INTERMEDIATE HEALTH OUTCOMES
OF
REPORTED MORBIDITY

A THESIS

PRESENTED TO THE

SCHOOL OF GRADUATE STUDIES OF

ADDIS ABABA UNIVERSITY

IN PARTIAL FULFILLMENT

OF THE REQUIREMENTS FOR THE DEGREE OF

MASTERS OF PUBLIC HEALTH

B Y

FEREW LEMMA, M.D.

MAY, 1989.

ADDIS ABABA UNIVERSITY
School of Graduate Studies

Intermediate Health Outcomes of Reported Morbidity

by

Dr. Frew Lemma

Department of Community Health / Faculty of Medicine

Approved by the Examining Board:

Dr. Tadesse Alemu
Chairman, Department Graduate Committee

Dr. Charles Larson
Advisor

Dr. Yayehyirad Kitaw
Examiner

Dr. Gary Peckeles
Examiner

Dr. Madeleine Fletcher
Examiner

ACKNOWLEDGEMENTS

I would like to extend my gratitude to the Limmu District Party, District Administration, and Peasant Association Offices for allowing and facilitating the surveys done. I also thank the Kaffa Regional Health Department, especially Dr. Abdulaziz Adus, for their cooperation.

Most of all I am indebted to Dr. Charles P. Larson, my advisor, for his support during the preparation of this paper, and Dr. Frances Aboud for her useful advice. I am also grateful to all staff members of the Ras Imeru Training and Demonstration Centre. I extend my appreciation to Dr.M.Fletcher for the valuable suggestions and advices forwarded after reading the manuscript.

The study was made possible by the generous financial support of the International Development Research Centre of Canada.

Finally, I would like to thank W/t Mezmure Dawit for her assistance in the preparation of this thesis report.

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

SUMMARY

A cohort study was carried out in the Keffa Region of Southwestern Ethiopia to investigate intermediate (six month) health status outcomes of reported morbidity and identify their determinants. At both the initial (time 1) and six month follow up survey (time 2), cough, diarrheas, fever, musculoskeletal disorders, and abdominal conditions (worms, cramps) were the most frequently reported illnesses. Those who were ill at time 1 were as likely to remain ill (46%) as to get better (54%) at time 2. While less likely to become ill, 38% of those well at time 1 reported an illness at time 2. By the sixth month follow-up death had occurred most frequently among those who had eye disease and fever at time 1 (7.8% and 7.7%) respectively. From the 516 subjects who were ill at time 1, only 5.0% reported the same complaint at time 2.

Important predictors for morbidity at T1, based upon multiple regression, were level of education, marital staus, and sanitary practices. Important predictors of illness at T2 were traditional practices, type of housing, and age. This investigation has shown that reported morbidity is associated with several intermediate adverse health consequences and has quantified the relative impact of specific illness categories. These findings further emphasize the importance of reported morbidity in identifying priority health problems and in assessing a population's health status.

I. INTRODUCTION

In many developing African countries, including Ethiopia, very little is known about the consequences of reported morbidity. The literature on morbidity mainly focuses on descriptions of illness frequency distributions. While this information has provided useful guidance to health planners, it represents an incomplete assessment of the impact of morbidity.

A far greater understanding of the impact of morbidity would be derived from the documentation of subsequent adverse consequences of the morbidity, including death, disability and length of illness. Morbidity is a key index of health and is presently used as a measure of progress towards the attainment of 'Health for all by the year 2000'. It is therefore highly relevant that the eventual impact of reported morbidity be documented.

It is of major public health importance to better our understanding of what actually happens to those who report an illness. Such studies will enable us to more completely document the actual trends of illnesses and their outcomes. Based on such information more appropriate health priorities can be established and preventive measures taken. The few Ethiopian studies of rural populations have shown that in excess of 20% of the population report illness at any given time (2). The most commonly reported illnesses include diarrhea, abdominal problems, coughs and head and neck complaints (1)(2)(3).

A baseline health status survey carried out in the spring of 1988 on about 10,000 subjects in the Limmu District of Kaffa Region provided an opportunity to conduct a follow-up study of reported morbidity outcomes. It is expected that the information derived from this study will provide information that furthers our understanding about the health impact of reported morbidity and, the relative importance of specific catagories of morbidity.

OBJECTIVES

The objectives were as follows:

1. To determine the distribution of illness types among those who were morbid at two points in time (time 1 and 2),

2. To determine the intermediate (6 months, time 2) health status outcomes of those who reported illness during the baseline survey,

3. To identify sociodemographic, environmental, and behavioral determinants of illness occurrence at times 1 and 2.

II. STATE OF KNOWLEDGE

Reports on morbidity prevalence in Ethiopia state that in rural areas disease patterns are exacerbated by low living standards, poor hygiene and a limited number of health facilities (1). Other studies have also found inaccessibility of health units to be an important factor affecting illness distribution (2).

In a recent World Bank document, based upon data gathered from Ethiopian hospitals, health centers and stations, it was reported that respiratory illness, diarrheas, eye infections (including trachoma), skin infections and fever were the leading causes of morbidity in children under five years of age (1). A community based study conducted by Kloos et al. in Ethiopia found that 23.2% of the population living in rural communities reported illness over a 2-week recall period. The most frequently reported illnesses were diarrhea and abdominal conditions, all coughs, and diseases of the head and neck (21.7% , 13.7% and 13.0% respectively) (2).

In Zein Ahmed Zein's study of an Ethiopian urban population, the most commonly reported illnesses over a 4-week recall period were gastrointestinal (26.1%), miscellaneous disorders such as headache and fever, urogenital complaints (23.1%), eye diseases (17.5%), musculoskeletal problems and rheumatism (13.1%), respiratory conditions (11.1%), skin conditions (3%), and physical injuries (5%) (3).

Yayehyirad Kitaw, in his study of self care, in three Ethiopian communities, found that the prevalence of illness was 8.7%, 10.2%, and 15.0% based on a two-week recall period. The most frequently reported illnesses were cough and other respiratory diseases, followed by head and neck, diarrhea and gastrointestinal symptoms (4).

A health survey of rural Ethiopia was conducted by the Central Statistical Office in two rounds; August to September 1982 and January 1983(5). The types and distribution of diseases and injuries in the different regions of the country were reported. In Keffa region, 30.4% and 30.5% of the study population reported illness over a 2-week recall period during round 1 and round 2 surveys respectively (6). The leading causes of morbidity were worms in stool (25.7%), malaria (22.2%), diarrhea (17.4%), and skin wounds (13.9%) for the first round survey; and skin wounds (19.3%), eye problems (15.6%), pneumonia (13.0%), diarrhea (11.7%), worms in stool (11.5%), gastroenteritis (10.5%), and malaria (10.3%) in the second round (6).

In Bas Zaire, a study of maternal and socioeconomic correlations of child morbidity reported a diarrheal incidence rate of 20%, fever was reported in 10% of rural children and 20% of 1670 children reported malaria. Worms were very prevalent among older children (7).

Findings from the five Ethiopian studies are similar. However, the World Bank documentation is based on records from

hospitals, health centers and clinics which may be unreliable due deficient recording or identification. Additionally, since vital statistics recording is not mandatory, the completeness of figures on morbidity and mortality are suspect (1). More confidence can be placed on the figures derived from community based studies.

Determinants of childhood morbidity have been examined in several African studies. For example, information gathered from university hospital records and an interview in Lagos, Nigeria, demonstrated that socioeconomic factors change patterns of morbidity significantly (8). In this study, morbidity was related to parental education, occupation, and environmental sanitation factors such as type of latrine and access to pipe water.

A study conducted in Bas Zaire also examined correlations between child morbidity and environmental/household factors such as water source, toilet facilities, electricity, type of floor material and possession of a working radio (to indirectly assess income). Unexpectedly, the results showed that urban children with uneducated mothers were at significantly lower risk of illness relatively to those mothers who have a few years of education. In contrast, among rural children, it was found that no maternal education led to higher risk for recent illness (diarrhea, malaria), while better education in rural mothers was protective, the effect being statistically significant. Lastly, the authors found that living under better socioeconomic

conditions as measured by the above household factors lowered the risk of morbidity in rural areas (7).

In the present study, the influence of environmental and socioeconomic factors on illness occurrences will be tested, the hypothesis being that these factors significantly influence the rate of illness occurrence in a rural Ethiopian population.

An important objective of this study is to determine illness outcomes for people who were ill during the baseline survey. A review of the literature within developing countries was unable to identify any studies reporting on the outcome of reported morbidity. Several follow-up studies of people who are ill have examined the type of treatment sought for the reported illness. Kloos, for example, studied actions taken to treat an illness and found that 20% used self (lay) care, 26% resorted to traditional medicine (healer, holy water, 'wogesha', etc.), 33% were treated at modern health services, and the remaining 21% did not take any measures. Except for diarrheas and fevers, most illnesses were commonly treated with traditional medicine. The study also indicated that more females than males used modern or traditional medicine and fewer reported non-use (2). On the other hand, a study in Addis Zemen town showed that of 360 illness episodes, 57% utilized some form of modern medicine (health center, local pharmacy, or both), 42.6% took no action for their illness, and the minority (1.9%) resorted to traditional medicine (3). Yayehyirad also noted that a large proportion (between 13% and 37%) took no action for their illness, and between 14% and 23%

had self (lay) care. In contrast to the Kloos study, more males were found to resort to external (professional) action while females used self (lay) care or no action at all (4). However, none of these studies followed up the respondents at a later point in time to assess their health status outcomes. This represents an important gap in our understanding of reported morbidity and its eventual health impact in the community.

III. MATERIALS AND METHODS

A. STUDY DESIGN

This investigation employed a cohort design. The cohort included subjects who participated in a random household survey done among the Limmu district's rural population between May 23 and June 4, 1988 [T1]. Within the cohort, subjects were classified according to the presence or absence of reported morbidity at the time of the initial survey. The health status of this cohort was then documented six months later [T2].

B. STUDY DOMAIN

Limmu district is found in Kaffa administrative region in southwestern Ethiopia (Figure 1). It is subdivided into four subdistricts (woredas) which are organized into 358 peasant associations and about 15 urban dweller associations. The district is known for its coffee production in the region and country. Based on the 1984 G.C. census, the mid-1988 population of the district was estimated to be 532,832 (10).

The majority (94%) of the district population live in rural areas and the rest (6%) in urban settings. 47% of the adult population are farmers, 30% housewives, and the unemployment rate is very low (0.4%). Most of these farmers are illiterate or have participated in the country's literacy campaign, but have not attended school (9).

The district exhibits all three climatic conditions

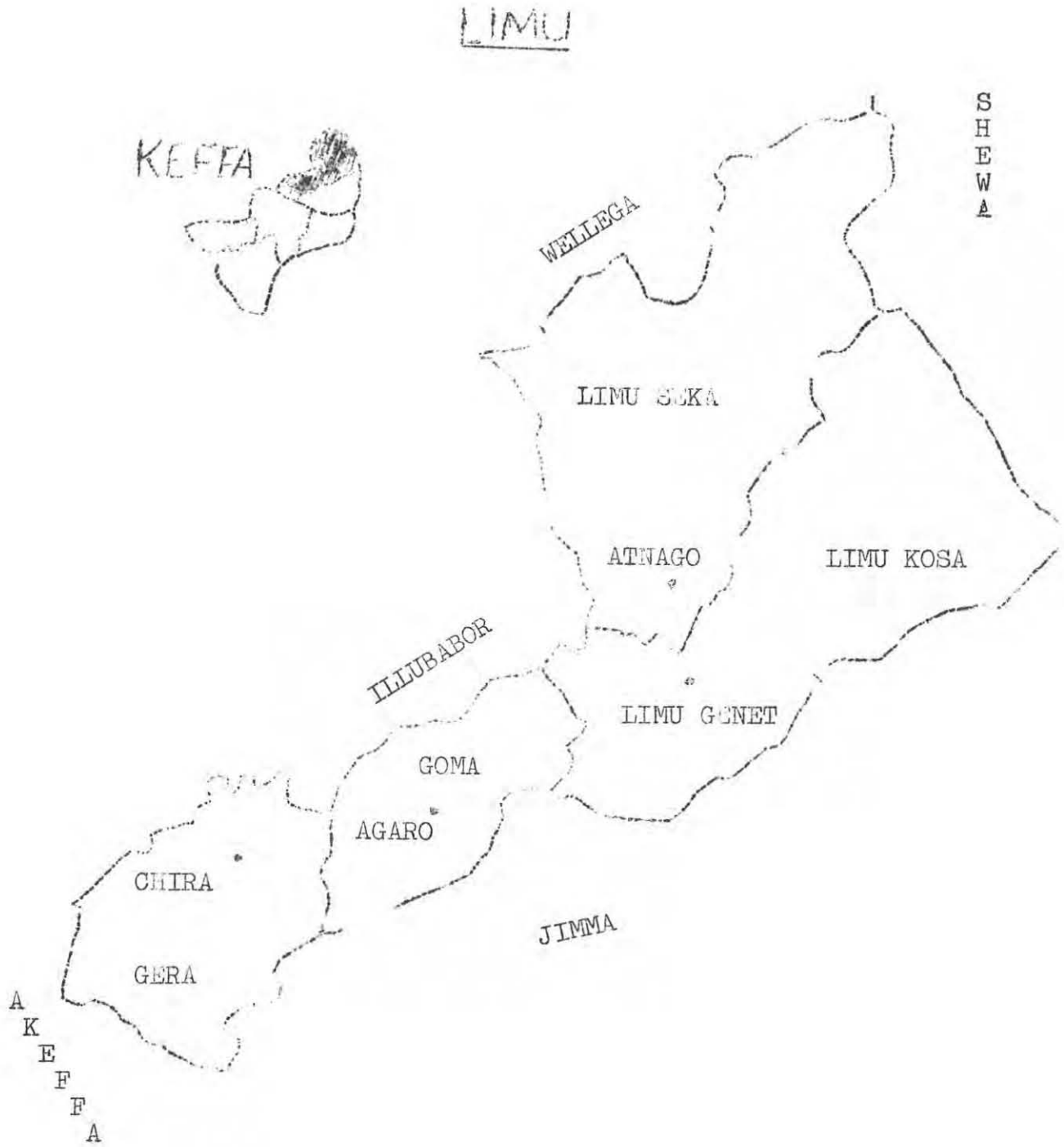


Figure 1. Map of Study Area, Limmu District

prevailing in the country. Most of the district lies in the temperate zone i.e. between 1500-2500 meters above sea level. The main agricultural products of the area are coffee, as mentioned above, maize, teff, wheat and barely (10). In addition to peasant and urban dwellers associations, the population is further organized into youth, women, and professional associations which facilitate the communication of health information from central to community levels.

C. POPULATION: (See Figure II)

1. Source Population: All rural dwellers of Limmu district were taken as the source population for this study. Urban inhabitants (6% of the total population) were excluded from the study. From the four subdistricts in the district, three (Goma, Gera and Kossa) were included and the fourth, Seka was excluded because of instability and disruption due to famine during the study period. At the time, the area was inaccessible to the investigation team and a house-to-house interview was not possible.

2. Study Population: A stratified random sampling procedure was used to identify the study population (9). The district was first stratified by subdistrict (woreda) and then within each woreda, peasant associations were randomly selected using a simple random sampling technique (3 from Goma, 3 from Gera, 6 from Kossa). All rural dwellers are registered in a peasant association. A census survey of all residents of the

selected peasant associations was then conducted (T1).

Subjects at T1 were classified as ill (reporting illness) or well. For reasons of economy, not all well subjects were re-surveyed. Instead, for each ill subject, two age-matched randomly selected well subjects from the cohort were surveyed for follow-up six-months later (T2). Randomization was based on a table of random numbers which were matched with subject identification number.

D. MEASUREMENT

1. Baseline (time 1) Household Interview

a) Measurement of Morbidity: At T1 morbidity was assessed by asking the head of the household or the spouse whether any member of the family were ill or not at the time of the study or in the past 2 weeks. Those who were ill were (or the mother or guardian in case of under-fives) were asked about the symptoms, duration of the illness, and actions taken for their illness (see Questionnaire, Appendix A). Return visits were made in the event of absence.

b) Determinant Measurement: To assess the association between illness occurrence and its determinants, the latter were classified as follows:

Sociodemographic factors - age, gender, occupation, education, religion, ethnicity, (as housing type, separated cooking place, animals in separate dwelling).

Behavioral factors - traditional medicine practices, use of

modern medicine facilities, defecation practices.

Environmental factors - housing type, cooking place, animals in separate dwelling, water supply, refuse disposal site, latrine.

The questionnaire was prepared initially in English by the principal investigator. After discussing it with advisors, it was translated into Amharic and verified by a physician for accuracy. Since Oromigna was the local language spoken by rural dwellers, the questionnaire had to be assessed by a person who knew both Oromigna and Amharic well. This was done by the head of one of the health centers in the district.

2. Follow-up Household Interview (Time 2, 6 months later).

At this time, the health status of all subjects was assessed in the same manner as was done at time 1. Questions were directed towards an illness at the time of the interview and towards any death, disability or persistent illness within the six-months study period (see Appendix B). The specific health status measurements included:

a) Death: when a cohort subject died, symptoms prior to death, place of death and action(s) taken before death were recorded. Symptoms were classified according to a WHO format for lay interviewers (11).

b) Disability: In the study, disability was defined in the same manner as in a UNICEF study conducted by Rural Integrated Basic Services in rural areas of Kaffa Region (12). When a subject was found to be disabled, the type and duration of

disability were recorded. Types of disability were classified into four categories, namely sight, hearing, physical and mental disability.

c) Persistent Illness: This outcome was measured for those subjects who had reported illness at T1. If a subject was registered as ill at both T1 and T2, reported illness types were compared to see if it was recurrent, persistent or a different type of illness. This question was not consistently understood correctly by respondants and therefore this study when referring to "persistent" illness is inclusive of both recurrent and persistent illness. These subjects were also asked about the course (outcome) of their previous illness. This was not included in the analyses due to inconsistency of reports.

The questionnaire for the follow-up study was also prepared by the principal investigator. As it was done for the T1 survey, the questionnaire was translated into Amharic and then assessed in Oromigna, and modified somewhat on the basis of pretest and translation problems.

E. DATA COLLECTION AND MANAGEMENT

1. Interviewers and Training

Students who had completed 12th grade education, who were fluent in the local language (Oromigna), and had taken part in the 1984 G.C. census data collection were recruited. The same interviewers were used for the T1 and T2 surveys. They were not aware of the purpose of the study.

Two health workers from the district health office were trained to train interviewers and coordinate them. They were told about the purpose of the study by the principal investigator. Three days of training on interviewing skills was conducted by the two coordinators, assisted by the principal investigator.

2. Conduct of the Survey

Before the actual survey was conducted, the interviewers conducted a pretest in the outskirts of Agaro, the capital of the district. Minor modifications were made according to the pretest result to fit local conditions, and then the questionnaire was administered to every household in the sample, that is, to people reporting illnesses at T1 (cases) and to those randomly selected age-matched non-exposure controls. The interview was conducted in Oromigna, but responses were recorded on the Amharic version of the questionnaire.

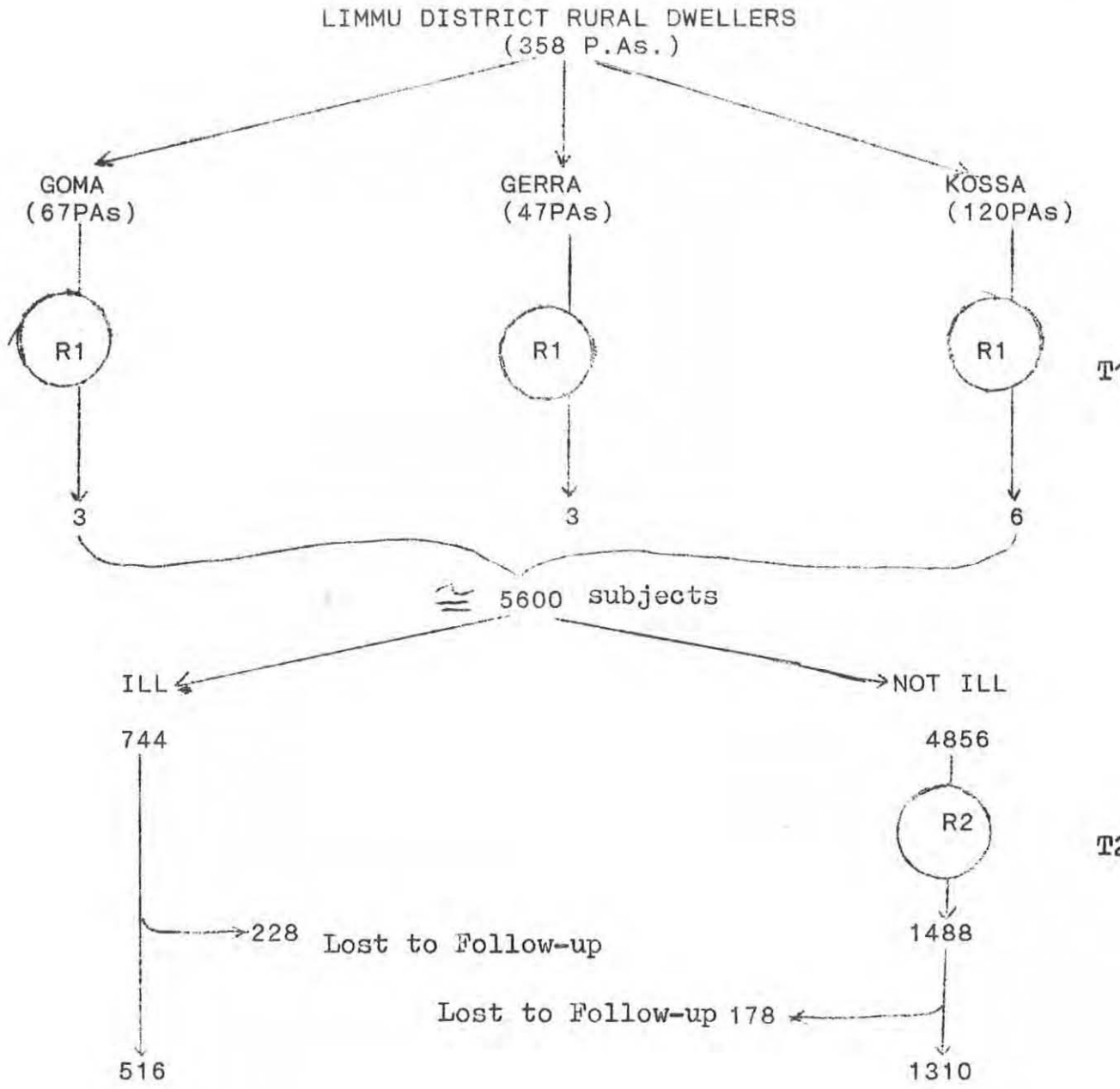
During the actual data collection period, the coordinators supervised the interviewers daily. Each supervisor had six to twelve interviewers to assess daily. The principal investigator visited all interviewers at least once during the date collection at each of the 12 selected peasant associations.

3. Analyses

Analyses were made using the SPSS/PC+ statistical package. Frequency distributions were obtained for the different illness types at T1 and T2. To examine the health status outcomes of

subjects, outcomes were classified as: same illness, different illness, death, and disability. Also a crosstabulation and chi square test was performed to examine the relation between illness at T1 and illness at T2.

Bivariate analyses were performed to identify determinants of illnesses at T1 and T2 separately. This included calculation of crude rate ratios and 95% confidence intervals. Rate ratios were calculated by comaring the subgroup in a variable with the sum of the other subgroups in the same variable. Finally, a multiple regression was performed for both T1 and T2 to determine which factors were the best predictors of illness occurrence.



KEY

P.As.- Peasant Associations
R1 - Randomization of about 5% from each subdistrict
R2 - Randomization 2-age matched non-ill subjects for each ill subject.

Figure 2: Study Population and Sampling Method

IV. RESULTS

A. DESCRIPTION OF COHORT

A total of 2235 subjects were included in the sample selected for this study. Eighty-four subjects from the cohort interviewed at T1 could not be traced during the follow-up survey six months later because they either changed residence or were out for 'zemecha' (field work far from residence). One peasant association in Kossa subdistrict (woreda) was excluded at T2 because the house numbers had been changed during their recent villagization process, making it impossible to locate them. The T2 survey therefore included 1826 subjects. The date of the T2 interviews was the month of December, 1988. Figure 2 summarizes the entry figures for the entire study population.

From the total 1826 subjects, 92.6% were Oromos. The study group was 50.0% female and 48.3% male, yielding a 1:1 ratio. The sociodemographic and economic status of the population is shown in Table I. Almost 60% of those 5 years and above were illiterate and only 7% had grade 3 or more education. Concerning the occupational status, the majority of subjects above 10 years of age are farmers, while a few (5.6%) were found to be either government or private employees. Marital status of subjects above 10 years indicated that 68.7% were married and only 0.7% separated. For further analyses, divorced, separated, and widowed were grouped together.

Information gathered on water and sanitation revealed that

Table I

Sociodemographic Characterstics of Study Population

Variables	Number	Percentage
Educational Status (for those > 5 years)		
Illiterate	830	59.2
Literacy campaign	427	30.4
Grade 1-2	47	3.3
Grade 3 +	99	7.0
Occupational Status (for those > 10 years)		
Farmer	629	50.0
Housewife	444	35.3
Student	114	9.1
Others	69	5.6
Marital Status (for those > 10 years)		
Single	272	21.7
Married	861	68.7
Divorced	39	3.0
Separated	8	0.7
Widowed	47	5.9

90.8% of subjects' households had a private or communal latrine. The majority of subjects (57.9%) disposed of their solid wastes in an unsafe manner, that is, in the open field or nearby flowing rivers. Regarding the source of water, 58.8% of the population used unsafe water (unprotected well, spring or river water).

B. MORBIDITY AT TIME 1

Table II shows the different illness symptoms reported at Time 1 according to the modified WHO lay interviewers disease list (9). 516 people reported an illness and from these the most prevalent included cough (acute), diarrheas, musculoskeletal disorders, eye diseases, and abdominal conditions (worms, cramps). For further analyses the illness symptoms listed in table II were grouped into the following catagories:

fever (1-3), skin diseases (4), all diarrheas (5,6), abdominal conditions (7), all coughs (8,9), eye problems (12), head and neck manifestations (13), musculoskeletal disorders (22,23), and others (10,11, 14-21, 24).

Those who reported more than one illness symptom and did not match the list shown in table II were included in the category of "others".

The age frequency distribution for each illness category is shown in table III and the illness frequency distribution for each age group category at T1 is shown in table IV.

From table III it can be seen that ever was distributed somewhat evenly within the three age groups 0-4, 30-44 and 45-59.

Table II

Illnesses Reported During the Initial Survey

	Reported Symptom	Number	Percentage
1.	Fever with skin manifestations	33	6.4
2.	Fever + Neurological symptoms	3	0.6
3.	Other Fevers	16	3.1
4.	Skin Infections	28	5.4
5.	Diarrhea and Vomiting	8	1.6
6.	Other Diarrheas	47	9.1
7.	Abdominal Conditions	41	7.9
8.	Cough (chronic)	22	4.3
9.	Cough (acute,URTI)	128	24.8
10.	Breathing Problems (asthma)	1	0.2
11.	Urogenital Manifestations	1	0.2
12.	Eye Problems	38	7.4
13.	Head and Neck Manifestations	11	2.1
14.	Neurologic Manifestations	36	7.0
15.	Maternal Problems	1	0.2
16.	Newborn Problems	2	0.4
17.	General Problems due to old age	4	0.8
18.	Mild Injuries	18	3.5
19.	Serious Injuries	2	0.4
20.	Others (Vague Complaints)	26	5.4
21.	Mental disorders	1	0.2
22.	Musculoskeletal Disorders	43	7.9
23.	Body Swelling	2	0.2
24.	Malnutrition	4	0.8
		516	100.0

Table III

Age Frequency Distribution for Reported Illness Catagories at T1
(rows add up to 100.0%)

Illness Category	Age Categories* 0-4	5-14	15-29	30-44	45-49	60+
All Fevers	21.2(11)	11.5 (6)	15.4(8)	21.2(11)	21.2(11)	9.6(5)
Skin Diseases	28.6 (8)	35.7(10)	21.4(6)	14.3(4)	--	--
All Diarrheas	38.2(21)	12.7 (7)	12.7(7)	18.2(10)	5.5(3)	12.7(7)
Abdominal Conditions	7.3 (3)	14.6 (6)	19.5(8)	31.7(13)	19.5(8)	7.3(3)
All Coughs	22.7(34)	23.3(35)	13.3(20)	19.3(29)	12.0(18)	9.3(14)
Eye Problems	28.9(11)	7.9 (3)	13.2(5)	21.1(8)	15.8(6)	13.2(5)
Head and Neck Diseases	6.4 (3)	8.5 (4)	25.5(12)	27.7(13)	19.1(9)	12.8(6)
Musculoskeletal Disorders	2.3 (1)	11.6 (5)	11.6(5)	27.9(12)	30.2(13)	16.3(7)
Others	12.9 (8)	12.9 (8)	12.9(8)	29.0(18)	14.5(9)	17.7(11)

*percentages(frequency)

Skin diseases were highest (35.7%) in children 5-14 years old but relatively high in almost all age groups. Musculoskeletal problems (especially rheumatism) primarily affected those above 45 years old. Eye problems, including trachoma, were frequently reported in under fives and 30-44 year olds.

The figures in table IV indicate that for all age groups cough is the most frequent complaint. After cough complaints, in preschool children diarrhea is the next most frequently reported illness. In children between 5 - 14 years old, skin diseases were prominent. In ages between 15 - 44, abdominal manifestations, mainly worms and abdominal cramps, and head and neck disorders were common. In the older age groups, i.e., 45 and above, musculoskeletal disorders (rheumatism) were frequently reported.

C. MORBIDITY AT TIME 2

At the follow-up survey (T2), 730 subjects reported some kind of illness. The types of reported illnesses in order of frequency were fever (22.9%), diarrheas (17.2%), other vague complaints (14.8%), coughs (13.7%), abdominal condition (10.7%), musculoskeletal disorders (7.3%), skin diseases (5.8%), eye problem (4.2%) and head and neck disorder (2.7%).

Table V summarizes the illnesses reported at T1 and their corresponding health outcomes six months later (T2). It can be seen that for all reported illnesses at T1, a small proportion continued to have the same complaint 6 months later (T2).

Table IV

Illness Frequency Distributions by Age Group Categories
(columns add-up to 100%)

Illness Catagories	Age Groups 0-4	5-14	15-29	30-44	45-59	60+
Fever	11(11)	7.1 (6)	10.1 (8)	9.3(11)	14.3(11)	8.6 (5)
Skin Diseases	8 (8)	11.9(10)	7.6 (6)	3.4 (4)	---	---
Diarrheas	21(21)	8.3 (7)	8.9 (7)	8.5(10)	3.9 (3)	12.1 (7)
Abdominal Conditions	3 (3)	7.1 (6)	10.1 (8)	11.0(13)	10.4 (8)	5.1 (3)
Coughs	34(34)	41.7(35)	25.3(20)	24.6(29)	23.4(18)	24.1(14
Eye Diseases	11(11)	3.6 (3)	6.3 (5)	6.8 (8)	7.8 (6)	8.6 (5
Head/Neck Diseases	3 (3)	4.8 (4)	15.2(12)	11.0(13)	11.7 (9)	10.3 (6)
Musculoskeletal Disorders	1 (1)	5.9 (5)	6.3 (5)	10.2(12)	16.9(13)	12.1 (7)
Others	8 (8)	9.5 (8)	10.1 (8)	15.3(18)	11.7 (9)	18.9(11)

* percentage (and frequency)

Table V

Intermediate Health Status Outcomes for Different Illnesses at Ti*

Illness Catagories	Intermediate Health Status Outcomes					
	Same	Other	Dead	Disabled	Well	Total
Fevers	9.6(5)	36.5(19)	7.7(4)	---	46.2(24)	100 (52)
Skin Disease	---	60.7(17)	---	---	39.3(11)	100 (28)
Diarrhea	5.5(3)	32.7(18)	3.6(2)	3.6(2)	56.4(31)	100 (55)
Abdominal Conditions	12.2(5)	39.0(16)	2.4(1)	---	46.3(19)	100 (41)
Coughs	3.3(5)	38.0(57)	5.3(8)	4.0(6)	49.3(74)	100(150)
Eye Problems	10.5(4)	39.5(15)	7.8(3)	2.6(1)	44.7(17)	100 (38)
Head/Neck Diseases	9.1(1)	36.4(4)	---	27.3(3)	27.3 (3)	100 (11)
Musculo-skeletal Disorders	4.7(2)	51.2(22)	4.2(2)	2.3(1)	37.2(16)	100 (43)
Others	1.0(1)	23.5(23)	3.1(3)	3.1(3)	69.4(68)	100 (98)

* percentage(frequency)

However, many continue to report illness, especially those with skin, abdominal, and musculoskeletal disorders at T1. A high percentage of deaths were recorded in subjects who reported eye problems, fever or cough during the initial survey. Disability was high among individuals who reported head and neck diseases at T1.

A chi square test was performed on morbidity at T1 and T2 to examine the effect of T1 illness on the likelihood of being well or ill at T2. It revealed that those who were ill at T1 had an equal chance of being ill (46.3%) and being well (53.7%) at T2, but those who were well at T1 had a greater chance of being well (61.9%) than ill (38.1%) at T2. This association was statistically significant ($p < .01$).

D. ANALYSES OF DETERMINANTS AT T1 AND T2

To examine determinants of illness at T1 , chi-square tests, crude rate ratios and their 95% confidence intervals were calculated in order to determine which variables were related to the occurrence of an illness. No significant differences were seen in gender, whether animals lived in the same room with people, and in boiling of drinking water.

Significant sociodemographic and economic factors are displayed in table VI. Concerning educational status, being illiterate increased the risk of being ill while subjects who were grade 3 and above were protected. Farmers and housewives had a higher risk of being ill compared to students. The use of

Table VI

Summary of Bivariate Analyses for Significant Determinants of Illness at T1 for all subjects

Variables	Morbidity Classification Ill	Well	RR	95% CI
Education *				
illiterate	61.7%(243)	58.3%(584)	1.15	0.91,1.46
literacy campaign	29.4%(116)	30.6%(307)	0.94	0.73,1.21
Grade 1-2	4.8% (19)	2.8% (28)	1.76	0.98,3.20
Grade 3+	4.1% (16)	8.3% (83)	0.47	0.27,0.81
Occupation **				
Farmers	50.0%(180)	48.1%(415)	1.08	0.84,1.39
Housewives	41.1%(148)	33.7%(291)	1.37	1.14,1.63
Students	4.7% (17)	12.1%(104)	0.36	0.21,0.61
Others	4.2% (15)	6.1% (53)	0.66	0.36,1.19
Marital Status **				
Single	15.2% (55)	25.0%(214)	0.54	0.39,0.75
Married	75.7%(274)	65.8%(564)	1.62	1.22,2.14
Separated/ Widowed/ Divorced	9.1% (33)	9.2% (79)	0.99	0.64,1.52
Water Supply *				
Unsafe	46.3%(238)	39.4%(506)	1.33	1.08,1.62
Safe	53.7%(276)	60.6%(778)	0.75	0.60,0.92
Refuse Disposal *				
Openfield	54.6%(274)	62.4%(795)	0.73	0.59,0.90
Garbage pits	45.4%(228)	37.6%(480)	1.37	1.11,1.68
Latrine Presence ***				
No	7.9% (41)	9.8% (126)	.80	.51,1.07
Yes	92.0%(475)	90.2%(1164)	1.25	.84,1.76
Housing Type *				
Thatched roof	76.1%(392)	80.5%(1040)	0.77	0.60,0.98
Others	23.9%(123)	19.5%(252)	1.29	1.01,1.63
Defecate Outside *				
Yes	29.6% (69)	39.1%(276)	0.65	0.48,0.88
No	70.4%(164)	60.9%(429)	1.53	1.12,2.08

* $p<0.05$ ** $p<0.01$ ***$p<0.001$ for chi-square tests

unsafe water was also found to increase one's risk for illness. Using a garbage pit, defecation in the open field, type of housing, and presence of latrine were also associated with illness occurrence. In general, since the confidence intervals are broad, definite comparisons are difficult to make. A multiple regression analysis (table VII) including all potential determinants found that marital status, site of refuse disposal, latrine availability, and level of education were the major predictors of illness occurrence at T1. Being married and relatively uneducated were directly related to illness, as were latrine presence and use of a garbage pit.

Similar bivariate analyses were performed on T2 data for all subjects (Table VIII). The chi-square tests showed that vaccination and nutrition for under-fives, gender, occupation, animals living with people, and the presence of a separate cooking room were not significantly associated with illness.

Concerning sociodemographic and environmental factors, use of unsafe drinking water, education (under grade 3), marital status (divorced/separated/widowed), old age and use of certain traditional practices were found to increase the risk of illness occurrence. In addition, latrine presence, using garbage pits, use of and not defecating in the open field were unexpectedly found to increase the risk of illness at T2.

Figures of bivariate analysis vary because response rates vary for different variables. A particular problem was encoutered on the defecation practice question where the

Table VII

Results of Multiple Regression for Significant Predictors of Illness Among All Subjects At T1

Variable	B	SE B	BETA	P Value
Marital status	.0799	.0374	.0931	<.033
Refuse disposal site	-.1407	.0377	-.1617	<.001
Latrine availability	-.0832	.0257	-.1406	<.002
Educational status	-.0489	.0234	-.0913	<.038
Constant	.4838	.1190	-	<.001

$R^2 = .05421$

Table VIII

Summary of Bivariant Analyses of Determinants of Illness at T2 for All Subjects

Variable	Morbidity Classification at T2 Ill	Well	RR	95% CI
A. Sociodemographic:				
1. Age-group**				
0 - 4	18.9%(138)	19.6%(211)	0.95	.74,1.21
5 -14	21.6%(158)	22.1%(238)	0.97	.77,1.22
15-29	13.2% (96)	16.4%(177)	0.77	.59,1.01
30-44	19.7%(144)	22.8%(245)	0.83	.66,1.04
45-59	14.2%(104)	11.4%(123)	1.28	.77,1.04
60 +	12.3% (90)	7.6% (82)	1.70	1.23,2.54
2. Education*				
Illiterate	58.1%(323)	59.6%(495)	0.94	.76,1.17
Literacy campaign	32.0%(178)	29.5%(245)	1.12	.90,1.42
Grade 1-2	4.5% (25)	2.7% (22)	1.73	.96,3.03
Grade 3 +	5.4% (30)	8.2% (68)	0.64	.41.1.00
3. Marital Status*				
Single	18.9% (91)	24.3%(177)	0.73	.55, .97
Married	69.6%(335)	67.9%(495)	1.08	.85,1.38
Separated/ Widowed/ Divorced	11.4% (55)	7.8% (57)	1.52	1.03,2.27
4. Housing Type***				
Thatched roof	72.6%(530)	83.7%(897)	0.52	0.41,0.66
Others	27.4%(200)	16.3%(175)	1.93	1.52,2.41

Table VIII (cont)

Variable	Morbidity Classification at T2 Ill	Well	RR	95% CI
B. Environmental:				
1. Latrine Presence***				
No	8.5% (62)	10.0%(107)	0.84	0.61,1.17
Yes	91.5%(668)	90.0%(964)	1.19	0.85,1.65
2. Refuse Disposal**				
Openfield/River	55.3%(394)	62.9%(666)	0.72	0.59,0.87
Garbage Pits	44.7%(319)	37.1%(393)	1.37	1.15,1.68
3. Water Supply***				
Unsafe	48.6%(352)	36.8%(393)	1.64	1.35,1.97
Safe	51.4%(373)	63.2%(675)	0.61	0.51,0.74
C. Health Behaviors:				
1. Traditional Medicine***				
uvulectomy	13.8% (98)	9.5%(100)	1.63	1.21,2.20
tonsillectomy	26.0%(184)	26.7%(281)	1.03	0.83,1.22
circumcision	17.3%(123)	13.4%(141)	1.45	1.11,1.90
postpartum butter swallowing	15.8%(112)	29.4%(309)	0.47	0.36,0.60
cow-dung over umbilical stump	12.1% (86)	10.3%(108)	1.28	0.95,1.73
2. Defecate Outside***				
Yes	30.5%(121)	41.9%(226)	0.61	0.47,0.80
No	69.5%(276)	58.1%(314)	1.64	1.25,2.14

*p<0.05 **p<0.01 ***p<0.001 for chi-square tests

respondants number was was low.

To determine the relative importance of the above factors, a multiple regression was performed on illness at T2 (table IX). Four factors positively predicted illness occurrence: use of traditional practices, not defecating in the open field, living in a nonthatched house, and old age were the best predictors of illness occurrence at T2. It is to be noted that illness at T1 was not entered into the regression equation.

Because the relation between morbidity at T1 and T2 was significant, bivariate analyses were performed on T2 data separately for those who were ill and well at T1. The results do not differ strikingly from the results presented above for the groups combined (see tables X and XI in Appendix C).

Table IX

Results of Multiple Regression for Significant Predictors of Illness at T2 Among All Subjects

Variable	B	SE B	BETA	P Value
Traditional practices	-.0335	.0108	-.1061	<.0020
Deficating open field	.0956	.0349	.0932	<.0063
Housing type	.1087	.0453	.0790	<.0167
Age group	.0222	9.91133E-03	.0732	<.0255
Constant	1.1659	.0989	-	<.0000

$X^2 = .03860$

V. DISCUSSION

The main objectives of the study were to determine the intermediate (six month) health status outcomes of a rural Ethiopian community, namely Limmu district, and to identify predictors of both illness occurrence and health status outcomes. The results dealing with these objectives will be discussed in the following way. First, descriptive findings such as prevalence rates and types of morbidity will be discussed. The second part will deal with intermediate health status outcomes of the different morbidity categories reported at time 1. Lastly, the relation between illness occurrence and its determinants will be discussed.

A. REPORTED MORBIDITY AT TIME 1 AND TIME 2

At T1, 11.8% of all 10,000 respondents reported an illness. This figure was lower than the 23%, 18% and 30% rates reported by Kloos (2) and Zein (3), and the Rural Health Survey (6) respectively, but similar to those reported by Yayehyirad (4). which were 8.7%, 10.2% and 15%. Differences in recall periods and/or in time of year may account for some of the variations. At T2, 38% of those initially well reported an illness. This could be due to a differential reporting of illness symptoms at T2 when the interview focused exclusively on illness and its outcomes. Differences may also be related to the time of year, with the latter occuring in the cooler, raining period of the year. The T1 12% prevalence rate is nonetheless considered to be

representative of the source population, for the time of the year the survey was conducted.

The types of reported illnesses at both time 1 and time 2 were similar, namely coughs, diarrheas, fevers (malaria or others), musculoskeletal disorders, abdominal conditions (worms, cramps), eye diseases and skin diseases. This finding is consistent with studies done in Chebo-Guragie district, Addis Zemen town and the rural health survey results of Keffa region (2,3,5). The documentation of morbidity prevalence by the World Bank, although based on health institution data, is also consistent with these findings; malaria (fever), helminthiases (abdominal conditions), skin diseases, URTI (coughs), and diarrhea in children are the frequent causes of visits to the outpatient department of health units in Ethiopia (1). These consistencies indicate that community-based morbidity studies, though based on symptoms rather than disease, can represent morbidity types accurately. Their advantage over health institution data is that they give a more accurate assessment of morbidity rates in a given community, subject to the reliability of reporting, especially in countries like Ethiopia where the reporting system which exists in health units is poor (1).

3. INTERMEDIATE HEALTH STATUS OUTCOMES

Of the 516 subjects who were ill at time 1, 53.1% were ill, dead, or disabled at time 2. The remaining 46.9% were well. Ill subjects at time 1 with skin diseases and musculoskeletal

problems were more likely than those with other illnesses to report morbidity at time 2, indicating the chronicity of these diseases. Eye problems and fevers (malaria or others) were associated with high mortality rate, and head and neck manifestations were associated with disability. The absolute figures show us that from the 23 deaths reported, 8 occured due to cough at time 1. Six of the 16 disabilities reported at time 2 were alsoo associated with cough at time 1.

Although other studies have examined outcome as a function of treatment sought (2), none has classified the outcomes as fully as this study. They were interested in the course of the original illness rather than in the risks for illness of any kind. In this study 41.1% of those ill at time 1 acquired a new illness at time 2 and would probably have been overlooked by such treatment outcome studies.

C. DETERMINANTS OF ILLNESS OCCURRENCE

Sociodemographic and economic factors had significant effects on illness occurrence. During the initial survey, lower levels of education (under grade 3), use of unsafe water, and being married increased the risk of being ill. These factors were also determinants of illness at time 2. The findings are consistent with studies done in Bas Zaire and Nigeria (7,8). Documentation on Ethiopia from the World Bank states that 'illness patterns are exacerbated by poor hygiene and low living standards' (1). However, the results of the present study

indicate that not all manifestations of poor hygiene and low living standards are associated with illness.

The rural health survey showed that reported morbidity was high in the widowed, illiterates, among those not using protected water, to whom latrine and refuse disposal are not available (6).

Unexpectedly, use of garbage pits and housing other than the thatched roof type were also associated with illness. This could be due to improper use of garbage pits in a residence, such as allowing flies and scavengers access to it and thus facilitating disease transmission. In rural areas, thatched roof houses are common and easy to maintain (9), but houses with corrugated iron sheet, even though sturdy, would be difficult to maintain for a family who lives on subsistence farming. The findings for latrine presence and defecation practices may not be reliable. For example, a survey of the awraja found that 40% of those who had a latrine did not use it (9).

D. METHODOLOGY

The methodology of this study has both weak and strong points. One of the weak points is that subjects could have been more frequently followed thus permitting a more detailed assessment of the course of illness and health status outcomes. In addition, the link between reported symptoms and disease categorization is problematic but necessary for community-based morbidity studies. The result is a certain lack of specificity between disease categories. One should be cautious in the

interpretation of morbidity interview surveys. As shown in the study of Belcher et al, morbidity picture which emerged from interview survey showed marked difference from the disease prevalence during health examination (13). In general, problems of under reporting or over reporting should be kept in mind.

A major strength of this study is its cohort design. By following people with varied illness exposures, it was possible to prospectively assess specific health outcomes and important determinants of these outcomes.

E. GENERALIZATION

In Ethiopia, most rural areas are alike in that about 90% of the country's population live on agriculture, the majority had less than grade 3 education until the start of the literacy campaign. Therefore the results of this study can be generalized to the national level. Furthermore, in African countries where rural areas have similar sociodemographic and economic characteristics, these results can also be applied.

VI. CONCLUSION AND RECOMMENDATIONS

The study has shown that a high percentage of people in rural communities report illness. The most frequently occurring illnesses were cough, diarrhea, musculoskeletal disorders, and skin diseases. The study has also clearly shown the intermediate term impact of reported illness. Abdominal conditions and eye problems were associated with persistency while eye problems and fever (malaria or other) and head and neck manifestations were associated with increased mortality and disability respectively.

This study has also confirmed that low education and unsafe water use predict illness occurrence, implying that without the betterment of these conditions, curative medicine alone can not change morbidity patterns or their outcome.

Finally the following points are recommended:

1. The reporting of morbidity data should be standardized when using lay interviewers to conduct community surveys. The WHO lay interviewers disease manual is recommended here.
2. On the basis of the intermediate term outcomes reported, appropriate measures in the area of prevention and follow-up treatment should be given for illnesses at risk for persistence, disability, and death. Attempts should be made to carry out more detailed community-based studies, identify disease outcomes and seek appropriate solutions.
3. Further studies, especially on traditional medicine (practices), on sanitary practices, and explanatory studies on reported morbidity and subsequent outcome is recommended.

REFERENCES

1. World Bank, Sector Review, Ethiopia: Population, health and nutrition. Sept. 1985, (published document).

2. Kloos H. et al. Illness behaviour in Addis Ababa and rural central Ethiopia. Soc. Sci. Med. 1987, 25, 1003-1019.

3. Zein Ahmed Zein et al. The prevalence of perceived morbidity in Addis Zemen town, Ethiopia. Ethiop J. Health Dev. 1987, 2, 19-25.

4. Yayehyirad Kitaw, Self-care: A study of three communities in Ethiopia. Ethiop.J.Health Dev. 1987, 2,13-75.

5. Central Statistics Office, Report on the Rural Health Survey of Ethiopia, (1982/83), Vol. 1, Addis Ababa, 1985.

6. Central Statistics Office, Report on the Rural Health Survey of Ethiopia, (1982/83), Vol. 2, Addis Ababa, 1985.

7. Tsui AO. De Clerque J. and Mangani N. Maternal and socioeconomic correlates of child morbidity in Bas Zaire: The effects of maternal reporting. Soc. Sci. Med. 1988, 26, 701-713.

8. Chojnacka H. and Adegbola O. Determinants of infants and child morbidity in Lagos, Nigeria. Soc.Sci.Med.1984, 19, 799-810.

9. Ferew Lemma, Health profile and action plan of Limmu Awraja, 1988, (Unpublished report).

10. Zonal Planning Office of Southwestern Ethiopia, Socioeconomic conditions of Limmu District (in Amharic), July, 1987, (Unpublished report).

11. WHO, Lay reporting of health information, Geneva, 1978.

12. South-Western Zonal Planning Office and UNICEF, Rural Integrated Basic Services Survey Report, Limmu Awraja, 1988, (Unpublished report).

13. Belcher et al, Comparison of morbidity interviews with a health examination survey in rural Africa. The American Journal of Tropical Medicine and Hygiene, Vol. 25, No.5, 1976; pp 571-578.

APPENDIX A

LIMMU AWRAJA HEALTH STATUS QUESTIONNAIRE

I. IDENTIFICATION

Awraja _____ Woreda _____
Farmer _____ Household No _____

	Age	Sex	Marital Status	Educational Status	Occupational Status	Religion	Ethnicity
1							
2							
3							
4							
5							
6							
7							
8							
9							
10							

II. Morbidity/Mortality

1. Is or has anyone been sick during past 2 weeks
   No_____ Yes_____

   If yes

Age	Sex	Duration of Illn.	Symptom Illness	Measures Taken Nothing	Trad. Healer	Pharmacy	CHS	HI

2. Is or was there anyone with the following symptoms ?

Diarrhoea	No_____	Yes_____
Cough	No_____	Yes_____
Eye problem	No_____	Yes_____
Skin problem	No_____	Yes_____

3. Is there a disabled person in the house

No_____ Yes_____ If yes

Age	Sex	Type of Disability Hearing	Visual	Mobility	Mental

4. Did anyone die in the household during the past 12 months?

No_____ Yes_____ If yes

Age	Sex	Cause	Month

5. Has any female died during pregnancy or child birth during the past 12 months?

No_____ Yes_____ If yes

Age	Month of gestation	Parity

III. SANITATION

1. Housing

Type of house
Thatched_____
Corrugated_____
Others_____

2. Do you have a separate room for cooking?

No_____ Yes_____

3. Do domestic animals live in the same room with household members?

No_____ Yes_____

4. Do you have a latrine in your home or nearby?

No_____ Yes_____

5. If yes type

Dry pit_____
Others_____

6. If yes to Q 5, is it

Shared_____
(Semi private)_____
Private_____

7. If No to Q 4, what is the reason
___ no space available for construction
___ no money / material for construction
___ don't know importance
___ others_____

8. Do you defecate in the open field?
No_____ Yes_____ days/week

9. Are there any disadvantages of defecating in the open field?
No_____ If yes explain_____

REFUSE DISPOSAL

10. Where do you usually dispose solid wastes?

Open field ___
River _____
Garbage pit____
Others_____

WATER SUPPLY

11. From where do you get your drinking water?

Well protected_____ River_____
unprotected___ Pipe water - private___
Spring protected___ communal (Bono)___
unprotected___

12. How far do you walk to fetch drinking water?
_____ kilometers

13. Do you boil drinking water for your child?
N/A_____ Yes_____ No_____

IV. MATERNAL AND CHILD HEALTH

Age	No pre.	Date of last pre. (3 years)	Did you A /N/ C Yes	No	Place of delivery Unskilled	TBA	TTBA	HW	Health Instr.

1. For any child under 12 months of age, fill the table below

Date of birth (MTH)	Sex	Age of Mother

V. EXPANDED PROGRAMME OF IMMUNIZATION AND NUTRITION

Age	Ever Vacc.	Type of vaccine taken BCG +	DPT	POLIO 0	MEASLES	BF Duration	Supplementary Food started

VI. NUTRITION

Age	Milk	Injera	Vegetables	Cereals	Meat	Fruits	Lentils	H 0 2

1. Does any member of your family, including you, practice

Tonsillectomy: No____ Yes____

Uvulectomy: No_____ Yes____

Female circumcision No____ Yes___

Male circumcision (at home)
No_____ Yes_____

Make an infant swallow butter
No_____ Yes_____

Cover umbilical stump with butter / low dung
No_____ Yes_____

APPENDIX B

FOLLOW-UP QUESTIONNAIRE FOR HEALTH STATUS OUTCOMES

Name:_____

Name of Interviewer_____

Part I - Identification

1. Woreda ____

2. Peasant Association ____ ____

3. Household Number ____ ____ ____

4. Family Member Number ____ ____

5. Age ____ ____

6. Sex ____

7. Distance of nearest health institution from place of residence _____kms ____ ____

Part II - Current Morbidity

8. Is the above registered family member ill now (today)?
No____ Yes____ ____

9. If yes, list all complaints_____

_____. ____ ____

Duration of illness_____dys/mths (specify)
____ ____

Action(s) taken (1) nothing_____ (4) CHS____
(2) Trad. Med.___ (5) HI ____
(3) Pharmacy ____ **STOP, GO TO PART V

10. If the answer to Q-8 is No, is the person (is he disabled)?

No_____ Yes_____ ____

11. If the answer is Yes, go to Part III

If the answer is No, is the person alive and well?

No_____ Yes_____ ____

12. If the answer to Q-11 is Yes, STOP
If the answer to Q-11 is No, is the person

1. ill____, go back to Q-9
2. dead____, go to PART IV
3.disabled__,go to PART III

Part III. For Disabled Person Only

13. Type of Disability
(1) sight (2)hearing (3)Mobility (4)Mental ____

14. Duration of Disability_____
(days, months - specify) ____ ____

15. Measures taken for disability
(1) nothing (4) CHS
(2) Trad. Med (5) HI ____
(3) Pharmacy

16. Is there restriction from daily activities previously carried out

____

No_____ Yes_____

Part IV. For Deceased Persons Only

17. Date of Death: ___Day___Month___Year ____

18. Place of Death: (1) Home
(2) Health Institution
(3) Others ____

19. Presenting symptoms/complaints before death?

____ ____

20. Measures taken before death

(1) Nothing (4) CHS ____
(2) Trad. Med (5) HI
(3) Pharmacy

21. Informant

Relation to the deceased ____

Age ____ ____

Sex ____ ____

Part V. If subject is currently ill, and also reported illness 6 months back, ask the following questions:

22. What happened to the person, whom you reported ill 6 months back? ____

- got well soon after
- got well after some time
- got well after long time
- still has the same complaint
- same complaints occur on-and-off
- became disabled
- died

23. Did you take additional measures? ____
No_____ Yes_____

24. If yes, (1) Trad. Med (3) CHS
(2) Pharmacy (4) HI ____

Appendix C

Table X

Summary of Bivariate Analyses of Significant Determinants for Morbidity at T2 for those Well at T1

Variables	Morbidity Classification at T2	
	Ill	Well
Education*		
Illiterate	55.3%(209)	59.8%(364)
Literacy campaign	34.1%(129)	28.7%(175)
Grade 1-2	4.0% (15)	2.1% (13)
Grade 3+	6.6% (25)	9.4% (57)
Water Supply***		
Unsafe	48.9%(236)	33.5%(263)
Safe	51.1%(247)	66.5%(522)
Latrine presence*		
No	9.4% (46)	10.2% (80)
Yes	90.5%(441)	89.8%(707)
Housing Type***		
Thatched roof	74.9%(365)	83.9%(662)
Others	25.1%(122)	16.1%(127)
Defecate Outside***		
Yes	31.9% (92)	45.2%(184)
No	68.1%(196)	54.8%(223)
Age-groups*		
0 - 4	18.3% (89)	19.6%(155)
5 -14	22.8%(111)	24.9%(197)
15-29	13.1% (64)	16.2%(128)
30-44	19.9% (97)	21.9%(173)
45-59	14.0% (68)	10.3% (81)
60 +	11.9% (58)	7.1% (56)
Gender*		
Male	53.5%(257)	46.5%(223)
Female	47.0%(369)	53.0%(416)

Table X (cont)

Traditional Medicine***		
Uvulectomy	12.3% (58)	8.3% (64)
Tonsillectomy	26.5%(125)	25.1%(194)
Circumcision	14.4% (68)	13.6%(105)
Postpartum butter swallowing	19.1% (90)	31.4%(243)
Cow dung over umbilical stump	11.9% (56)	10.6% (82)

*P<0.05 **P<0.01 ***P<0.001 for chi-square tests

Table XI

Summary of Bivariate Analyses for Significant Determinants for Morbidity at T2 among those Ill at T1

Variables	Morbidity Classification-T2	
	Ill	Well
Refuse Disposal***		
Openfield/River	43.9%(101)	63.1%(169)
Garbage pit	56.1%(129)	36.9% (99)
Latrine Presence*		
No	6.8% (16)	9.1% (25)
Yes	93.2%(221)	90.9%(250)
Housing Type***		
Thatched roof	67.5%(160)	83.2%(228)
Others	32.5% (77)	16.8% (46)
Traditional Medicine***		
Uvulectomy	17.3% (40)	12.6% (34)
Tonsillectomy	24.7% (57)	31.5% (85)
Circumcision	23.4% (54)	13.3% (36)
Postpartum butter swallowing	9.5% (22)	24.1% (65)
Cow dung over umbilical stump	13.0% (30)	9.3% (25)

*p<0.05 **p<0.01 ***p<0.001 for chi-square tests

መጠይቅ አንዱ

በሰሙ አወራሽ የጡኖ መጠይቅ

1. ጠቅሳላ መረጃ

አወራሽ _____ ወረዳ _____

የገበረ ማኅበር _____ የቤት ቁጥር _____

ፅድሜ	ፃታ	የጋብቻ ሁኔታ	የትምህርት ደረጃ	ሥራ	ሃይማኖት	ጉዛ
1						
2						
3						
4						
5						
6						
7						
8						
9						
10						

2. የበሽታው የሞት ሁኔታ

1. በቤት ውስጥ አሁን ወይም ቢለፈት ሁለት ሳምንታት ውስጥ ታም የነበረ ሰው አለ?

የለም _____ አለ _____

አለ ካሉ፡

ፅድሜ	ፃታ	የበሽታ ሁኔታዎች	የበሽታ ጊዜ	የተወሰደው አርምጃ ምንም	የባሕል	ፋርማሲ	ቀ.ጤ.አ	ጤ.ተ.
1								
2								
3								
4								

2. በቤት ውስጥ የሚከተሉት የበሽታ ስሜቶች ያለው ወይም የነበረው አለ?

ተቅማጥ የለም _____ አለ_____

ሳል የለም_____ አለ_____

የአይን በሽታ የለም_____ አለ_____

የቅዳ በሽታ የለም_____ አለ_____

3. በቤት ውስጥ አካለ ስንኩል አለ?

የለም_____ አለ_____ አለ ካሉ_____

ተራ ቁጥር	ዕድሜ	ፆታ	የአካለ ስንኩልነቱ አይነት		
			የማየት	የመስማት	የእንቅስቃሴ የአእምሮ
1					
2					
3					
4					
5					

4. በቤት ውስጥ ከላፉት 12 ወራት ውስጥ የሞተ ሰው አለ?

የለም_____ አለ_____ አለ ካሉ፣

ተራ ቁጥር	ዕድሜ	ፆታ	ምክንያት	ወር
1				
2				
3				

5. በቤት ውስጥ በወሊድ ወይም በእርግዝና ምክንያት ባለፉት 12 ወራት ውስጥ የሞተ ሰው አለ?

የለም _____ አለ_____ አለ ካሉ፣

ተራ ቁጥር	ሳድሜ	የእርግዝናው ወር	የእርግዝናው ብዛት
1			
2			

3፣ የአካባቢ ጤና አገልግሎት

1. የቤት ሁኔታ
   የቤቱ ዓይነት
   ¯ የሣር ክዳን
   ¯ የቆር ቆሮ ጣራ
   ¯ ሌላ
2. ለምግብ ማብሰያ የተለየ ክፍል አሎት?
   የለም_____ አለ_____
3. የቤት እንስሳት ከቤተሰብ አባላት ጋር አንድ ክፍል ውስጥ ያድራሉ /ይኖራሉ/?
   የለም _____ አዎን_____
4. በቤት ውስጥ ወይም በአካባቢያ ሽንት ቤት አለ?
   የለም _____ አለ_____
5. አለ ካሉ፣ አይነቱ
   ጉድጓድ_____
   ሌላ_____
6. ለጥያቄ 4 አለ ካሉ
   የጋራ_____
   /ለ4 ቤተሰብ አንድ ቦታ/_____
   የግል_____
7. ለጥያቄ 4 የለም ካሉ፣ ምክንያቱ ምንድነው?
   _____ ለመሥሪያ ቦታ የለም
   _____ ለመሥሪያ ገንዘብ/ ቁሳ ቁስ የለም
   _____ ጥቅሙን አለመገንዘብ
   _____ ሌላ
8. ሜዳ ላይ ይፀዳዳሉ?
   የ.ነም_____ አዎን_____ ቀን/በሳምንት

9. በሜዳ ላይ መፀዳዳት ጉዳት የሚያስከትል ይመስሉታል?

የለም_____

አዎን፣ ለምን_____

10. የቤት ውስጥ ቁሻሻን /ደረቅ ቁሻሻን/ የት ይጥሉሉ?

¯ሜዳ ላይ_____

¯ወንዝ ውስጥ_____

¯ ቁሻሻ ማጠራቀሚያ ገደል ውስጥ_____

¯ሌላ_____

11. የመጠጥ ውሃ ከየት ያገኛሉ?

ጉድጓድ ¯ የተጠበቀ_____ ወንዝ_____

¯ ያልተጠበቀ_____ የቧንቧ¯ የግል_____

ምንጭ ¯ የተጠበቀ_____ ¯ የጋራ /ቦኖ°/____

¯ ያልተጠበቀ_____

12. የመጠጥ ውሃ ለማግኘት ምን ያህል ይጓዛሉ? _____ ኪ.ሜ.

13. ለሕፃናት /ከ5 ዓመት በታች/ የመጠጥ ውሃን ያፈላሉ?

አይመለከትም_____ የለም_____ አዎን_____

4. የእናቶችና የሕፃናት ጤና አገልግሎት

ፅንስ	የዕርግዝና ብዛት	የመጨረሻ የዕርግዝና ወቅት	የእርግዝና አለ	ክትትል የለም	የወሰዱበት ቦታ/ሰው ያልተማረ	ለ.ዓ.	የሰ.ለ.ዓ.	ጤ.ቢ	ጤ

1. ለማንኛውም ከአንድ ዓመት በታች /ከ12 ወራት በታች/ ላለ ሕፃን፣ የሚከተለውን ሠንጠረዝ ሙላ

የተወለደበት ቀን	ፆታ	የእናት አድሜ

5. የክትባት መርሃ ግብር

ፅድሜ ያውቃል	ተከትቧ	የክትባት ዓይነት				ሙት የጠቧበት ጊዜ	ተጨማሪ ምግብ የጀመረበት ፅድሜ
		ቢሲጂ	ዲፒቲ	ፓሊዮ	ኩፍኝ		
			ተ	0			

6. የተመጣጠነ ምግብ

ፅድሜ	ወተት	እንጀራ	ቀጠሊቀጠል	ጥራጥሬ	ሥጋ	ፍራፍሬ	ምሥር	ውሃ

ከቤተሰብ አባሊት ውስጥ ከእርስዎ ጭምር የሚከተሉትን የተጠቀመ አለ?

ጉሮሮ ማስቧጠጥ	የለም_____	አለ_____
እንጥል ማስቀረጥ	የለም_____	አለ_____
ሴት ልጁ ማስገረዝ	የለም_____	አለ_____
ወንዱ ልጁ ማስገረዝ/በቤት ውስጥ/	የለም_____	አለ_____
ሕፃን ልጁን ቀቤ ማስዋጥ	የለም_____	አለ_____
እትብት ላይ ቀቤ/እበት ማስቀመጥ	የለም_____	አለ_____

መጠይቅ ሁለት

የበሽታን ሁኔታ ለማጥናት የወጣ መጠይቅ

ሊሙ አውራጃ_____

ቀን _____

የጠያቂ ስም_____

ክፍል 1. ጠቅላላ መረጃ፤

1. ወረዳ _____
2. የገበሬ ማኅበር_____
3. የቤት ቁጥር _____
4. የቤተሰብ አባል ቁጥር _____
5. ዕድሜ _____
6. ጾታ _____
7. ከአቅራቢያው ካለው የጤና ድርጅት ያለው ርቀት ..... በኪ/ሜ

ክፍል 2. የበሽታ ሁኔታ፤

8. ከላይ የተመዘገበው የቤተሰብ አባል አሁን/ዛሬ ያመ ዎ፡ነ? የለም____ አዎን ____ _____
9. አዎን ካሉ፤ የሚሰማቸውን የበሽታ ስሜቶች በሙሉ መዘግብ _____

_____

ሕመሙ ከጀመበት ጊዜ ..... ቁጥር/ወራት

የተወሰደ እርምጃ፤

1. ምንም
2. የባሕል አዋቂ
3. ፋርማሲ
4. ቀበሌ ጤና ኬላ
5. ጤና ድርጅት

ወደ ክፍል አምስት ይሂዱ _____

10. ለጥያቄ 8 የለም ካሉ፤ ከላይ የተጠቀሰው አባል አኪለ ስንኩል ነው?

የለም ____ አዎን ____ _____

11. አዎን ካሉ፤ ወደ ክፍል 3/ ሶስት/ ይሂዱ
የለም ካሉ፤ አባሉ ጤነኛና በሕይወት አለ?
የለም ____ አዎን ____ _____

12. ለጥያቄ 11 አዎን ካሉ፤ አቁም _____

ለጥያቄ 11 የለም ካሉ፣ አቧሉ

1. ታሟል ____ ወደ ጥያቄ 9 ይመለሱ
2. ሞቷል____ ወደ ክፍል 4
3. አካለ ስንኩል ሆኗል_____ ____
   /ወደ ክፍል 3/

ክፍል 3፣ <u>ለአካለ ስንኩሎች ብቻ፣</u>

13. የአካለ ስንኩልና ው ዓይነት
   1. የማየት ጭግር
   2. የመስማት
   3. የአንቀሳቃሴ
   4. የለአምሮ ____

14. አካለ ስንኩል ከሆነ ስንት ጊዜው ነው?
   ..... ቁጥር/ወራት ይገለጽ ____ ____

15. አካለ ስንኩል ከሆነ በኋላ ምን እርምጃ ወሰዱ?
   1. ምንም
   2. የባሕል ሕክምና
   3. ፋርማሲ
   4. ቀበሌ ጤና አገልግሎት
   5. ጤና ተቋም ____

16. ከ ቀን ? ቀን ሥራዎ ላይ ጭግር አምጥቷል
   የለም ___ አዎን ____ ____

ክፍል 4፣ <u>ለሞቱ ብቻ፣</u>

17. የሞቱበት ቀን፣ ..... ቀን .... ወር .... ዓመት ____
18. የሞቱበት ቦታ
   1. ቤት ውስጥ
   2. ጤና ተቋም
   3. ሌላ ____

19. ከመሞታቸው በፊት የነበሩት የሕመም ምልክቶች_____
   _____ ____

20. ከሞት በፊት የተወሰደ እርምጃ፣
   1. ምንም
   2. የባሕል መድኃኒት
   3. ፋርማሲ
   4. የቀበሌ ጤና አገልግሎት
   5. ጤና ተቋም ____

21. መረጃውን የሰጠው ሰው፣
   _ ከሟቹ ጋር ያለው ግንኙነት/ዝምድና ____
   _ ዕድሜ ____
   _ ጾታ ____

ክፍል 5፣

የቤተሰብ አቢሉ አሁን ሕመምተኛ ከሆነና ከስድስት ወር በፊትም የሕመም ስሜት እንዳለው ከገለፀ፣ የሚቀጥሉት ጥያቄዎችን ይጠየቅ

22. ከስድስት ወር በፊት የሕመም ስሜት እንደሚሰማው የገለፁልን የቤተሰብ አቢል ምን ሆነ፣

¯ወዲያውኑ ተሻለው

¯ጥቂት ቁጥ ቆይቶ ተሻለው

¯ብዙ ቁጥ ቆይቶ ተሻለው

¯አሁንም የቀጠለ የበሽታ ስሜቶች አሉ፣

¯የቀጠለ ስሜቶች አልፍ አልፍ ይሰሙታል

¯አካለ ስንኩል ሆነ

¯አረፈ

23. ካለፈው እርምጃ ሌላ ተጨማሪ ያደረጊት ነበር?

የለም ____ አዎን _____

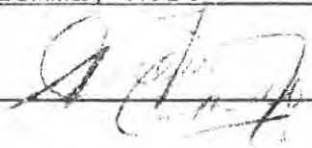
24. አዎን ካሉ፣

1. የባሕል ሕክምና
2. ¯ፋርማሲ
3. ቀበሌ ጤና አገልግሎት
4. ጤና ተቋም ____

DECLARATION

I, the undersigned, declare that this thesis is my work and that all sources of material used for this thesis have been duly acknowledged.

Name Ferew Lemma, M.D.

Signature 

Place Addis Ababa, Ethiopia

Date of Submission April, 1989