8	0.4	0.8	0.3	0.7
Not Currently Using	57.5	72.2	69.2	63.2	50.5	40.4
Total	100.0	100.0	100.0	100.0	100.0	100.0
N	(1545)	(160)	(210)	(365)	(574)	(235)

TABLE 8.8

Percent Distribution of Current Contraceptive Use
Among Women in Union, by House Type
1985 Chogoria Community Health Survey

Current Method	Total	House Type		
		Modern	Semimodern	Nonmodern
Using Any Method	42.5	61.6	49.4	28.1
Supplied Methods	33.6	53.6	39.9	19.7
Pills	15.7	16.0	18.8	11.4
IUD	10.6	27.7	12.3	4.0
Sterilization	2.5	3.8	3.5	0.9
Foam	2.5	3.0	2.9	1.8
Condoms	1.7	2.0	1.9	1.3
Injections	0.5	1.1	0.5	0.4
Nonsupplied Methods	9.0	8.0	9.6	8.5
Rhythm	4.5	4.2	4.7	4.3
Postpartum abstinence	2.1	1.5	2.1	2.4
Withdrawal	1.7	1.7	2.2	1.0
Billings	0.1	0.6	0.2	0.0
Other methods	0.5	0.0	0.5	0.8
Not Currently Using	57.5	38.4	50.6	71.9
Total	100.0	100.0	100.0	100.0
N	(1545)	(173)	(879)	(493)

TABLE 8.9

Percent of Women in Union Currently Using Any Contraceptive Method, by Residence Zone, by Number of Living Children, Education, and House Type
1985 Chogoria Community Health Survey

Characteristics	Total	Zone		
		High	Middle	Low
Total	42.5 (1545)	54.4 (272)	54.0 (772)	28.7 (501)
House Type				
Modern	61.6 (173)	65.0 (63)	60.2 (93)	* (17)
Semimodern	49.4 (879)	52.6 (190)	57.2 (512)	34.5 (177)
Nonmodern	28.1 (493)	* (19)	40.7 (167)	23.8 (307)
Living Children				
1**	33.3 (154)	39.4 (33)	39.0 (77)	22.7 (44)
2-3	40.3 (440)	56.3 (75)	49.4 (233)	25.8 (132)
4-5	48.9 (459)	56.8 (81)	63.5 (222)	34.6 (156)
6+	46.9 (442)	62.2 (74)	58.0 (226)	32.4 (142)
Education				
No school	27.8 (160)	* (11)	39.6 (53)	22.9 (96)
Adult literacy	30.8 (210)	40.6 (32)	42.9 (98)	20.0 (80)
Primary 1-4	36.8 (365)	52.7 (55)	51.2 (162)	24.3 (148)
Primary 5-8	49.5 (574)	53.7 (123)	55.9 (313)	39.1 (138)
Any secondary	59.6 (235)	68.6 (51)	65.7 (146)	39.5 (38)

*Fewer than 25 cases.
**The 0 children category is omitted. None of the 50 interviewed women without living children were using contraception.

NOTE: Numbers in parentheses are numbers of cases.

TABLE 8.10

Percent Distribution of Current Contraceptive Use
Among Women in Union,
1985 Chogoria Community Health Survey (CCHS) and
1984 Kenya Contraceptive Prevalence Survey (KCPS)

Current Method	1985 CCHS	1984 KCPS
Using Any Method	42.5	17.0
Supplied Methods	33.6	9.6
Pills	15.7	3.1
IUD	10.6	3.0
Female sterilization	2.5	2.6
Foam	2.5	0.1
Condoms	1.7	0.3
Injectables	0.5	0.5
Nonsupplied Methods		
Rhythm	4.5	3.8
Postpartum abstinence	2.1	2.7
Withdrawal	1.7	0.6
Billings	0.1	*
Other methods	0.5	0.2
Not Currently Using	57.5	83.0
Total	100.0	100.0
N	(1545)	(3806)

*Not asked in survey.

TABLE 8.11

Percent Distribution of Source of Contraception
Among Women Currently Using Selected Methods, by Residence Zone
1985 Chogoria Community Health Survey

Zone and Method	Total	Source of Contraception: Clinic/ Health Centre	Hospital	Educator/ Volunteer	Private Source	N
All Zones						
Pills	100.0	75.1	18.4	5.5	1.0	(322)
IUD	100.0	66.4	32.0	0.0	1.6	(212)
Foam	100.0	80.7	7.6	8.5	3.2	(45)
Condoms	100.0	64.9	18.6	7.8	8.7	(30)
High Zone						
Pills	100.0	66.7	28.8	3.0	1.5	(66)
IUD	100.0	60.9	34.8	0.0	4.4	(46)
Middle Zone						
Pills	100.0	79.8	14.1	5.6	0.5	(198)
IUD	100.0	68.8	31.2	0.0	0.0	(138)
Low Zone						
Pills	100.0	70.7	20.7	6.9	1.7	(58)
IUD	100.0	64.3	32.1	0.0	3.6	(28)

TABLE 8.12

Percent Distribution of Source of Family Planning Mentioned for Respondents Not Currently Using Family Planning Who Are Interested In Using It in the Future, According to Residence Zone and Education
1985 Chogoria Community Health Survey

Characteristics	Total	Source Mentioned				Source Not Known	N
		Total	Clinic/ Health Ctr.	Hospital	Other		
Total	100.0	71.5	48.4	20.2	2.9	28.5	(826)
Zone							
High	100.0	77.5	43.4	31.8	1.3	22.5	(129)
Middle	100.0	77.6	57.5	17.7	1.4	22.4	(379)
Low	100.0	66.0	43.1	19.5	3.5	34.0	(318)
Education							
No School	100.0	61.9	41.0	18.7	2.2	38.1	(79)
Adult Literacy	100.0	68.8	49.8	16.3	2.8	31.2	(100)
Primary 1-4	100.0	70.3	47.5	20.3	1.6	29.7	(187)
Primary 5-8	100.0	71.1	50.0	18.4	2.7	28.9	(332)
Any Secondary	100.0	85.1	50.1	30.2	3.9	14.9	(128)

TABLE 8.13
Percent Distribution of Interest in Receiving Family Planning Supplies Through a CBD* Program and Preferred Delivery System by Selected Charateristics
1985 Chogoria Community Health Survey

Characteristics	Interested in CBD: Total	Preferred Delivery: To Home	Collect	No Preference	N
Total	80.7	41.1	26.3	13.3	(1556)
Zone					
High	79.3	44.1	22.6	12.6	(270)
Middle	76.5	36.7	24.9	14.9	(812)
Low	85.2	44.5	28.9	11.8	(474)
Education					
No school	81.8	37.2	31.0	13.6	(127)
Adult literacy	85.0	37.0	29.7	18.3	(171)
Primary 1-4	82.1	40.9	29.2	12.0	(331)
Primary 5-8	80.6	43.4	22.4	13.8	(636)
Any Secondary	75.7	41.1	24.4	10.2	(290)
Current Use of FP					
Using	79.7	41.1	26.7	11.9	(708)
Not Using	81.5	41.1	26.1	14.3	(848)

*Community-Based Distribution

TABLE 8.14

Percent Distribution of Primary Reason for Not Currently Using Contraception Among Sexually Active Non-users* 15-44-Years-Old, by Residence Zone 1985 Chogoria Community Health Survey

Reason Not Using	Total	Zone		
		High	Middle	Low
Reasons Related to Pregnancy, Subfecundity, etc.	78.6	85.5	77.6	77.8
Postpartum/breast-feeding	30.3	35.9	33.3	27.3
Currently pregnant	28.5	24.4	28.7	29.3
Subfecund/infertile/menopause	10.8	12.2	9.8	11.1
Want to become pregnant	9.0	13.0	5.7	10.2
Other Reasons	21.4	14.5	22.4	22.2
Lack of information	6.3	3.1	4.1	8.2
Intend to use	3.7	4.6	4.9	2.8
Side effects	3.7	3.1	5.2	2.8
Husband's opposition	3.0	0.8	2.7	3.7
Don't like family planning	1.9	0.0	2.7	1.7
Other	2.8	3.1	2.7	2.8
Total	100.0	100.0	100.0	100.0
N	(849)	(131)	(366)	(352)

*Excludes women who have never been married and have had no live births.

TABLE 8.15

Percent Distribution of Primary Reason for Stopping Use of Most Recent Method of Contraception, Past Users 15-44-Years-Old, for All Methods Combined, Pills, and IUD's
1985 Chogoria Community Health Survey

Reason Stopped Use	Most Recent Contraceptive Method		
	All Methods	Pills	IUD
Reasons Related to Sexual Activity or Pregnancy	43.2	36.0	43.5
Wanted to become pregnant	21.4	20.5	34.2
Became pregnant	18.3	10.4	9.4
Became inactive or infertile	3.5	5.0	0.0
Other Reasons	56.8	64.0	56.5
Physical problems/Discomfort	32.5	41.7	31.8
Forgot to get supply/Too lazy/etc.	8.1	11.2	0.0
Husband's opposition	6.3	5.8	4.2
IUD expelled	3.4	--	19.3
Other	4.8	4.1	1.1
Unknown	1.7	1.2	0.0
Total	100.0	100.0	100.0
N	(380)	(233)	(69)

TABLE 8.16

Percent Distribution of Current Pregnancy Intention Among Sexually Active Fecund* Women 15-44-Years-Old 1985 Chogoria Community Health Survey

Characteristics	Total	Current Pregnancy Intention: Currently Pregnant	Desire Pregnancy	Do Not Desire Pregnancy Now	Up to God/ Fate/Undecided	N
Total	100.0	21.8	5.5	72.2	0.5	(1,161)
Zone						
High	100.0	15.8	6.4	77.2	0.5	(202)
Middle	100.0	17.3	2.8	79.9	0.0	(602)
Low	100.0	28.0	7.8	63.0	1.1	(357)
House Type						
Modern	100.0	16.9	2.5	79.9	0.6	(142)
Semimodern	100.0	17.1	5.0	77.4	0.5	(675)
Nonmodern	100.0	30.3	7.2	61.9	0.7	(344)
Living Children						
0	100.0	70.6	29.4	0.0	0.0	(32)
1	100.0	29.1	15.5	55.5	0.0	(115)
2	100.0	27.4	5.7	66.9	0.0	(175)
3	100.0	26.2	4.2	68.7	0.9	(165)
4	100.0	15.2	4.7	78.5	1.6	(178)
5-6	100.0	15.3	2.3	81.9	0.5	(282)
7+	100.0	15.8	1.8	82.1	0.4	(214)
Education						
No School	100.0	25.7	5.7	68.7	0.0	(106)
Adult Literacy	100.0	23.7	4.5	70.8	1.0	(142)
Primary 1-4	100.0	22.3	8.6	68.7	0.5	(265)
Primary 5-8	100.0	19.6	4.5	75.0	0.8	(449)
Any Secondary	100.0	22.1	3.8	74.1	0.0	(198)

*Women were considered infecund if they reported that they had reached menopause, had surgery making pregnancy impossible, or at least 2 years without pregnancy despite being sexually active without using contraception.

TABLE 8.17

Percent Distribution of Number of Additional Children Desired Among Fecund Women* According to the Current Number of Living Children 1985 Chogoria Community Health Survey

Additional Children Desired**	Total	Living Children					
		1	2	3	4	5-6	7+
0	46.0	1.9	11.8	24.9	55.7	77.0	92.6
1	12.0	3.0	13.8	28.5	20.9	10.1	2.8
2	17.3	22.9	40.4	27.2	12.3	6.9	1.8
3	11.0	39.2	15.2	7.9	2.7	0.0	0.5
4	4.7	14.8	5.6	3.1	1.6	0.8	0.0
5-7	1.6	6.5	1.5	0.0	0.0	0.7	0.5
God's will, etc	2.8	2.3	6.3	2.4	3.4	1.5	1.5
Not sure	4.6	9.5	5.5	6.1	3.5	3.0	0.3
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0
N	(1,624)***	(293)	(249)	(215)	(229)	(336)	(290)

*Women who have been contraceptively sterilized are included in the table and considered as wanting no more children.
**If currently pregnant, refers to after pregnancy terminates.
***Includes 12 respondents with no living children.

TABLE 8.18

Percent of Fecund* Respondents Wanting No More Children**
According to Selected Characteristics and Number of Living Children
1985 Chogoria Community Health Survey

Characteristics	Total	Living Children***				
		0	1	2-3	4-6	7+
Total	46.0	0.0	1.9	16.4	58.4	86.3
Zone						
High	46.3	***	1.7	25.3	68.5	88.2
Middle	44.3	***	2.6	18.5	63.3	89.3
Low	38.1	***	1.2	11.5	51.6	82.8
House Type						
Modern	47.5	***	6.0	24.2	75.7	***
Semimodern	45.4	***	1.7	21.5	59.3	87.8
Nonmodern	35.3	***	0.8	8.1	52.9	83.0
Education						
No School	53.6	***	***	18.4	56.9	77.0
Adult Literacy	68.8	***	***	***	60.4	88.9
Primary 1-4	45.7	***	0.0	12.8	51.2	87.5
Primary 5-8	35.0	***	2.3	16.0	60.6	94.2
Any Secondary	24.0	***	2.3	17.6	67.7	***

*Contraceptively sterilized women are included in the table.
**If currently pregnant, refers to after pregnancy terminates.
***Fewer than 25 cases.

TABLE 8.19

Percent of Fecund, Married Women 15-44-Years-Old
Who Want to Have No More Children
According to the Number of Living Sons and Daughters
1985 Chogoria Community Health Survey

Living Sons	Percent Wanting No More Children
Living Sons	
0	9.6
1	21.3
2	43.3
3	65.5
4+	81.1
Living Daughters	
0	10.6
1	26.4
2	49.0
3	62.8
4+	75.6

TABLE 8.20

Percent of Fecund Respondents Wanting 4 or More Additional Children** According to Selected Characteristics and Number of Living Children
1985 Chogoria Community Health Survey

Characteristics	Total	Living Children*				
		0	1	2-3	4-6	7+
Total	6.3	55.8	21.3	5.2	1.5	0.5
Zone						
High	3.6	**	10.5	1.3	0.0	0.0
Middle	4.8	**	18.8	3.3	0.7	0.0
Low	8.5	**	28.1	8.2	2.6	1.1
House Type						
Modern	2.8	**	12.7	0.0	0.0	**
Semimodern	5.3	**	19.9	2.2	1.6	0.8
Nonmodern	8.6	**	26.4	10.0	1.9	0.0
Education						
No School/ Adult Literacy	3.8	**	**	9.6	1.0	2.1
Primary 1-4	6.3	**	35.0	4.8	2.1	0.0
Primary 5-8	7.4	**	23.0	4.9	0.0	0.0
Any Secondary	6.5	**	12.4	5.2	0.0	**

NOTE: Those saying the number of children they want is "up to God" or something similar are 2.8 percent of fecund respondents and are not included in these figures.

*If currently pregnant, refers to after pregnancy terminates.
**Fewer than 25 cases.

TABLE 8.21

Percent Distribution of Number of Additional Children Desired by Respondents' Husbands*, According to the Number of Children Desired by the Respondent
1985 Chogoria Community Health Survey

Additional Children Desired by Respond.	Total	Additional Children Desired by Husband								
		0	1	2	3	4+	As Many as Possible	Fate/God's Will, etc.	Not sure	N
0	100.0	79.5	7.3	1.2	1.4	4.0	2.4	2.1	2.1	(352)
1	100.0	10.5	65.3	10.3	0.8	5.3	3.5	1.4	3.0	(111)
2	100.0	3.1	3.1	73.4	7.0	7.2	0.6	1.2	4.4	(127)
3	100.0	2.0	0.0	4.4	68.9	20.4	0.0	2.0	2.3	(67)
4+	100.0	0.0	2.9	4.9	2.7	89.5	0.0	0.0	0.0	(25)
Total	100.0	42.6	15.0	16.2	9.0	10.1	1.8	2.0	3.4	(722)**

*Includes only those currently married women who have discussed the matter of desired children with their husbands.

**Does not equal the sum of the listed N's because categories for "Not Sure" and "God's Will, etc.," are not shown. These categories each had fewer than 25 cases.

TABLE 8.22

Percent Distribution of Planning Status of Most Recent Pregnancy Among Women With a Birth After 1979 according to Selected Characteristics 1985 Chogoria Community Health Survey

Characteristics	Total	Planning Status: Planned*	Unplanned: Total	Unplanned: Unwanted	Unplanned: Mistimed	Unknown	N
Total	100.0	46.5	52.4	11.1	41.3	1.1	(1,615)
Zone							
High	100.0	44.8	53.7	10.5	43.3	1.5	(268)
Middle	100.0	46.4	53.0	10.7	42.3	0.6	(815)
Low	100.0	47.2	51.5	11.7	39.9	1.3	(532)
House							
Modern	100.0	47.0	51.4	8.2	43.2	1.7	(167)
Semimodern	100.0	45.5	54.0	12.4	41.6	0.6	(905)
Nonmodern	100.0	47.6	50.6	10.1	40.5	1.5	(543)
Living Children							
0-1	100.0	50.9	47.3	1.3	46.0	1.8	(293)
2	100.0	47.1	50.8	1.5	49.3	2.2	(263)
3	100.0	53.5	45.9	3.1	42.8	0.6	(221)
4	100.0	52.1	47.9	5.0	43.0	0.0	(229)
5-6	100.0	43.5	55.9	15.6	40.3	0.6	(354)
7+	100.0	34.5	64.6	38.1	26.5	0.9	(253)
Education							
No school	100.0	49.1	48.7	14.4	34.3	2.3	(157)
Adult literacy	100.0	43.6	56.4	23.3	33.1	0.0	(190)
Primary 1-4	100.0	49.7	49.3	14.0	35.3	1.0	(338)
Primary 5-8	100.0	43.6	55.4	8.3	47.1	1.0	(638)
Any secondary	100.0	49.4	49.5	1.9	47.6	1.21	(291)

*Includes answers such as God's will, which accounted for 3.8 percent of all responses. These responses are grouped with the planned pregnancies on the grounds that they were not pregnancies which the respondent wanted to avoid.

TABLE 8.23

Percent Distribution of Need for Family Planning Services*
According to Selected Characteristics
1985 Chogoria Community Health Survey

Characteristics	Total	Need for Family Planning Services				N
		In Need				
		Total**	For Spacing	For Limiting	Not In Need	
Total	100.0	7.5	4.4	2.7	92.5	(1880)
Zone						
High	100.0	5.5	3.1	1.8	94.5	(328)
Middle	100.0	7.6	4.2	2.7	92.4	(945)
Low	100.0	8.1	4.9	3.0	91.9	(607)
House Type						
Modern	100.0	7.6	4.8	2.8	92.4	(210)
Semimodern	100.0	8.1	4.9	2.5	91.9	(1063)
Nonmodern	100.0	6.8	3.6	2.8	93.2	(607)
Living Children						
0	100.0	0.0	0.0	0.0	100.0	(57)
1	100.0	10.0	10.0	0.0	90.0	(318)
2-3	100.0	6.7	5.2	1.1	93.3	(533)
4-5	100.0	7.8	4.1	2.9	92.2	(504)
6+	100.0	7.6	0.8	6.3	92.4	(468)
Age						
15-24	100.0	9.8	9.2	0.1	90.2	(574)
25-34	100.0	7.4	3.8	3.1	92.6	(783)
35-44	100.0	5.3	0.2	4.9	94.7	(521)
Education						
No school	100.0	7.8	4.4	2.7	92.2	(185)
Adult Literacy	100.0	5.3	1.0	4.3	94.7	(233)
Primary 1-4	100.0	7.1	3.2	3.4	92.9	(416)
Primary 5-8	100.0	8.5	5.6	2.5	91.5	(723)
Any secondary	100.0	7.6	6.1	0.8	92.4	(322)

*Women in need of family planning service are defined as: fecund, married, not currently pregnant, not wanting to become pregnant, and not using any method of family planning.

**Total is greater than the sum of "For Spacing" and "For Limiting," since 0.5% of respondents said they did not want to get pregnant immediately, but were unsure if they wanted more children.

TABLE 8.24

Percent Distribution of Selected Characteristics of Respondents Who Have Undergone Contraceptive Sterilization Compared with Characteristics of All Respondents 1985 Chogoria Community Health Survey

Characteristics	Sterilized Respondents		All Respondents	
Place of Operation				
Chogoria Hospital	77.7			
Meru Hospital	9.7			
Embu Hospital	3.2			
Other	9.3			
Years Since Operation				
<1	35.6			
1	25.2			
2-3	24.1			
4+	13.1			
Unknown	1.9			
Age at Operation				
15-19	0.0	(0.0)*		(5.8)*
20-24	1.9	(1.9)		(24.5)
25-29	16.1	(3.2)		(21.9)
30-34	46.7	(52.9)		(19.4)
35-39	24.3	(20.1)		(14.0)
40-44	10.9	(21.9)		(14.2)
Living Children				
0-1	0.0		19.7	
2	1.9		15.3	
3	6.7		12.8	
4	16.4		13.6	
5-6	37.9		22.5	
7-8	31.6		12.3	
9+	5.5		3.8	
Zone				
High	26.2		13.2	
Middle	51.2		41.4	
Low	22.7		45.4	
House Type				
Modern	13.1		9.7	
Semimodern	69.2		52.1	
Nonmodern	17.7		38.2	
Education				
No school	10.5		11.5	
Adult literacy	11.6		12.9	
Primary 1-4	18.5		23.3	
Primary 5-8	39.1		36.7	
Any secondary	20.2		15.5	
Employment				
No paid labour	57.3		56.9	
Casual labour	26.5		31.1	
Wage labour	16.2		12.1	
Total	100.0		100.0	
N	(49)		(1880)	

*Numbers in parentheses represent the age distribution at the time of interview.

TABLE 8.25

Percent of Fecund Respondents Wanting No More Children Who Are Interested in Undergoing Contraceptive Sterilization According to Selected Characteristics 1985 Chogoria Community Health Survey

Characteristics	Total	Interest in Sterilization: Interested	Not Interested	Undecided	N
Total	100.0	61.9	33.4	4.7	(622)
Zone					
High	100.0	60.5	36.0	3.5	(114)
Middle	100.0	55.2	37.6	7.3	(330)
Low	100.0	69.7	28.1	2.3	(178)
Age					
20-29	100.0	66.0	29.2	4.8	(159)
30-39	100.0	65.7	30.3	3.9	(290)
40-44	100.0	52.5	41.7	5.8	(172)
Education					
No school/ adult literacy	100.0	68.9	27.9	3.2	(203)
Primary 1-4	100.0	63.0	34.0	3.0	(159)
Primary 5-8	100.0	59.1	35.5	5.4	(202)
Any Secondary	100.0	39.3	47.7	13.0	(58)

TABLE 8.26

Percent Distribution of Source of Contraceptive Sterilization Operation or Information Mentioned by Women Reportedly Interested in Undergoing a Contraceptive Sterilization According to Selected Characteristics
1985 Chogoria Community Health Survey

Characteristics	Total	Source of Sterilization Cited				N
		Hospital*	Clinic/ Health Ctr.	Educator/ Volunteer	Don't Know Where to Go	
Total	100.0	46.8	5.5	0.3	47.3	(408)
Zone						
High	100.0	52.1	4.1	0.0	43.8	(73)
Middle	100.0	54.1	4.4	0.0	41.6	(207)
Low	100.0	38.3	7.0	0.8	53.9	(128)
Age						
20-29	100.0	47.9	6.3	0.0	45.8	(111)
30-39	100.0	46.4	5.1	0.0	48.5	(198)
40-44	100.0	46.5	5.4	1.4	46.7	(99)
Education						
No school/ adult lit.	100.0	35.8	8.0	0.9	55.3	(145)
Primary 1-4	100.0	51.9	1.3	0.0	46.7	(105)
Primary 5-8	100.0	52.1	6.5	0.0	41.4	(127)
Any Secondary	100.0	66.2	3.1	0.0	30.7	(31)

*Only hospitals which actually perform contraceptive sterilizations

TABLE 8.27

Percent Distribution of Reasons Among Respondents Who Have All the Children They Want, Not Interested in Undergoing Contraceptive Sterilization, by Residence Zone
1985 Chogoria Community Health Survey

Reason Not Interested	Total	Zone		
		High	Middle	Low
Fear of Operation	39.9	56.1	40.3	32.0
Happy with Current Method	13.2	9.8	17.7	8.0
Subfecund/Not Sexually Active	9.6	4.9	8.1	14.0
Circumstances May Change*	8.5	4.9	11.3	6.0
Dislike of Operation	8.4	4.9	5.7	14.0
Husband Opposes	8.2	2.4	7.3	12.0
Need More Information	4.1	0.0	4.0	6.0
Husband Must Decide	3.4	2.4	3.2	4.0
Cost	1.8	2.4	0.0	4.0
Other/Undecided	3.1	12.2	2.4	0.0
Total	100.0	100.0	100.0	100.0
N	(215)	(41)	(124)	(50)

*Child may die, respondent may want more children, or husband may change his mind and want another child.

TABLE 8.28

Percent Distribution of Reasons for Not Undergoing Contraceptive Sterilization Among Respondents Who Have All the Children They Want and Are Interested in Sterilization
1985 Chogoria Community Health Survey

Reason Not Sterilized	Total	Zone		
		High	Middle	Low
Husband Must Decide	29.0	39.0	28.5	26.0
Husband Opposes	15.0	12.2	15.5	15.5
Need More Information	15.1	12.2	17.1	13.8
Intending Soon/Following Birth	13.5	12.2	12.2	15.5
Happy With Current Method	8.1	14.6	9.8	3.5
Fear of Operation	6.4	7.3	5.7	6.9
Cost of Operation	4.8	2.4	2.4	8.6
Dislike of Operation	3.0	0.0	4.9	1.7
Circumstances May Change*	1.0	0.0	0.8	1.7
Other/Undecided	4.2	0.0	3.3	6.9
Total	100.0	100.0	100.0	100.0
N	(222)	(41)	(123)	(58)

*Child may die, respondent may want more children, or husband may change his mind and want another child.

TABLE 8.29

Percent of Women Still Using Contraception After Selected Durations for Women Starting Pill or IUD Use After 1979 by Residence Zone 1985 Chogoria Community Health Survey

	Method and Zone				
	Pill				IUD
Duration	Total	High	Middle	Low	Total
6 Months	72.4	76.4	75.2	61.9	91.4
1 Year	59.6	65.7	64.4	45.0	84.9
2 Years	41.8	41.9	47.7	26.0	71.3
3 Years	28.5	30.5	33.6	12.8	58.8
Median duration (months)	18.8	19.3	22.5	10.8	42.9
N	(598)	(109)	(350)	(139)	(277)

IX. HEALTH SERVICES

Health education of the community is an important part of the Chogoria programme. The programme strives to reach every member of its catchment area through extensive use of two kinds of community health workers. Volunteer family health workers (VFHW) are community members who are recruited by local area health committees and trained by the programme for the purpose of providing health education and counselling to neighbors. In addition, the Chogoria programme employs many people trained as field health educators (FHE), who provide community health education. One educator works with approximately 10-15 volunteers. Both groups of community health workers visit residents in their homes to discuss topics such as family planning use, antenatal and postnatal care, nutrition, child health (including immunizations and safety), and sanitation and to follow up on missed clinic appointments. Because of the need to assess the impact of the Chogoria community outreach efforts in the catchment area, the survey included a module on coverage and satisfaction with Chogoria's community health outreach and clinic services.

Use of Community Health Workers

All respondents were asked if they had ever heard of VFHWs and FHEs and, if so, if they had ever been visited by or used the services made available by either. Among all respondents, only 20 and 30 percent reported ever being visited by VFHWs and FHEs, respectively (Table 9.1). Smaller percentages of women had ever gone to a VFHW or FHE. Overall, less than 40 percent of women reported ever using the services of either type of health worker. Women living in high and middle zones were more likely to report ever having heard of a VFHW or an FHE and much more likely to report having ever used their

services than women living in the low zone. This has important implications for the Chogoria programme, since health conditions are worst in the low zone.

Women who ever used the services of a VFHW or FHE during the past 12 months were asked what they discussed at their last meeting. As seen in Table 9.2, four topics were by far the most commonly discussed during health worker visits: family planning/childspacing (60 percent), nutrition (39 percent), sanitation (38 percent), and child health including immunization (26 percent). The major differences by zone were a greater tendency to talk about sanitation and antenatal/postnatal care in the low zone and about family planning in the high zone.

Use of Health Facilities

Approximately half of respondents reported using Chogoria Hospital or one of its associated clinics most often for health care services (Table 9.3). Another 32 and 17 percent of women used facilities operated by the Government and the Catholic Church, respectively, most of the time. Reported use of Chogoria services varied only slightly by zone of residence.

Over half of respondents reported that it took them more than three-quarters of an hour to reach their usual source of health services (Table 9.4). Travel time differed substantially by zone of residence--low zone inhabitants tended to travel further than others--because of fewer health facilities and a more greatly dispersed low-zone population. Twenty-two percent of high zone women and only 14 percent of middle zone women traveled for 76 minutes or more, compared to 45 percent of low zone women.

Seventeen percent of respondents stated that they did not regularly use the health facility closest to their home. The main reasons for not using the closest facility (shown in Table 9.5) were that services were not free (only at government facilities are services free), poor facilities, and lack of medicines/supplies. These accounted for 70 percent of all reasons. The primary reasons for not using the closest facility were similar in each zone. However, in the high zone, the most commonly cited reason was a lack of medicines or supplies at the nearest facility. This, rather than being an indication that high zone clinics are poorly supplied, probably means that with several accessible health facilities, high zone residents can be more selective about where they receive services.

Respondents were asked if they were very satisfied or not very satisfied with selected aspects of the health facility they attended most often. For each of the five clinic aspects, a large majority of respondents reported being very satisfied, ranging from 85 percent for the manner in which staff deals with people down to 64 percent for ease of getting to the facility and waiting time for services (Table 9.6). Low zone residents are less satisfied than others regarding access (they tend to live further from clinics) and cost (they tend to be poorer). A further note regarding the data in Table 9.6 is in order. Since we do not know how willing respondents were to criticize health facilities, the figures should be viewed as maximum levels of satisfaction.

Community-Perceived Health Problems

Respondents were asked to state what they considered to be the most important health problem in the area. A broad array of problems were mentioned, with no single one standing out. Overall more than half of women cited either access

to health facilities, water problems, or malaria (Table 9.7). In the high zone, women considered respiratory problems (pneumonia, colds, etc.) to be the greatest problem, a problem rarely mentioned in the low zone. Low zone women were most likely to report access to health facilities as the main community problem. They also mentioned malaria and water problems more prominently than women living elsewhere.

TABLE 9.1

Percent Distribution of Knowledge and Use of Services of Volunteer Family Health workers (VFHW) and Field Health Educators (FHW) According to Residence Zone 1985 Chogoria Community Health Survey

	Total	Residence		
		High	Middle	Low
Volunteer Family Health Workers				
Has been visited by VFHW	20.2	21.0	23.5	17.0
Heard of but never visited by VFHW	25.1	27.1	29.2	20.8
Never heard of VFHW	54.7	51.8	47.3	62.2
Ever Visited by FHE				
Yes	29.6	36.1	36.2	21.8
No	70.4	63.9.	63.8	78.2
Ever Gone to VFHW or FHE				
Yes	13.3	15.3	14.4	11.7
No	86.7	84.7	85.6	88.3
Ever Used Services of VFHW or FHE				
Yes	36.5	42.1	43.1	28.8
No	63.5	57.9	56.9	71.2
Total	100.0	100.0	100.0	100.0
N	(1877)	(328)	(943)	(606)

TABLE 9.2

Percent of Women 15-44 Who Have Met with Family Health Workers or Field Health Educators according to Specific Topics Discussed at Their Most Recent Visit, according to Residence Zone 1985 Chogoria Community Health Survey

Topics Discussed	Total	Zone		
		High	Middle	Low
Family planning/childspacing	60.0	71.1	58.3	57.9
Nutrition	39.0	37.1	39.9	38.8
Sanitation/hygiene	37.5	32.0	27.5	50.0
Child health/immunization	25.8	24.7	29.4	22.4
Missed appointment reminder	8.9	9.3	9.1	8.6
Distribution of contraceptives	6.3	4.1	8.0	5.3
Examined ill family member	4.8	3.1	6.2	4.0
Antenatal/postnatal care	4.7	3.1	2.2	7.9
Breast-feeding/weaning	3.7	4.1	3.3	4.0
Fireplace safety	2.2	0.0	5.1	0.0
N	(525)	(97)	(276)	(152)

NOTE: Topics total to more than 100 percent, since some women mentioned more than one topic.

TABLE 9.3

Percent Distribution of System of Health Facility Most Often Used by Respondents, According to Residence Zone 1985 Chogoria Community Health Survey

System to which Facility Belongs	Total	Zone		
		High	Middle	Low
Chogoria	49.3	46.6	51.4	48.2
Government	31.5	43.4	29.3	30.2
Catholic	17.4	8.8	18.9	18.5
Other/none	1.8	1.2	0.4	3.1
Total	100.0	100.0	100.0	100.0
N	(1877)	(328)	(943)	(606)

TABLE 9.4

Percent Distribution of Time Normally Taken for Respondent to Reach the Health Facility She Most Often Uses, According to Residence Zone
1985 Chogoria Community Health Survey

Time (in Minutes) to Reach Facility	Total	Zone		
		High	Middle	Low
0-15	17.1	16.5	24.1	10.8
16-45	28.0	32.1	37.4	18.2
46-75	25.8	29.7	24.0	26.3
76-120	20.4	13.8	12.2	29.8
121+	8.7	8.0	2.2	14.9
Total	100.0	100.0	100.0	100.0
N	(1877)	(328)	(943)	(606)

TABLE 9.5

Percent Distribution of Reasons Respondents
Do Not Most Often Use the Health Facility Nearest Their Home
1985 Chogoria Community Health Survey

Reason Nearest Clinic Not Used	Total	Zone		
		High	Middle	Low
Services not free	30.2	23.2	29.9	32.7
Poor facilities	24.0	19.6	19.8	29.6
Lack of medicines/supplies	15.6	28.6	18.0	9.2
Lack of doctors/staff not competent	5.6	1.8	7.2	5.1
Travel is difficult/costly	5.1	0.0	3.6	8.2
Mobile clinic only	3.3	12.5	0.6	3.1
Long wait	2.3	0.0	5.4	0.0
Lack MCH services	2.2	1.8	2.4	2.1
Lack family planning services	1.7	0.0	3.0	1.0
Other/don't know	10.1	12.5	10.2	9.2
Total	100.0	100.0	100.0	100.0
N	(321)	(56)	(167)	(98)

TABLE 9.6

Percent of Respondents Who Said They Were Very Satisfied*
With Selected Aspects of the Health Facility
They Most Often Use, According to Residence Zone
1985 Chogoria Community Health Survey

Aspect of Facility	Total	Zone		
		High	Middle	Low
How the staff treats people	85.4	85.7	88.3	82.7
Cost of services	71.0	82.2	74.0	65.0
Availability of drugs and supplies	71.2	65.4	72.2	72.0
Ease of getting to facility	64.2	67.7	77.8	50.8
Waiting time for services	64.4	56.6	67.3	64.0
N**	(1858)	(325)	(930)	(601)

*Women who were undecided or had no opinion have been excluded from this table.

**Number of responses varies slightly, depending on the aspect of service. The N presented is for the aspect with the smallest number of responses.

TABLE 9.7

Percent Distribution of What Respondents Consider to Be the Most Important Health Problem Where They Live, According to Residence Zone
1985 Chogoria Community Health Survey

Health Problem	Total	Zone		
		High	Middle	Low
Access to health facilities	20.1	10.7	10.4	31.8
Water problems	17.9	13.8	15.3	21.5
Malaria	13.9	5.2	10.7	19.3
Lack of food	9.1	11.4	9.8	7.8
Respiratory problems	8.4	21.8	11.1	2.0
Poverty/land shortage	6.6	8.6	8.6	4.2
Other diseases	3.2	2.8	3.9	2.8
Overpopulation/teen pregnancy	1.6	1.5	2.6	0.7
Lack of health education	1.6	1.8	1.7	1.3
Other problems	3.8	3.6	5.8	1.8
Don't know	1.1	2.2	1.2	0.7
No problems	12.7	15.6	19.0	6.2
N	(1862)	(326)	(935)	(601)

X. CONCLUSIONS AND RECOMMENDATIONS

General

1. It is clear that the Chogoria Community Health Programme, along with the other service providers in the area, have made significant progress in improving the health status of the population in the high-altitude and middle-altitude areas. While the situation in the low-altitude area may not necessarily poor when viewed in a national or African context, it is much worse than in the rest of the catchment area. It follows that a much higher priority must be given to improving the health status of the low-altitude area, while consolidating the progress made in the upper-altitude areas.

2. As in many other places, the CCHS has found that the poorest segments of the population tend to have the poorest health status and are least likely to utilize health services. Long-term improvements in health status, as have been witnessed in the upper-altitude areas, are difficult to sustain without improvements in economic status. The educational level of the parents, especially the mother, is also important in improving health status. The Chogoria programme should continue to develop a multisectoral approach, with strong community participation in the health programmes. The ongoing training programmes for Area Health Committees, volunteer community health workers and Traditional Midwives and programme staff are crucial in maintaining this momentum. Links with other agencies, especially Government Community Development and Agriculture Development officials, should be strengthened. The District Health Team and the new district focus for development are particularly welcome initiatives, and

the Chogoria programme should actively participate in these developments, making appropriate inputs, including training staff of other agencies where possible.

3. The CCHS has shown that levels of use of preventive services, especially family planning services, are extremely high. However, the present survey was not designed to determine exactly which aspects of the Chogoria community health programme contribute to these high use levels. Programme staff believe that the combination of accessible daily clinic services, plus community-based activities and initiatives, have a synergistic effect on use levels. Strong community participation and genuine programme accountability to local communities undoubtedly also play a part. Donor agencies and area service providers should seriously consider the funding of a further study to determine which components of the existing programme(s) have had the most significant impact.

4. The population of the catchment area of the Chogoria programme continues to grow rapidly, most notably in the low-altitude area; programme activities must now cover as far as the Tana River, the eastern boundary of Meru District. While the present survey has given adequate baseline information on the western and northern sections of Thakara, it was not possible, for reasons of logistics and time, to survey deep into Tharaka. If a further survey were to be undertaken to check on which components of the programme are most effective, the opportunity should be taken to conduct a much wider survey of the Tharaka area, to assess health status and needs in an area assumed to have great health problems.

Household Environmental Conditions

1. Far more households than anticipated have no access to a safe water supply all the year round. The Chogoria programme should treat increased access to safe water as a priority area in its next phase.

   Storage of drinking water in such a way that it provides breeding sites for mosquitos or places household members at risk of drinking contaminated water, is another hazard. Teaching in this area should continue to be a part of training programmes.

2. An important target group is the 20 percent of low-altitude homes without a pit latrine. Encouraging the digging of latrines, and use of latrines by all family members, especially the old, should be stressed in training programmes.

3. A major failure of the existing programme has been the continued lack of safe cooking facilities. Programme staff and community representatives should identify the reasons for this, especially the reported removal of protected fireplaces in some high-altitude communities, and work to develop suitable low-cost, protected fireplaces which will be acceptable to the communities.

4. The CHD was encouraged to find that 30 percent of homes had a kitchen vegetable garden. This initiative should continue to be a part of training programmes, especially mentioning the use of waste household water for use on the vegetable garden.

Socioeconomic

1. The survey has documented that the more highly educated mothers provide are more likely to utilize health care services for their children, have healthier children, and are more likely to plan their families. The more highly educated husbands are, in turn, more likely to support their wives using family planning. The programme should promote education, especially for girls, and should adopt a more open, positive approach to the encouragement of parents in educating all their children. The Youth Education Programme should continue to develop inputs on motherhood and good child care, both inside the schools and among the out-of-school youth.

2. It is clear that men are the final decisionmakers in many aspects of health care, and especially with use of family planning. The emphasis on involving men in health activities, first introduced in the Chogoria programme in 1982-1983 is particularly important and should be continued in all training programmes. The need for male, as well as female, volunteer health workers and distributors is crucial because of local cultural norms. Although the mother often decides when, if at all, the child should be taken to the clinic, it is most often the father who makes the money available for the clinic visit. Often, the mother will be the one to decide the use of antenatal clinic or to use a method of family planning, but there are few who would do so without the consent of the husband. Very few women, according to the survey, had access to funds of their own without consultation with their husbands.

3. Of those respondents not making use of health services, a common reason for nonuse was inability to afford clinic fees. Cost of travel or

difficulty of travel was also frequently mentioned in the low-altitude area. The programme should examine, with Area Health Committees, ways of allowing access to services for those too poor to afford clinic fees. In addition, access to money/wages for many tends to be limited to certain seasons. Casual labourers were employed only at the time of planting and harvest. Coffee farmers had access to funds only soon after the periodic payments. The programmes might take this into account when planning activities which require access to funds, especially persuading local people to pay for clinic services in advance, when money is available, and thus allowing them access to services later when their meager resources are finished.

Child Health

1. Although infant mortality rates in the high-altitude and middle-altitude zones were considerably less than nationally, the infant mortality rate for the low-altitude zone was estimated to be almost 73 per 1,000, very nearly the same as for Kenya as a whole. Efforts must continue to decrease this rate in the low-altitude zone. As a large proportion of infant deaths can be prevented by simple interventions, the extension of programme activities deeper into the low-altitude zone is again emphasized. Improvement in low zone mortality is also likely to increase the use of family planning services there.

2. Child immunization rates were high and it is clear that the consistent message from all service providers has made considerable impact. The low-altitude zone had the highest proportion of nonimmunized children, but throughout all zones there were groups of children who had received some

immunizations but had not completed the full course. The children who have received no immunizations tend to be those who have been delivered at home and have not subsequently been brought to the clinic. The TBAs who attend these births can play an important role by encouraging the mother to attend the clinic and even escorting her to the clinic for the first immunization (and possibly a post-natal check and family planning discussion as well).

3. A substantial number of children have received all recommended immunizations except for the measles immunization. It seems that there is specific resistance to the measles immunizations, and this is particularly noteworthy because of the seriousness of this disease and the high risk of serious complications. Clearly, there is need for all service providers to cooperate in designing strategies that will be more effective in encouraging broader coverage of measles immunization.

4. An ongoing problem in many Expanded Programmes of Immunization (E.P.I.) is the relatively large number of children who present for immunization, only to have it refused because the child is suffering from a minor cold or ailment. In the CCHS, of those mothers questioned as to why the child was not fully immunized, one-half stated that the child had been ill. A large proportion of these had been presented at the clinic and were refused immunization. From these reports, it is certain that potential clients in many communities perceive that the most minor of colds or ailments will result in the refusal of an immunization if the child is brought to the clinic. Most paediatricians in Kenya and the staff of the K.E.P.I. agree that the risks of not immunizing the child (recognizing that this means,

in practice that the child is not likely to be brought for immunization again) are much greater than the risks of a reaction to the vaccine during a minor illness. The Chogoria programme has had a policy for the last 2 years of immunizing the child unless he was so sick that he was being admitted to a hospital. The clinic staff are, however, rather reluctant on this matter, fearing that the community would blame them in the event of any serious vaccine reaction.

There is a clear need for the K.E.P.I., the Ministry of Health, and the local District Health Team to examine this matter and develop a strong policy to be followed by all programmes. This matter must be covered in all basic and in-service training courses for health staff, committees, and volunteer health workers.

5. Approximately 20 percent of all 1- and 2-year-old children had suffered diarrhoea within the 2 weeks before the survey. It is likely that lack of access to safe/protected water, having inadequate amounts of water for personal hygiene (especially hand-washing after toilet) and household use, and having no proper means of disposal for human waste (20 percent of low-altitude homes), contribute to this relatively high level. The incidence of diarrhoea underlines the importance of education on oral rehydration at the village level.

6. As the survey was conducted shortly after the severe famine of 1985, it is probable that higher levels of undernutrition were found than might have existed during a more typical year. There was a strong correlation between low socioeconomic status and undernutrition. Some mothers leave

children with inadequate caregivers when the mother has to be away from the home. Of particular concern were children left in the care of a child under the age of 16 years or "nobody." These children were more likely than others to be undernourished. The Chogoria programme should raise these issues in training courses and with Administration leaders during their in-service courses.

7. Although three out of four mothers had been informed about oral rehydration solution (ORS), there was widespread lack of knowledge about the correct way to make ORS and the correct way of administering ORS to a child sick with diarrhoea. Most mothers knew the correct ingredients and the fact that water must be clean and/or boiled but did not know the correct proportions of sugar and salt. Many mothers mention amounts of salt for the solution that are dangerously high. The District Health Team should consider this matter and decide on an appropriate message, which will be consistently disseminated by all area programmes. The size and type of container, as well as the measurement and quantity of the ingredients, should all be standardized. This standardized message should then be aggressively communicated through all possible outlets. The District Health Team should also consider whether or not to suggest that ORS packets, as distributed by UNICEF, should be made available through the various programmes.

Infant Feeding

1. Encouragingly, the survey showed that almost all children were breast-fed and that breast-feeding lasts about 2 years on average. There was concern that a considerable proportion of women, however, introduce weaning foods

too early. There seems to be a lack of clarity or consistency in the advice that mothers receive about the best age to introduce weaning foods. The District Health Team should consider this issue, so that all programmes offer consistent advice and guidance to mothers in the area. Because some mothers rely on the contraceptive effect of breast-feeding, it is important for all programmes to emphasize that the risk of unintended pregnancy increases when the number of breast-feeding episodes decreases, and supplemental foods are added to the child's diet.

2. Many mothers appear confused about the general principles regarding how to treat children with diarrhoea, as demonstrated by the fact that only about two-thirds of them know to continue breast-feeding and increase fluid intake. A substantial number of women even advocated cutting back on breast-feeding and liquids. This represents a serious gap in the work of the Chogoria programme and in the programmes of other service providers. A combined approach, coordinated by the District Health Team, should study these difficulties and design common approaches. An ORS demonstration, carried out in the home by a volunteer, is probably the best way of undertaking such teaching. Demonstrations at the clinic, while children are screaming in the queue, are much less likely to be effective.

Antenatal and Maternity

1. Although attendance rates for antenatal clinic are exceedingly high, first visits are often late in pregnancy, and many women wait until the third trimester before reporting for an antenatal examination. During training sessions for health workers and especially local TBAs, the programme should emphasize the importance of encouraging pregnant women to attend earlier, should encourage the husbands (or parents of unmarried pregnant

mothers) to make money available for the clinic, and should encourage special arrangements for the poor, who are least likely to make use of the service. Encouraging TBAs to escort pregnant women to the clinic for the initial examination might result in earlier first visits.

2. With 50 percent of all deliveries in hospitals and a further 20 percent in health centres or maternity cottages, the rates of institutional delivery were high. For the 30 percent of all births which still occur at home, it is important for the service providers to ensure that the birth is supervised by a trained TBA. The highest percentage of home deliveries, by far, occur in the low-altitude zone, and it is here that programmes should concentrate efforts in training TBAs and reducing the number of unattended deliveries.

3. All programmes seem to place very little emphasis on post-natal checks, resulting in low post-partum clinic attendance. For home deliveries, programmes could encourage the TBA to escort the mother and baby to the clinic for a post-natal check and for the first immunization of the baby. For institutional deliveries, post-natal checks should become standard procedure at the time when the mother brings the child for the first DPT/Polio immunization, if it has not been done earlier. Ideally, the post-natal check should be conducted 6 weeks after delivery, and a record system that identifies mothers due for post-natal check, as the Chogoria system does, is recommended.

Family Planning

Although the very high levels of family planning use are surely one of the major findings of the survey, there are still deficiencies that have been

identified and lessons to be learned. The Chogoria programme, as well as other service providers, should build on the strengths identified and attempt to overcome the major deficiencies.

1. Access to family planning services is still a problem in the low-altitude zone, although it has become less of a problem in the other zones. There is a need for more family planning clinic facilities and the community-based distribution (CBD) of family planning commodities should be extended, again, especially in the low-altitude area. The training of volunteers and TBAs in CBD should therefore be extended, while curative-only sites operated by other service providers, such as small rural dispensaries, should be considered for integration to offer a daily MCH/FP service.

2. At Chogoria programme sites the most common criticisms by respondents were long waiting periods. Some respondents criticized Catholic clinics because staff refused to offer advice on family planning methods, even about the natural methods of contraception. Criticism was levelled against Government clinics because of the relatively low priority given to family planning activities at some clinics, long waiting times, nonavailability of commodities or qualified staff, and priority being given to curative rather than preventative services such as immunization or antenatal exams. A very frequent criticism of Government sites was lack of privacy for family planning consultation. Programme managers should assess their projects in the light of these criticisms and take remedial action, especially in the in-service training of clinic staff and health centre managers.

3. It has been estimated that unmarried women account for approximately 20 percent of all births. However, such women have very limited access to family planning services. Officially, Government sites will offer family planning services to the unmarried. In practice, though, unmarried mothers are often discriminated against when they report for family planning advice and services. Neither the Chogoria sites nor the Catholic sites will offer family planning advice or services to the unmarried. While the moral stance of the churches is understood, it must be pointed out that the large numbers of illegitimate children that are, to some extent, the end result of this policy, are placing a very heavy burden on the country and on local communities. It is clear that these children are severely disadvantaged, are more likely to be undernourished, and are much less likely to receive education or a land inheritance. These issues are, however, very complex and must be solved by local people in discussion with church leaders and health service providers.

   Government health service managers should carefully consider family planning provision for the unmarried and cover these issues with clinic staff during in-service training. If staff have a negative attitude towards family planning or providing family planning for the unmarried, then they might be considered for other duties.

4. Considerable efforts should be made by programme managers to reduce unplanned pregnancies. Despite widespread contraceptive use, over half of all respondents reported that their most recent pregnancy had been unplanned. The interventions in place have not been completely successful owing to a variety of factors. Five of these factors are discussed below.

a. Inadequate male involvement--Recruitment of male volunteer health workers/CBD distributors should continue, and there should be a policy of home visiting by male volunteers to households where the husband/ male partner is resistant to family planning. Public education sessions on family planning, specifically designed for male groups and general male audiences, should be developed and pilot-tested. Clinic staff and field educators should be trained in counselling of male clients and in ways of discussing family planning issues with clients in the clinic. Area Health Committees (AHCs)could do much more to aid family planning programmes, either by public advocacy or by sponsoring meetings to discuss the family planning issues locally. The Chogoria programme could utilize the AHC members in a more systematic way to develop family planning in the local communities. In the higher-altitude areas where more sophisticated techniques might be appropriate, the use of locally produced video tapes could be used to trigger discussion and debate among organized groups and for patients in clinic and outpatient settings.

b. Unavailable local services--There is considerable room for increasing the number of family planning "access" points for the community, especially in the low-altitude zone. Those Government sites which are not offering any family planning services could and should be expanded. In clinics where there is an inadequate service (i.e., insufficient staff, no family planning commodities or low priority for family planning clients), the problems can be reduced by improved in-service training, increased supervision, and the transfer of staff with negative attitudes to family planning. Regarding the problem of

family planning commodities, it is possible that the proposed new family planning kits for Government clinics will improve the situation. There is scope for the Chogoria programme to assist local Government sites with family planning commodities when they run short, but this would have to be discussed and agreed between the respective managers on the District Health Team.

In addition, other strategies could be developed. Distribution through local shops or groups (i.e., depot holder approach), the possibility of establishing a network of vending machines for condoms (in market centers and possibly associated with bars and nightclubs), and consideration of developing family planning clubs, possibly with incentive for membership.

Issues to consider in developing alternative family planning strategies are: Maintaining the current high standards of safety for clients through regular checkups and visits; attempting to aim for high continuation rates, rather than just high rates of short-term acceptance; the legal questions on incentive schemes; and especially the logistics of these programmes to ensure that they can operate both in the short term and the long term after any period of external funding.

c. Lack of information on available services--One of the major surprises for the Chogoria programme staff was the discovery that knowledge about the availability of female sterilization in the survey area was less than nationally. For all other family planning methods,

knowledge of methods was considerably higher than nationwide surveys show. This means that the programmes still need to put considerable effort into publicizing the availability of sterilization services. Because of the high rates of institutional delivery, this is probably best done before delivery of the baby. It is clear that issues regarding sterilization are not being discussed with clients and when they are discussed they are often raised only if the couple have a large number of children. The availability and desirability of sterilization (especially as a better option than long years of IUD use) should be discussed with parents from the birth of the third child onward. This procedure should be routinely offered post partum in the major institutions and in the health centres on a rotating basis. It is clear that problems of travel costs and distance prevent some potential clients from presenting for service. The best ambassadors for sterilization are those who have already been sterilized, but the counselling of clients must never be done in a coercive manner, nor should there ever be any question of any institution or clinic having a "quota" of clients who must be sterilized within a given period. Arrangements must be made for the poor who cannot afford the subsidized fees and for those who cannot afford to travel to the institution for the operation.

d. Misinformation regarding family planning--Although knowledge about family planning methods was very high compared to the national average, there was scope for improvement, especially in the low zone. However, the survey indicated that there many women are misinformed about side effects and other aspects of certain family planning

methods. The best approach for programmes to take is to continue to give factually-based and balanced teaching to community leaders, volunteer health workers, and TBAs. Detailed discussion on contraceptive methods (including the potential side effects) and the side effects and problems of an unwanted or mistimed pregnancy, will inevitably defeat unfounded family planning rumours and misinformation.

e. Discontinuation of methods--The survey showed that many clients stop using their family planning method because of relatively minor side effects, which could easily have been foreseen and the client warned that the particular side effect might develop. It is vital that clients be carefully told how the method works and what types of problems could develop. Common reasons for stopping the use of the pill were breakthrough bleeding, slight nausea after taking the tablets, minor headache, etc. Common reasons for stopping the use of the IUD were heavier than normal menstrual flow, minor backache, etc. These clients stop using the method and often inform their neighbors about their problems. Typically, such bad news seems to travel quickly.

Home visits are, by far, the best way of counselling the client. The client must be encouraged to seek assistance, either from the volunteer, or from the clinic, in the event of any problem. Having local people on hand to advise family planning users is much better than just having the paid staff of the clinic available.

Although the survey did not reveal infertility to be a problem, it should be remembered that family planning includes services for the infertile couple. This fact should be widely publicized and will lend the family planning component of the programme greater credibility if it is seen that the programme is genuinely concerned about all aspects of family planning. For the same reason, as things stand at present in rural Kenya, any family planning programme should be integrated into other community-based interventions. The programme which concentrates on family planning while ignoring all other community problems, will not be as valued or as successful as the programme which is responsive to other needs in the community.

Continuation rates also fall when the family planning programmes are unable to continue supplying the service or are unable to continue to supply commodities reliably. The survey identified a considerable number of women who were unable to get a resupply of pills. Some women came for an IUD checkup to discover that the nurse had been transferred and the new one was not trained. Others presented for family planning resupply and were told that the Clinical Officer was too busy seeing those women who wanted to have children. Such incidents will, inevitably, reduce continuation rates and place motivated clients at risk of unwanted or mistimed pregnancy. Programme managers must, therefore, carefully consider how best the services can continue to be offered. Additional family planning services should perhaps be introduced only after the most serious of the existing logistical and staffing problems have been resolved.

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