DETERMINANTS OF MOTHERS' TREATMENT OF DIARRHEA IN UNDER-FIVE CHILDREN

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Determinants of Mothers' Treatment of Diarrhea in Under-Five Children

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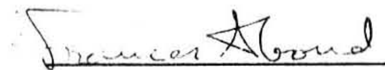
Dr. Frances Aboud 

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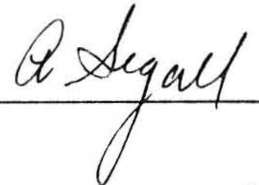
Dr. Ascher Segall 

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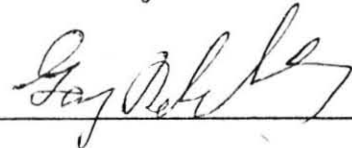
Dr. Gary Peckles 

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SUMMARY

The objective of the study was to identify the knowledge, attitude and practice concerning current diarrheal treatment by rural mothers. From 11 randomly selected peasant associations in Wolayta awraja, 6414 mothers were interviewed to determine whether they had children under five years of age and whether any child had diarrhea in the previous two-week period. The 654 mothers whose children had diarrhea were interviewed about their knowledge, attitudes and treatment practices for the current diarrhea using a structured questionnaire. The results showed that the prevalence of diarrhea in the study community was 11.1%; 73 of the diarrheal children died indicating a mortality rate of 11.4 per 1000 children under five years for 2 weeks. Concerning home treatment of diarrheal cases, only 12.3% of mothers increased the amount of fluid given, 19.9% increased or gave the same amount of food, and 20.5% gave ORS or ORT to the diarrheal child. Use of health institutions was found to be 7.3%. Determinants of treatment practices were: 1) mothers' knowledge about causes and consequences of diarrhea; and 2) nature of the child's diarrhea such as concurrent vomiting and frequency of the diarrhea in 24 hours. Mothers preferred to seek treatment from drug shops than from health institutions despite the fact that the latter were nearer to their homes. The outcome of diarrhea was significantly associated with treatment practices.

LIST OF TABLES, FIGURES AND APPENDIX

Table 1 Age specific diarrheal morbidity in the study population

Table 2 Age specific diarrheal mortality in the study population

Table 3 Characteristics of diarrheal child

Table 4 Maternal perception of severity of diarrhea

Table 5 Frequency distribution of mothers current diarrheal treatment

Table 6 Frequencies of variables measuring maternal characteristics

Table 7 Correct responding on knowledge test

Table 8 Aspects of illness associated with requesting professional help

Table 9 Factors associated with maternal home treatment of diarrhea

Table 10 Factors associated with use of modern professional treatment

Table 11 Factors associated with outcome of diarrhea

Figure 1 Sampling frame for selection of sample

Appendix Interviewers Manual and Questionnaire

INTRODUCTION

In many developing countries diarrhea is one of the most prevalent and debilitating diseases in children under five years of age. The most serious consequence is loss of fluids and electrolytes from the body. This leads to dehydration which can be fatal, if not treated appropriately on time. In addition, diarrhea can lead to malnutrition by decreasing the child's appetite for food, by reduction of absorption capacity of the bowel, and by alteration of body metabolic activities. When diarrhea occurs repeatedly and is accompanied by vomiting the above mentioned outcomes become magnified (1). Other consequences of diarrhea are weakness, abdominal cramps and straining during diarrhea which leads to a great deal of discomfort for the child. In this state, the diarrheal child has less interest in and capacity to explore the environment and to develop physically, mentally and socially (1).

In recognition of the seriousness of diarrheal diseases in children, international agencies such as the World Health Organization have given greater attention to a diarrheal disease control programme. This programme, from its start in 1978, has emphasized the distribution and use of oral rehydration salts (ORS) for the treatment of diarrhea in children. Today more than 100 countries have launched national control of diarrheal disease (CDD) programmes.

Control of diarrheal disease programmes give priority to the

training of health personnel, promotion of use of home solutions as early as possible during diarrheal episodes, procurement and/or production of ORS sachets, and supervision, monitoring and evaluation of activities to make sure that oral rehydration therapy (ORT) is used effectively and to measure its impact (1).

In Ethiopia the CDD programmes co-ordinating office was set up in 1980 at the national level in conjunction with the expanded programme on immunization (2). The CDD co-ordinating offices were located in regional offices, hospitals and health centers. Although the CDD programme has been in operation for 9 years in Ethiopia, there is little evidence of its effectiveness. Diarrheal disease remains one of the most prevalent causes of morbidity and mortality in children. Moreover, oral rehydration is still rarely used among the rural population. To understand the reasons for not using ORT, one has to study in depth the behavioral aspect of the community, particularly the practices of mothers when treating their diarrheal child. Therefore, the present study assesses the treatments given by mothers to their diarrheal child, including home treatment and professional treatment. In addition, an attempt was made to determine whether mothers' perceptions of the severity of the diarrhea, her knowledge about the disease, or her attitude towards modern medicine had any effect on the treatment she used.

The study was conducted in Wolayta Awraja, Southern Ethiopia. Reports from all the health institutions in the Awraja for 1986/87 showed that diarrheal disease was the most important cause of morbidity in children under five years of age. Even in all out-patient reports, it was the sixth most important cause of morbidity (3). In both adults and children, diarrhea ranks as one of the major health problems in the Awraja.

OBJECTIVES

General Objectives

To identify the current diarrheal treatment practices of rural mothers.

Specific Objectives

1. To identify the prevalence of diarrheal disease in the study community.
2. To assess the various treatments used by mothers such as home treatment and the professional treatment they sought for their diarrheal children both modern and traditional.
3. To assess mother's knowledge about the causes, consequences and treatment of diarrhea.
4. To determine the influence of mothers' perception of her child's diarrhea on use of modern treatment.
5. To determine the relation between current diarrheal treatment practices and both child and maternal variables, such as knowledge and attitude of the mother.

LITERATURE REVIEW

MAGNITUDE AND IMPACT OF DIARRHEAL DISEASE

Diarrheal diseases are a major cause of morbidity and mortality among children in most developing countries. Recently WHO estimated that 4 million children die each year from diarrheal diseases (excluding China). In every 100 children there are an average 220 diarrheal episodes every year (4). In 1988 UNICEF estimated that two and half million children still die each year from simple dehydration while a large number of children are left malnourished due to repeated diarrheal episodes. These figures are discouraging given the fact that during the last 10 years period oral rehydration solution (ORS) has been made available to one quarter of the developing world's parents (4).

These statistics are reflected in a study conducted in India showing that 1.5 million deaths due to diarrhea occur in the country in each year. Every day in India there are 4000 deaths of children, of which two-thirds are due to simple dehydration alone which could have been prevented by fluid and electrolyte replacement (5).

In Ethiopia the magnitude of diarrheal disease morbidity and mortality as estimated in 1987 shows that diarrhea is a major cause of morbidity with an estimated 4.8 episodes per child per year in children under 5, and a total of 39,000,000 diarrheal episodes per year. Of the approximately 230,000 deaths occurring

annually in children less than five years of age 46% are due to diarrhea. The mortality rate due to diarrheal disease was 9.2 per thousand children less than 5 years (2).

A study conducted in Ethiopia in 1984-85 concerning diarrheal disease magnitude revealed that diarrheal prevalence for a two-week recall period varied from region to region: 10.7% in Wello to 18.4% in Harrerge with a median diarrheal prevalence of 16.5%. The annual diarrheal incidence ranged from 3 to 5 episodes of diarrhea per child under 5 years. The proportional mortality rate from diarrhea in children less than 5 ranged from 22.6% to 62.0% with a median of 45% (6).

The magnitude and impact of diarrheal disease in Wolayta awraja (district) is similar to that of the nation as a whole. A review of all outpatient records of health institutions in the awraja of 1986/87 showed that diarrhea is the most important cause of morbidity in under five children and the sixth most important cause of morbidity in all outpatients (3).

MOTHERS' TREATMENT PRACTICES OF DIARRHEAL DISEASE

One major reason for the poor outcomes of diarrhea episodes is the mother's treatment of diarrheal disease at her home and the kind of professional treatment she seeks. Researchers in Pakistan interviewed 210 mothers with children under five. 33.8% of the mothers stopped all food items during diarrhea and 33% of diarrheal cases were treated with opium (7).

A study was conducted in Northern India using observation and interviews of mothers of 600 cases of diarrhea disease. 50%

of the respondents restricted fluid and/or food to the diarrheal child because they believed that food and fluid cannot be absorbed in the bowel of the child (8). Another community study in India showed that partial or total restriction of food was widely practiced by 98%; 65% of mothers said they would reduce fluid during a diarrheal attack. However 70.4% preferred modern treatment for diarrhea, 19.2% home remedies and 34.1% injections (9). Similar results are reported in other studies in India (5,8). A study conducted in Goa India found that 83% wanted to restrict food because they believed that it would increase diarrhea; 53% used herbal remedies and 34% tied garlic around the child's abdomen. 77% of the families preferred to try a home remedy before requesting modern professional treatment and only 19% said they would go to a hospital, health center or general practitioner (10).

Women were interviewed in Lima Peru at health institutions and at home (11). The interview focused on treatment of a hypothetical diarrheal episode. 20% of the respondents claimed to restrict fluid because they thought that the "belly might get big", the diarrhea might increase and the child might ask for more. However, most mothers gave a soup remedy of rice, bread and sugar and 30% gave a salt-sugar solution.

The major limitation of most of these studies was that they assessed a hypothetical episode of diarrhea rather than a specific incident. Thus memories may not be accurate and practices may not always have been consistent with intentions.

Other studies find that mothers continue to give food and fluid at home to a diarrheal child. Even traditional healers interviewed in Swaziland believed that giving solid food during diarrhea strengthens the child (12). In New Zealand mothers interviewed at a hospital and polyclinic on the treatment they would use if their child had diarrhea (hypothetical episode) showed that 40.7% would continue food during the diarrheal attack and 98% claimed that they would continue giving fluid to their diarrheal child (13). Similarly, 80% of mothers in Papua New Guinea gave additional fluid to their child (14). Although Indian rural mothers claimed that they would give less fluid during diarrhea, 75% believed that food should be given continually to the diarrheal child (5).

Concerning the use of health institutions for treatment of diarrhea 63% of Kenyan mothers used modern treatment, 30% herbal experts, and 32% used teething experts (15). In Zimbabwe, 53% went to health institutions and only 4% used traditional healers; the remainder preferred home remedies (16). In one Indian study, 70% sought treatment from modern medical workers, and 65% went to private practitioners (5,9). Thus in some countries, home treatment is poor yet mothers seek appropriate professional help.

Oral rehydration therapy is a simple and inexpensive way of reducing morbidity and mortality caused by diarrheal diseases. However, most mothers appear to neglect its use. A Papua New Guinea study was conducted to determine the use and acceptability of oral rehydration therapy. The mothers did not want to give

oral rehydration salts to their diarrheal child because it tasted unpleasant to the child and did not stop diarrhea (14). In an Indian study 25% of the respondents were aware of oral rehydration solution but were not convinced of its usefulness (8). In another Indian study, 26% had used ORS in the past and 9% used a salt-sugar solution (SSS)(5). In Lima, Peru, 30% reported using a salt-sugar solution (11). A study conducted in a rural area of Zimbabwe found that only 5% used salt-sugar solution (16). Experts claim that the low use of ORS or SSS is due to mothers' poor understanding of the loss of vital body fluids during diarrhea (5).

The study conducted in Ethiopia during 1984-85 concerning the magnitude of diarrhea and its treatment showed that 10.2% of diarrheal episodes were treated with ORS in Wello and 41.0% in Kefa with a median of around 20%. The proportion of diarrhea cases not receiving rehydration treatment varied from 52.2% (Addis Ababa) to 73.0% (Shoa) with a median of 64%. Many cases were treated with home remedies: 31.5% in Addis Ababa, 21.1% in Sidamo and 22.5% in Wello (6).

KNOWLEDGE AND ATTITUDE OF DIARRHEAL DISEASE AS DETERMINANTS OF PRACTICE

Most health professionals believe that unsatisfactory treatment of diarrhea and the consequent death of children is due to lack of adequate knowledge of causes and consequences of diarrheal disease and to a negative attitude to modern medicine (17).

Studies conducted in different countries and communities show that many things are believed to cause diarrhea, such as, worms, eating earth, unboiled porridge, various fruits such as passion fruits and ripe bananas, hard food , climate and even teething (18). The study of randomly selected families in Goa India showed that 30% believed diarrhea is caused by eating food such as meat, fish, eggs and pungent; 26% believe worms to be the cause, and 9% believe in spiritual causes (10).

Maternal beliefs and attitudes concerning diarrheal disease in Northern India showed that 50% of the mothers blame teething as a cause of diarrhea; others blame heat, cold, rains, worms and fast-feeding. 10% consider diarrhea to be due to the "curse of the devil" and so take their child to a witch doctor before seeking medical advice (8). In another Indian study respondents stated the following causes of diarrhea : 38% excessive heat, 20% teething, 12% overeating and 11% infection (9). Developmental milestones such as teething were very prominent in reported causes of diarrhea in many countries (15,16,18).

The mother's beliefs about causes of diarrhea may influence her treatment practice in that if the mother believes that food can cause or maintain diarrhea, she will stop giving food to the diarrheal child. Those who believe that teething causes diarrhea may want to take their child to have teeth extracted or to cut gums and apply indigenous herbs (15). In some families diarrhea was considered as an individual disturbance of function, and dehydration was believed to indicate a state of pollution that

requires ritual purification (19).

The role of mothers' knowledge, attitude and practice as predictors of diarrheal disease in children was demonstrated in a study in Colombia. A strong association was found between the presence of diarrhea in children less than five years of age and mothers's knowledge concerning causes and consequences of diarrhea, as well as housing sanitation as observed by the interviewer (20). Unfortunately, no similar studies were found which systematically related mother's knowledge about causes of diarrhea with her treatment.

The above mentioned literature review revealed that there were several piecemeal studies in different countries measuring diarrheal disease treatment, ORS usage and acceptance, knowledge concerning cause and consequences of diarrhea, and attitude towards modern medicine. Most of the studies focused on a hypothetical diarrhea episode in the past, and the interviewees were in most cases health workers in a health institution and in field areas. Very few studies were found for Ethiopia. Therefore the present study was conducted to assess knowledge, attitude and treatment practices of a current diarrheal episode in the past two weeks period.

MATERIALS AND METHODS

STUDY DESIGN

The study used a cross-sectional design to determine prevalence rates for diarrhea and for various maternal treatments and to examine concurrent determinants of mothers' treatment.

STUDY POPULATION

The sampling frame consisted of 271 Peasant Associations (PA's) existing within Wolayta Awraja (district). One PA which consists of nomadic people who are very difficult to trace was excluded from the sampling frame. Using a simple random sampling procedure, 11 PAs were selected. Within these PAs, a census survey of all households was conducted. Mothers having a child under five years with diarrhea in the pervious two weeks were the subject of the study. Figure 1 depicts the selection hierarchy.

Sample Size Estimation

The sample size required for the study was calculated on the basis of the prediction that mothers with high knowledge of causes and consequences of diarrhea (p1) are more likely to use modern treatment than other types of treatment (p2). The following values were estimated to calculate the sample size.

$p1 = 0.60 \qquad \alpha = 0.05 \qquad \Delta = 0.2$

$p2 = 0.40 \qquad \beta = 0.20$

$$n = \frac{[z_\alpha \sqrt{2p1(1-p1)} + z_\beta \sqrt{p(1-p)) + p(1-p)}]^2}{\Delta^2}$$

Where n = sample size

z_α = upper percent point of the normal distribution = 1.96

z_β = lower percent point of the normal distribution =1.28

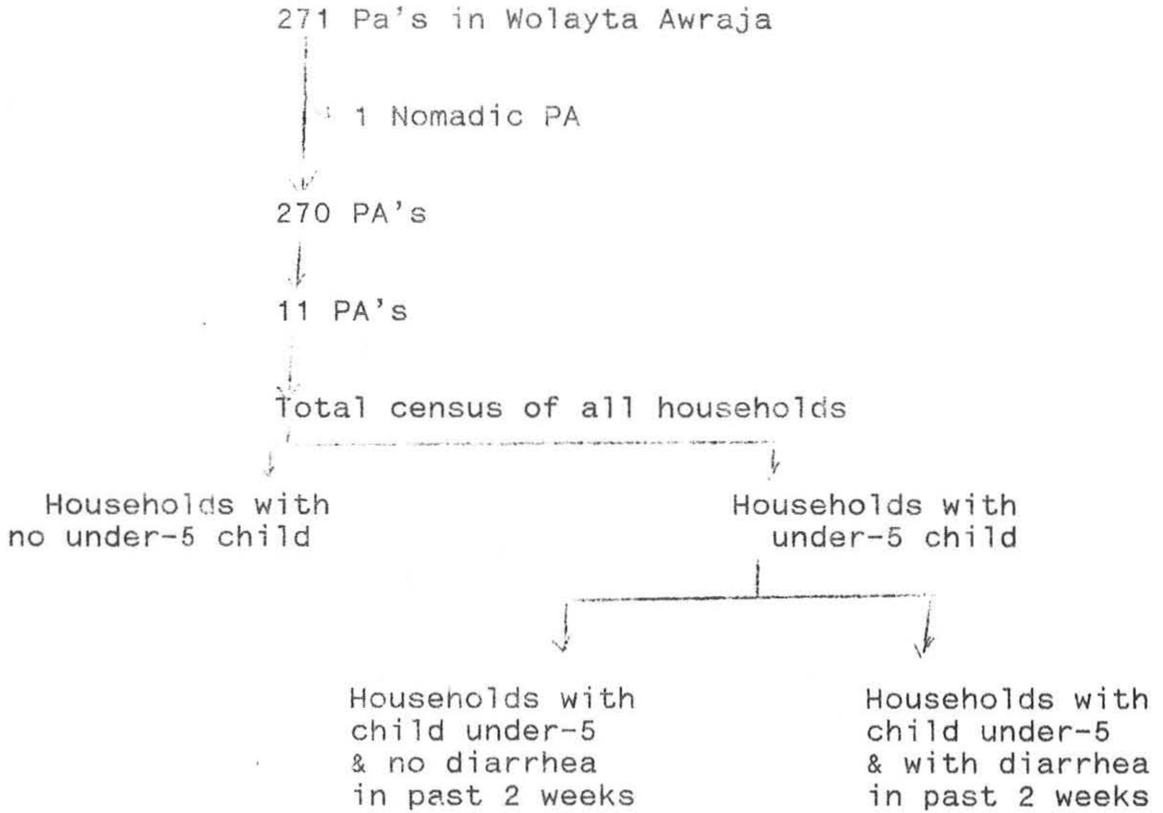

Figure 1. Sampling frame for selection of sample.

p1 = proportion of mothers seeking modern treatment who have high knowledge of causes and consequences of diarrhea.

p2 = proportion of mothers not seeking modern treatment who have high knowledge of causes and consequences of diarrhea.

The calculation indicates that the size of the modern treatment group be 107. Estimating that 14% use modern treatment, this means that the survey must include 764 mothers of diarrheal children. Further estimations were that the two-week prevalence of diarrhea is approximately 10% for children under 5 years of age, that 20% of the population are under 5 years, and on average one child under 5 years lives in each household. Thus 7640 house holds must be visited in order to interview 764 mothers with a diarrheal child under 5 years in the previous two-week period.

MEASUREMENT

The following operational definitions were used for variables relating to diarrhea and its treatment:

Diarrhea is defined as three or more loose or watery stools with or without blood or mucous in day (1).

Oral rehydration salts (ORS) refers to the UNICEF package for treatment of diarrhea.

Homemade cereal based oral rehydration therapy (ORT) refers to cereal flour with water and salt made at home for the treatment of diarrhea.

Modern treatment refers to the treatment schedules given in

health institutions, and includes use of ORS packages or homemade cereal based ORT.

Traditional treatment refers to treatments given by traditional healers, wogeshas, herbalists and magicians.

Private drug shops - the study includes only licensed drug shops with in the Awraja.

Questionnaire Development

Because there is no standard questionnaire for assessing knowledge, attitude and practices of mothers toward diarrheal treatment, the principal investigator designed a structured questionnaire. The questionnaire was designed in English and then translated into Amharic. Back-translation was done to check the consistency of meaning.

The opening questions asked about the presence of one or more under-5 child in the household and the occurrence of a diarrheal episode in the previous two-week period. If the answer to the questions were "yes" then the structured questionnaire was completed concerning the youngest diarrheal child (see Appendix for the questionnaire).

There were a total of 48 questions broken down into the following categories: 10 practice questions including mother's home treatment of diarrhea such as amount of fluid and food given, mother's seeking of modern professional or traditional help, and use of ORS or cereal based ORT; 6 questions on the nature and outcome of the current diarrhea. Two questions assessed attitude and 21 Yes-No questions assessed knowledge

about the causes, consequences and treatment of diarrhea. The remaining questions assessed geographic and demographic characteristics of the study population, such as educational status of the respondent, age and sex of the child. Practice items were asked before knowledge and attitude items to ensure more accurate reporting of practices.

RESEARCH TEAM AND DATA COLLECTION

The principal investigator made contact with community leaders and government officials to discuss the aim, the location and the time period of the study. A total of 22 female interviewers from the 11 selected PA's were recruited. They had 12th grade education and knew the language and cultural ways of their respective communities. Four people from the awraja health management team were recruited to supervise the interviewers.

The interviewers and supervisors were given three days training on how to administer the questionnaire, including elementary skills of communication, operational definitions used in the study, and translation into Wolaytigna (the local language). Pretesting was conducted in one peasant association not included in the sample. Each supervisor and interviewer interviewed at least five households, then problems of the questionnaire were discussed. Finally some questions were modified and additional questions were included.

The study area was divided into two zones each with two supervisors, 10-12 interviewers and one vehicle. The interviewers visited each household using prepared lists of names

of heads of household. They interviewed mothers or in her absence another primary care giver. If there was no under-5 child, they recorded this information and left the house. If there was an under five child but no diarrhea, they recorded the ages and sex of the children and left. If any of the children had diarrhea the structured questionnaire was completed for the youngest diarrheal child. The interviewers made two recall visits before reporting an absence.

Quality Control

The interviewers were supervised daily in the field. The supervisors handled problems which arose, and received and checked completed forms in order to clean up incorrect reporting. The field supervisors in turn met with the principal investigator each day to go over the completed forms and discuss problems. Therefore there was a two-stage quality control process throughout the data collection.

METHOD OF DATA ANALYSIS

The responses were coded on the questionnaire forms and data entered into a computer. Certain composite variables were computed to bring together responses which measured the same concepts.

1. Mother's home treatment score was computed by adding points for the following practices:

i) Fluids: increased fluid = 2

no change of fluid = 1

decreased or stopped fluid = 0

ii) Foods: increased food = 2

no change of food = 1

decreased or stopped food = 0

iii) Types of fluid: ORS/ORT = 2

soup and other fluid = 1

Therefore the maximum maternal home treatment of diarrhea score was 6. The scores were dichotomized into high score (4-6) and low score (0-3) for some analyses.

2. Modern professional treatment score was computed by adding points of the following practices:

i) Request for professional help = 1

ii) Place of treatment: traditional = 0

private drug shop = 1

health institution = 2

iii) Days of delay before requesting professional help:

request within 24 hrs = 2

request within 2-6 days = 1

request after 6 days = 0

iv) Treatments given: ORS/ORT = 1

all other treatments = 0

Therefore the possible maximum score for modern professional treatment practice was 6. The scores were dichotomized into high score (4-6) and low score (0-3) for some analyses.

3. Traditional treatment score was computed by adding points for the following practices :

massage of abdomen = 1

manipulation of gums = 1

given herbal remedy = 1

holy water and prayer = 1

Therefore the possible maximum score was 4. The scores were dichotomized into 0 and 1 or more for some analyses.

4. Knowledge score was computed by adding the number of correct answers to the 21 questions.

5. Attitude to modern medicine was computed by adding the following points:

i) preferred treatment: injection or tablets = 0

massage of abdomen and other body parts = 0

manipulation of gums = 0

herbal remedy, holy water, prayer = 0

ORS, ORT, cereal based ORT = 1

ii) preferred person to treat diarrheal child:

herbalist = 0

magician = 0

wogesha = 0

private drug shop owner = 1

community or institution health worker = 2

Therefore the possible maximum score was 3.

To meet the objectives of the study, the following analyses were conducted: Firstly the 2-week prevalence was determined as well as the age-specific prevalence and the case-fatality rate. Secondly, descriptive statistics such as frequency distributions were obtained for variables relating to the nature of the

diarrhea and maternal treatment practices. Finally, bivariate analyses were performed to examine the association between maternal treatment practices and both nature of the diarrhea and maternal knowledge and attitude. Treatment was also examined in relation to the outcome of the diarrhea.

RESULTS

The results will be presented in the order that they appear in the objectives. Firstly, the prevalence of diarrhea and age-specific rates will be presented. Secondly, characteristics of the diarrheal child will be described including severity and outcome of the diarrhea. Thirdly, the mothers' treatment of diarrhea concerning home practices and professional treatment will be outlined. Fourthly, results are presented concerning mothers' knowledge about diarrhea and her attitude toward health services. Finally, mothers' treatment of diarrhea will be examined in relation to both child and maternal characteristics.

PREVALENCE OF DIARRHEA

A total of 6492 mothers or primary caretakers were visited but only 6414 respondents were interviewed, making the response rate 98.8%.

Among the 6414 respondents, 654 reported that their child had diarrhea during the previous two weeks. From these, 575 had one child with diarrhea, 35 had two children with diarrhea, and 9 had three children with diarrhea. In addition, there were 35 diarrheal cases whose questionnaires could not be used for further analyses because the forms were incomplete. Thus, the total number of diarrheal cases was 707. The total number of under-five children reported by mothers visited was 6384, making the prevalence of diarrhea 11.07%. Age-specific diarrhea morbidity is presented in Table 1. The highest rate is found in 12- to 23-month-olds and the lowest in 48- to 59-month-olds. The

Table 1.

Age Specific Diarrhea Morbidity in the Study Population

Age	Diarrhea Cases	Total <5 yrs	Prevalence
0-11 months	154	1070	14.4
12-23 "	176	1098	16.0
24-35 "	102	957	10.7
36-47 "	151	1483	10.2
48-59 "	124	1776	7.0
Total	707	6384	11.1

Table 2.

Age Specific Diarrhea Mortality in the Study Population

Age	Diarrhea Deaths	Diarrhea cases	Case-fatality
0-11 months	17	142	12.0
12-23 "	24	164	14.6
24-35 "	9	85	10.6
36-47 "	9	127	7.1
48-59 "	14	101	13.7
Total	73	619	11.8

Note. This includes only the youngest diarrheal child in each household and excludes those with incomplete forms.

age-specific case-fatality is presented in Table 2 and is based on data collected about the youngest diarrheal child in the household and excludes the 35 cases with incomplete forms (n=619). The overall rate was 11.8% or 118 per 1000 diarrheal children. The highest rates were found for 12- to 23-month-olds. The mortality rate was therefore 11.4 per 1000 children under 5.

CHARACTERISTICS OF THE DIARRHEAL CHILD

The analyses presented from now on include information on only the youngest diarrheal child in each household. Table 3 presents the characteristics of the target child and his/her diarrheal episode. The age of the youngest child was evenly distributed over the five age categories. Over 70% of the diarrheal cases had more than 4 diarrheal episodes per 24 hrs, indicating that most of the cases of diarrhea were moderate or severe; 30% of them had associated vomiting. Concerning the outcome, 11.8% of the diarrheal cases had died by the time of the interview which is 118 per 1000; 56.1% had improved. Of those cases for whom the diarrhea had stopped (n=253), 73 died and 180 improved.

The mother's perception of the severity of her child's diarrhea was examined in relation to her report of the frequency of episodes within 24 hrs and the presence or absence of associated vomiting. The crosstabulations are presented in table 4. Chi-square tests indicated that maternal perceptions were strongly associated with diarrhea frequency and vomiting.

Table 3.

Characteristics of Diarrheal Child

Variable		Frequency	%
Age of the child	0-11 months	142	22.9
	12-23 months	164	26.5
	24-35 months	85	13.7
	36-47 months	127	20.5
	48-59 months	101	16.3
Sex of the child	male	335	54.1
	female	284	45.9
Frequency of diarrhea in 24 hrs	3-4	175	28.3
	5-7	261	42.2
	8-16	183	29.6
Associated vomiting	no	434	70.1
	yes	185	29.9
Mother's perception of severity	mild	137	22.1
	moderate	285	46.0
	severe	197	31.8
Outcome of diarrhea at time of interview	dead	73	11.8
	worsen	58 a	9.4
	no change	141 a	22.8
	improved	347	56.1
At time interview diarrhea stopped	no	366	59.1
	yes	253	40.9
Duration of diarrhea (if stopped)	0-3 days	103	40.7
	4-7 days	119	47.0
	8-12 days	31	12.3

a. Most of these included cases where diarrhea had not stopped.

Table 4.

Maternal Perception of Severity of Diarrhea

Variable		Perceived Severity: Mild freq (%) n=137	Moderate freq (%) n=285	Severe freq (%) n=197	Chi sq. (df)
A. Data presented withh column percentages adding to 100					
Frequency	3-4	124(90.5)	49(17.2)	2(1.0)	
of diarrhea	5-7	11(8.0)	214(75.1)	36(18.3)	646(4) **
in 24 hrs	8-16	2(1.5)	22(7.7)	159(80.7)	
Associated	No	97(70.8)	219(76.8)	118(59.9)	15.9(2) **
vomiting	Yes	40(29.2)	66(23.2)	79(40.1)	
B. Same data presented with row percentages adding to 100					
Frequency	3-4	124(70.8)	49(28.0)	2(1.1)	
of diarrhea	5-7	11(4.2)	214(82.0)	36(13.8)	
in 24 hrs	8-16	2(1.1)	22(12.0)	159(85.5)	
Associated	No	97(22.4)	219(50.5)	118(27.1)	
vomiting	Yes	40(21.6)	66(35.7)	79(42.7)	

** p <.0001

Although all measures are derived from reports by the mother, thus accounting for some of the consistency among the responses, these findings suggest that mothers are correctly basing their perception of severity on their recall of objective indices such as frequency of diarrhea in 24 hrs and presence or absence of associated vomiting. The mother's perception of the severity of the diarrhea is therefore not distorted.

MOTHERS' TREATMENT

Table 5 presents the results of the practice questions concerning the mother's home treatment of diarrhea and professional treatment she sought. The table includes variables related to fluid intake, food intake, types of fluid given, request for professional help, place of treatment, days of delay before requesting professional help, and type treatment given.

Quantities of fluid and food reportedly given by the mothers indicated that most mothers stopped or decreased fluid and food intake. Only 12.3% of the respondents reported increasing fluid; and 20% maintained or increased food. This shows that most of the mothers do not give proper home treatment. Those who were breast feeding, did not regard breast milk as fluid and so did not respond to the fluid question. Thus it was not clear whether the quantity of breast milk was maintained or not.

Regarding the composition of fluid given, only 20.5% of the mothers used ORS or ORT while the rest of them gave breast milk, soup and other homemade fluids such as plain water, tea, raw

Table 5.

Frequency distribution of mother's current diarrheal treatment

Variable		Frequency	%
Fluid intake	breast feed	164	26.5
	stopped fluid	53	8.6
	decreased fluid	262	42.3
	no change	64	10.3
	increased fluid	76	12.3
Food intake	not weaned	65	10.5
	stopped food	94	15.2
	decreased food	337	54.4
	no change	63	10.2
	increased food	60	9.7
Types of fluids	only breast milk	140	22.6
	ORT	107	17.6
	ORS	20	3.2
	soup	63	10.2
	other types	289	46.7
Request for professional help	no	313	50.6
	yes	306	49.4
Place of treatment	no treatment sought	313	50.6
	health institution	45	7.3
	private drug shop	133	21.5
	traditional healers	128	20.7
Days of delay before requesting help	0-2 days	168	54.9
	3 or more days	138	45.1
Types of treatments given by professionals	injections	125	40.8
	tablets	60	19.6
	massage of abdomen	38	12.4
	manipulation of gums	20	6.5
	herbal remedy	30	9.8
	holy water/prayer	15	4.9
	ORS	36	11.8
	ORT	12	3.9
	other	11*	3.6

* Because 34% of the cases were given two or more types of treatment, the frequency adds up to more than 306.

milk, diluted raw milk, and traditional remedies which are generally not helpful for the diarrheal child.

Half of the respondents did not seek professional help. Of those who did seek help, 41.8% took their diarrheal child to a traditional healer, 43.5% went to private drug shops, and only 14.7% went to a health institution. Those who did seek professional help sought it quickly: 54.9% of the respondents took their child within a 2-day period and the remaining 45.1% after 3 or more days of diarrhea. 66% of the diarrhea cases were given a single treatment while 15.4% were given two types of treatment. 40.8% of the diarrheal cases were treated with an injection which is not the proper treatment of diarrhea, while only 15.7% were given ORS and ORT.

MOTHERS' CHARACTERISTICS

Two types of factors were examined in relation to the mother's treatment of diarrhea: 1) the nature of the child's diarrhea, and 2) characteristics of the mother such as knowledge and attitude. Frequency distributions concerning mother's characteristics will be described in this section (see table 6). Almost 80% of the study population resided with in 10km of a health institution, where as only 40% resided within 10km of a private drug shop. Thus health institutions were more accessible than private drug shops. Because this characteristic varied according to the PA but not across mothers living in the same PA, the interpretation of it is problematic. Thus, it was not included as a mother characteristic in the bivariate analyses.

Table 6.

Frequencies of Variables Measuring Maternal Characteristics

Variable		Frequency	%
Distance from health institution	0-10km	490	79.2
	10-20km	129	19.8
Distance from private drug shop	0-10km	246	39.7
	10-20km	377	60.3
Educational status	Illiterate	3	0.5
	literacy/grade 1	586	91.4
	2-6 grades	38	6.1
	7-11 grades	12	1.9
	12th grade & above	0	0
Knowledge scores	0-13 correct	453	73.2
	14-21 correct	166	26.8
Attitude scores	0	54	8.7
	1	114	18.4
	2	406	65.6
	3	45	7.3

Over 90% of the respondents were illiterate or had completed only grade 1 or the literacy campaign programme. Therefore the educational status of the respondents was low and did not vary enough to do further analysis on its effects.

Generally the respondents had inadequate knowledge of the causes, consequences and treatment of diarrhea. A knowledge score of 14 out of 21 (66%) was considered to indicate adequate knowledge, because by chance alone they could receive a score of 50%. 73.2% of the respondents answered less than 14 questions correctly, while 26.8% obtained a score of 14 or more correct answers.

For a more detailed look at the responses to knowledge items, see table 7. As can be seen from the table, the respondents held many false beliefs that teething and accidental falls cause diarrhea, and diarrhea helps to clean the bowel. Poor knowledge about the treatment is reflected in beliefs that only water should be given to diarrheal child and a vomiting child should not be given anything. Although half of the respondents knew about ORS and ORT, most did not use them. On the positive side many knew that safe drinking water, use of latrines and personal hygiene prevent diarrhea.

Attitudes toward modern medical treatment were generally positive with 73% of the respondents scoring 2 or 3 indicating a preference for health professionals and injections. However only 7.3% would choose both a health worker and ORT.

Table 7.

Correct Responding on Knowledge Test

Questions (correct response)	% giving correct response
*1. Does teething cause diarrhea? (no)	7.9
2. Do flies spread diarrheal disease? (yes)	92.6
3. Does defecation outside the house spread diarrhea?(yes)	78.2
4. Does latrine use increase diarrhea? (no)	78.2
5. Does mother's hand washing before feeding decrease diarrhea? (yes)	75.4
*6. Does accidental fall cause diarrhea? (no)	17.3
7. Does eating with dirty hand cause diarrhea? (yes)	85.1
8. Can drinking river water cause diarrhea? (yes)	76.4
9. Can drinking protected spring water cause diarrhea? (yes)	64.9
10. Can diarrhea pass from family member to family member? (yes)	73.7
*11. Does diarrhea help to clean out the bowel? (no)	53.3
12. Can your child die from diarrhea, if not given injection? (No)	62.7
13. Does diarrhea cause loss of body fluids? (yes)	82.6
*14. Does high fluid intake worsen diarrhea? (no)	27.3
15. Can your child die from diarrhea, if not given fluids? (yes)	67.5
*16. Is it good to give only water to diarrheal child? (no)	30.9
17. Is it good to put salt in solution for diarrheal child? (yes)	69.3
*18. When diarrheal child vomits, should food and fluid be withheld? (no)	40.1
*19. When diarrheal child vomits, should he/she be given small amounts of fluid and food frequently? (yes)	29.7
*20. Do you know about ORS? (yes)	51.7
*21. Do you know about ORT? (yes)	48.1

* Poor responses

FACTORS ASSOCIATED WITH TREATMENT

In order to examine child's diarrhea and maternal characteristics as determinants of treatment practices, cross-tabulations and chi-square analyses were performed. The first and simplest treatment variable was requesting professional help and it was assumed that the severity of the child's diarrhea would be a signal to seek help. As table 8 indicates, seeking of professional help for her diarrheal child was associated only with the presence of associated vomiting (chi sq.=4.47, df=1, p<.05). Otherwise frequency of diarrhea per 24 hrs and mother's perception of severity were not associated with seeking professional help. The nature of the child's diarrhea did not influence where the mother went for help -- to a health institution, pharmacy or traditional healer, but only whether she sought professional help.

Three composite treatment variables were then examined in relation to the nature of the child's diarrhea and maternal characteristics. The three composite variables were mother's home treatment, modern professional treatment, and traditional treatment. The scores on these composite variables were dichotomized into low and high (see Method of Data Analysis).

Maternal home treatment of diarrheal disease was significantly associated with knowledge, in that mothers with high knowledge were more likely to use better home treatment (chi sq.=3.59, df=1, p<.05). No other variables were significantly associated (see table 9).

Table 8.

Aspects of Illness Associated with Requesting Professional Help

Variable		Sought professional treatment Yes freq (%)	No freq (%)	Rate Ratio (95% CI)
Frequency of diarrhea per 24 hrs	3-4	86 (26.1)	89 (28.4)	
	5-7	130 (42.5)	131 (41.9)	ns
	8-16	90 (29.4)	93 (29.7)	
Associated vomiting	Yes	104 (34.0)	81 (25.9)	1.50(1.06,2.12)
	No	202 (66.0)	232 (74.1)	.68(.481,.961)
Mother's perception	Mild	68 (22.2)	69 (22.0)	
	Moderate	137 (44.8)	148 (47.3)	ns
	Severe	101 (33.0)	96 (30.7)	

Table 9.

Factors Associated with
Maternal Home Treatment of Diarrhea

Variable		Maternal Practice Scores: High scorers n=229 freq (%)	Maternal Practice Scores: Low scorers n=390 freq (%)	Rate Ratio (95% CI)
Frequency of diarrhea per 24 hrs	3-4	65 (23.4)	110 (28.2)	
	5-7	99 (43.2)	162 (41.5)	ns
	8-16	65 (28.4)	118 (30.3)	
Associated vomiting	No	160 (69.9)	274 (70.3)	ns
	Yes	69 (30.1)	116 (29.7)	
Mother's perception	Mild	51 (22.3)	86 (22.1)	
	Moderate	103 (45.0)	182 (46.7)	ns
	Severe	75 (32.7)	122 (31.3)	
Knowledge score	14-21	72 (31.4)	94 (24.1)	1.40(.974,2.01)
	0-13	157 (68.6)	296 (75.9)	.69(.480,.692)
Attitude score	3	18 (7.9)	27 (6.9)	
	2	151 (65.9)	255 (65.4)	ns
	1	44 (19.2)	70 (17.9)	
	0	16 (77.0)	38 (16.6)	

Note. Home Treatment includes giving fluid, food, ORS/ORT/soup

Use of modern and traditional treatment of diarrhea was examined in relation to the same child and maternal variables. Use of modern professional treatment was not significantly associated with any variables. However, use of traditional treatment was significantly associated with frequency of diarrhea in 24 hrs (chi sq.=6.49, *df*=2, *p*<.05), mother's perception of severity of diarrhea (chi sq.=7.90, *df*=2,*p*<.01), and attitude scores (chi sq.=7.70, *df*=3, *p*<.05). The relation of the association (see table 10) was that children with a lower frequency of diarrhea in 24 hrs and with a maternal perception of the diarrhea as mild were more highly represented among those who used traditional treatment. Extremes of attitude, that is very positive and very negative to modern medicine were more likely to seek traditional treatment. However, because confidence intervals cross unity, these findings are not reliable.

The outcome of the diarrhea at the time of the interview was examined in relation to several factors (see table 11). The outcomes were classified as: dead, worsen, no change and improved. Chi-square tests and rate ratios were calculated for the improved and dead outcomes only, using the sum of the three other groups as a referent. No rate ratios were calculated for the no-change and worsen outcomes because it is conceptually confusing to compare a moderate outcome with both better and worse outcomes lumped together. All of the variables except home treatment were strongly associated with outcomes at the time of interview.

Table 10.

Factors Associated with Mother's Use of Traditional Treatment

Variable		Traditional Treatment Score		
		High scorers n= 89 freq (%)	Low scorers n=530 freq (%)	Rate Ratio (95% CI)
Frequency of diarrhea per 24 hrs	3-4	35 (39.3)	140 (26.4)	1.80(.909,3.56)
	5-7	30 (33.7)	231 (43.6)	.66(.336,1.31)
	8-16	24 (27.0)	159 (30.0)	.86(.435,1.70)
Associated vomiting	No	55 (61.8)	379 (71.5)	ns
	Yes	34 (38.2)	151 (28.5)	
Mother's perception	Mild	29 (32.6)	108 (20.4)	1.90(.962.3.74)
	Moderate	31 (34.8)	254 (47.9)	.66(.304,1.18)
	Severe	29 (32.6)	168 (31.7)	1.00(.557,2.17)
Knowledge score	14-21	28 (31.5)	138 (26.0)	ns
	0-13	61 (68.5)	392 (74.0)	
Attitude score	3	12 (13.5)	33 (6.2)	2.35(.764,7.24)
	2	50 (56.2)	356 (67.2)	.63(.204,1.94)
	1	17 (19.1)	97 (18.3)	1.05(.343,3.22)
	0	10 (11.2)	44 (8.3)	1.40(.456,4.31)

Note. Traditional Practice includes use of traditional healer, given massage of abdomen, manipulation of gums, herbal remedy and spiritual procedure (Holy water and prayer) to treat diarrheal cases.

Table 11a.

Factors Associated with Outcome of Diarrhea

(column percentages add to 100)

Variable		Outcome at Time of Interview: Improved freq(%)	No change freq(%)	Worsen freq(%)	Died freq(%)	Chi sq. (df)
Request for	Yes	205(59.1)	29(20.6)	20(34.5)	52(71.2)	78.0**
help	No	142(40.9)	112(79.4)	38(65.5)	21(28.8)	(3)
RR		2.45			2.76	
95% CI		1.33,4.51			1.48,5.17	
Home Treatment	4-6	122(35.2)	52(36.9)	18(31.0)	37(50.7)	ns
Score	0-3	225(64.8)	89(63.1)	40(69.0)	36(49.3)	
Modern Treatm't	4-6	86(24.8)	3(02.1)	5(08.6)	16(21.9)	39.47**
Score	0-3	261(75.2)	138(97.9)	53(91.4)	57(78.1)	(3)
RR		3.37			1.38	
95% CI		1.39,8.34			0.64,2.95	
Traditional	1 +	38(10.9)	10(07.1)	6(10.3)	35(48.0)	76.90**
Treatment	0	309(89.1)	131(92.9)	52(89.7)	38(52.0)	(3)
RR		0.53			8.31	
95% CI		0.22,1.25			3.68,19.2	

** p <.01

Table 11b.

Factors Associated with Outcome of Diarrhea

(row percentages add to 100)

Variable		Outcome at Time of Interview Improved freq(%)	No change freq(%)	Worsen freq(%)	Died freq(%)	Chi sq. (df)
Request for	Yes	205(67.0)	29(9.5)	20(6.5)	52(17.0)	78.0**
help	No	142(45.4)	112(35.8)	38(12.1)	21(6.7)	(3)
	RR	2.45			2.76	
	95% CI	1.33,4.51			1.48,5.17	
Home Treatment	4-6	122(53.3)	52(22.7)	18(7.8)	37(16.2)	ns
Score	0-3	225(57.7)	89(22.8)	40(10.3)	36(9.2)	
Modern Treatm't	4-6	86(78.2)	3(2.7)	5(4.6)	16(14.5)	39.47**
Score	0-3	261(51.3)	138(27.1)	53(10.4)	57(11.2)	(3)
	RR	3.37			1.38	
	95% CI	1.39,8.34			0.64,2.95	
Traditional	1 +	38(42.7)	10(11.2)	6(6.7)	35(39.3)	76.90**
Treatment	0	309(58.3)	131(24.7)	52(9.8)	38(7.2)	(3)
	RR	0.53			8.31	
	95% CI	0.22,1.25			3.68,19.2	

** p <.01

DISCUSSION

A major objective of the present study was to identify mothers' treatment of her child's current diarrhea in a southern Ethiopia rural district and determinants of her treatment.

Diarrheal prevalence in the study population in the previous two weeks was 11.1%. While the national figure varies from region to region, 10.7% in Wello to 18.44% in Harrerge, the median is 16.5% (6). The lower prevalence in the study population may be due to either the dry season at the time of study or under-reporting by mothers. The case-fatality rate was 118 per thousand children with diarrhea. The diarrhea-associated mortality rate was 11.4 per thousand children under 5. This is comparable to figures reported by Claeson (6) in which the median was 8.9. The high mortality rate associated with diarrhea is generally attributed to dehydration and is confirmed by the poor home treatment given by mothers in the present study.

The disease appeared evenly distributed among the five age categories. The highest diarrhea prevalence of 14.6% was observed in the age group 12-23 months and the highest case-fatality rate occurred in the same age group. This may be due to inadequate knowledge of weaning diet or unhygienic handling of supplementary food. Although the present study was not designed to identify determinants of diarrhea, the prevalence figures indicate that the problem of diarrhea may vary across age categories but in general diarrhea is a risk for all under-five

children. The majority of diarrheal cases were reported as moderate and severe, however, only one-quarter of the cases had associated vomiting.

The mothers' perception of severity of diarrhea was associated with frequency of diarrhea per 24 hrs and presence of vomiting. In some studies there was a problem in that mothers had distorted perceptions of the diarrhea's severity (5,16). There was no indication here that mothers minimized or otherwise distorted the severity of the disease. However mothers did not seek help as a function of their perception of the severity of the diarrhea, except on the basis of vomiting.

An assessment of mothers' treatment of diarrhea was the main focus of the study. Home treatment was generally poor. The quantity of fluid and food reportedly given by the mothers indicated that most mothers stopped or decreased fluid and food intake. 50.9% of the respondents had decreased or stopped fluids which is higher than found in the Peru study, where only 20% decreased fluid (11) but similar to the study in Northern India where 50% of the respondents restricted fluid and food (8). 83% of the respondents in another study decreased food to the diarrheal child (10). Furthermore, despite the efforts of UNICEF and the CDD programme, only 20% of the respondents gave ORT or ORS. This is similar to the findings in India (5).

Only half of the respondents requested professional help and only 7.3% went to a health institution. These low figures may be due to the mothers' previous experience with self-limiting

diarrhea which improved on its own. In a few cases the diarrhea may have just started and not worsened. However it also indicates that mothers do not understand the potentially serious consequences of diarrhea until it is too late. Also mothers seemed to make greater use of private drug shops and traditional healers than of health institutions. In contrast 63% of mothers in Kenya took their diarrheal child to a modern health institution (15). The treatments mothers received such as injections, abdominal massage and traditional medicine do not provide proper management of diarrhea.

The knowledge of the respondents concerning causes, consequences and treatment of diarrheal disease indicate that they are misinformed about causes and treatment. Inaccurate beliefs about the treatment of diarrhea include the beliefs that diarrhea helps to clean out the bowel, that water alone should be given to the diarrheal child and that fluid and food should be withheld from the diarrheal child who is vomiting. The mothers also held false beliefs about the cause of diarrheal disease, such as teething and accidental falls. Despite these false beliefs the respondents did have reasonably good knowledge of the importance of safe drinking water, use of latrines and personal hygiene. Knowledge of the respondents was an important determinant of how the diarrhea was treated at home. A larger proportion of those using appropriate home treatment (fluid and food) had higher knowledge compared to those using inappropriate treatment. Use of professional modern medicine was however not

related to knowledge. Also the severity of the child's diarrhea was unrelated to home or modern professional treatment. The fact that no child or maternal characteristics were associated with use of modern treatment is difficult to interpret. Even the mother's knowledge which did influence her home practice, was unrelated to use of modern treatment. One interpretation is that the health service is not capitalizing on mothers' positive attitudes toward health workers to get them into the health institutions.

Both severity of the diarrhea and attitude of the mother were related to use of traditional medicine. Those who use traditional treatment are more likely to perceive the diarrhea to be mild, to have children with a low frequency of diarrhea per day and to have either very positive or very negative attitudes to modern medicine. These findings were not strong but are interesting trends to follow up in future research.

The outcome of the diarrhea at the time of interview was analyzed. Compared to those who did not seek help a larger proportion of those who sought professional help died or improved. Similarly a larger proportion of those who used modern medicine treatment died or improved. Each outcome may have its own separate explanation. Those who improved may have done so because of the effectivness of the treatment. Those who died probably did so because they sought help only after it was too late, or perhaps because of poor management of the diarrheal case. Home treatment of diarrheal cases did not appear to

influence the outcome of the diarrhea.

Traditional treatment practices were significantly associated with the outcome of diarrhea. Compared to those who avoided traditional treatment, those who used it were more likely to have died. Thus traditional treatment had a clearly negative impact on the outcome of diarrhea.

CONCLUSIONS AND RECOMMENDATIONS

Prevalence of diarrhea in the study community was 11.2% with a high case fatality of 118 per 1000. In some cases, the mothers' treatment practices were influenced by the severity of the child's diarrhea and in other cases by her knowledge about diarrhea and her attitude toward modern medicine. The fact that none of these factors influenced her use of modern medicine services suggests that the health service itself may be an important but unassessed determinant. The outcome of the diarrhea at the time of the interview was affected by where the child went for treatment. Modern professional treatment resulted in higher rates of death and improvement. Traditional treatment practices resulted in a higher likelihood of death.

These conclusions lead to the following recommendations:

1. Mothers need orientation on how to treat diarrheal cases at her home and where to take their child if the diarrhea gets worse. This might be accomplished by community health workers.
2. ORS should be distributed more widely and vigorously in kebele shops, drug shops, health posts and traditional healers in order to reduce high case-fatality.
3. The CDD programme at national, regional, hospital and health centre level should continue to give priority to training but also to monitoring and evaluating the programme at the grassroots level.

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APPENDIX A

Interviewers Manual and Questionnaire

Introduce yourself to the respondent and explain your purpose.

1. Do you have any child under five years?
   - No - Thank you, good-bye!
   - Yes - go to the next question

2. If yes to Q.1 I would like to ask some questions about your children. Are you willing to answer them?
   - No - leave the house
   - Yes - go to the next question

3. If yes to Q.2, In previous two weeks did any of your children have diarrhea?
   - No - register all under five children in the form provided below and leave the house.
   - Yes - continue with questionnaire.

Under five children registration form during data collection.

Serial No	No of children < 5 years					Diarrhea present
	<1	1	2	3	4	
1						
2						
3						
4						
5						

Questionnaire

Answer on the spaces given or tick correct option

1. Study number ___ _____
   PA Role No

2. Respondents relation to child : 1 mother
   2 other person

3. Distance of PA from nearest health institution: ____km

4. Distance of PA from nearest private drug shop: _____km

5. Is there functioning community health worker? No ____
   Yes____

6. Age and sex of under 5 children who has diarrhea in the previous two weeks (for those under 1 yr write in months)

	Age	Sex
1	_____	_____
2	_____	_____
3	_____	_____
4	_____	_____

If more than one child has diarrhea, in the previous two week period, then ask about the youngest child for the following questions.

7. According to the respondent's perception, how severe was the diarrhea?
   1. mild
   2. moderate
   3. severe

8. The number of bowel movements in 24 hrs during the diarrheal episode _______

9. Was there associated vomiting? No _____
   Yes_____

10. Did you do anything for the diarrheal child? (write exactly what the respondent says)

    ____

11. Did you do anything else to your diarrheal child?

    ____

If the respondent mentioned fluid and food in questions 10 and 11 then tick the appropriate response to questions 12 and 13. Otherwise ask questions 12 and 13.

12. What was done in terms of fluid intake?
    0 - Only on breast milk
    1 - Stopped giving fluid
    2 - Decreased amount of fluid
    3 - Gave usual amount of fluid
    4 - Increased amount of fluid

13. What was done in terms of food intake?
    0 - Not yet weaned
    1 - Stopped giving food
    2 - Decreased amount of food
    3 - Gave usual amount of food
    4 - Increased amount of food

14. If not stopped giving fluid, what was the composition of fluid given to the diarrheal child? (write what the respondent describes)

____

15. Major fluid compositions mentioned in response to Q 14. If no response to Q. 14, ask about the following compositions.
    1. ORT
    2. ORS
    3. Soup
    4. Other type (specify)__________

16. Did you seek help from someone for your diarrhea child?
    No ______
    Yes _____

17. What was the outcome of the diarrhea at time of interview?
    1. Death
    2. Worse
    3. No change
    4. Improved

Question 18, 19 and 20 to be asked of those who sought someone's help.

18. Where did you seek help for your diarrheal child?
    1. Herbalist
    2. Magician
    3. Wogesha
    4. Private drug shop
    5. Health post
    6. Health station
    7. Health centre
    8. Hospital
    9. Other place (specify) _______

19. After how many days of diarrhea did you seek someone's help?
    0. On the same day of diarrhea
    1. After 1 day of diarrhea
    2. After 2 days of diarrhea
    3. After 3 days of diarrhea
    4. After 4 days of diarrhea
    5. After 5 days of diarrhea
    6. Six and above days of diarrhea

20. What was done to the diarrheal child at the place where you sought help? (tick all treatments used)
    0. Nothing
    1. Given injections
    2. Given tablets
    3. Massage of abdomen or body parts
    4. Manipulation of gums
    5. Herbal medicine
    6. Magic procedure (Holy water, prayer)
    7. ORS
    8. Shown and told how to prepare ORT
    9. Other help (specify) __________

21. At present has the diarrhea stopped? No _____
    Yes _____

22. If yes to Q.21, how many days did the diarrhea last? _____

23. If you had the choice, which treatment would you like most for your diarrheal child?
    1. Injection
    2. Tablets
    3. Massage of abdomen and other body parts
    4. Manipulation of gums
    5. Herbal medicine
    6. Magic procedure (Holy water, prayer)
    7. ORS
    8. ORT
    9. Other type (specify) _________

24. Which person do you think is the most successful in treating diarrhea?
    1. Herbalist
    2. Magician
    3. Wogesha
    4. Private drug shop owner
    5. Health workers
    6. Community health workers

For each of the following questions answer No or Yes

25. Does teething cause diarrhea?
26. Do flies spread diarrheal disease?
27. Does defecation outside the house spread diarrhea?

28. Does latrine use increase diarrhea?
29. Does mother's hand washing before feeding her child decrease diarrhea?
30. Does an accidental fall cause diarrhea?
31. Does eating with dirty hands cause diarrhea?
32. Can drinking river water cause diarrhea?
33. Can drinking protected spring water cause diarrhea?
34. Can diarrhea pass from family member to family member?
35. Does diarrhea help to clean out the bowel?
36. Can your child die of diarrhea, if not given an injection?
37. Does diarrhea cause loss of body fluids?
38. Does high fluid intake worsen diarrhea?
39. Can your child die of diarrhea, if not given fluid?
40. Is it good to give only water to a diarrheal child?
41. Is it good to put salt in solution for a diarrheal child?
42. When diarrheal child vomits, should food and fluid be withheld?
43. When diarrheal child vomits should he/she be given small amounts of fluid and food frequently?
44. Do you know about ORS?
45. Do you know about ORT?

46. Educational status of the respondent
    0. Illiterate
    1. Grade 1 or completed literacy campaign
    2. Completed grades 2 to 6
    3. Completed grades 7 to 11
    4. Completed grade 12 and above

47. Do you want to learn about causes and consequences of diarrhea?

48. If yes to Q.47 from whom would you like to learn?-----
    1. Herbalist
    2. Magician
    3. Wogesha
    4. Health worker
    5. Community health worker
    6. Health committee
    7. REWA leaders
    8. Others (specify)

Interviewers name---
Signature----------------------
Date --------------------

Supervisor's name ----------------------------------
Signature------------------
Date --------------------

መረጃዎችን ለሚሰበስቡት የተሰጠ መመሪያ

ወደ እያንዳንዱ ቤት ስትደርሱ ራሳችሁን ማስተዋወቅና ለምን ወደቤታቸው እንደመጡ መግለጽ።

1. ከአምስት ዓመት በታች የሆኑ ልጆች አሉት?

   _______ የለም። አመስግነው መሰናበት

   _______ አዎን። ወደሚቀጥለው ጥያቄ ማለፍ

2. አዎን ያሉ ከሆነ ስለልጆችዎ አንዳንድ ጥያቄዎች ለመጠየቅ እፈልጋለሁ። ፈቃደኛ ኖትን?

   _______ የለም። ቤቱን ለቀው የወጡ

   _______ አዎን። ወደሚቀጥለው ጥያቄ ይለፉ

3. ለተራ ቁጥር 2 ጥያቄ መልሱ አዎን ከሆነ ባለፈት ሁለት ሳምንታት ውስጥ ከልጆችዎ ውስጥ ተቅማጥ የያዘው አለን?

   _______ የለም። ከአምስት ዓመት በታች ያሉትን በሙሉ በዕድሜ ከለሳቸው በተሰጠው ቦታ ይመዘገቡ

   _______ አዎን። የተዘጋጁትን መጠይቆች ይቀጥሉበት

ተራ ቁጥር	ከአምስት ዓመት በታች ልጆች					ተቅማጥ ያለው
	1	1	2	3	4	
1						
2						
3						
4						
5						

የመጠይቅና የመልስ መስጫ ወረቀት

በተሰጡት ባዶ ቦታዎች ትክክለኛ መልስ ይመልሱ ወይንም በባዶ ቦታው ፊት ለፊት ምልክት ያድርጉበት።

1. የጥናት ቁጥር ____________________ ____________________

   ቀበሌ ገ/ማህበር የቤተሰብ ተራ ቁጥር

2. መልስ ሰጪው፣ እናት ___

   ሌላሰው ___

   /ከሕፃኑ ጋር ያለው ዝምድና ይጠቀስ/ ___

3. ር ቀት፣ ቅርብ ባለው ጤና ድርጅት በኪ/ሜትር ___

4. ር ቀት፣ ቅርብ ባለው ግል መድሃኒት ቤት በኪ/ሜትር ___

5. በሥራ ላይ ያለ ጤና ተጠሪ አለ ወይ? 0 የለም ___

   1 አለ ___

6. ተቅማጥ የያዛቸው ከአምስት ዓመት በታች ያሉት ሕፃናት /ከአንድ ዓመት በታች ላሉት በወራት ይጻፍ/

	ዕድሜ	ፆታ
1.	___	___
2.	___	___
3.	___	___

በአንድ ቤት ከአንድ ሕፃን በላይ ተቅማጥ ባለፉት ሁለት ሳምንታት ውስጥ ካለ ስለ ታናሹ ልጅ ብቻ የሚከተሉትን መጠይቆች ይጠይቁ፡

7. የተቅማጡ ሁኔታ እንዴት ነበረ? /በመልስ ሰጪው ግምት/

   1. አነስተኛ ___
   2. መካከለኛ ___
   3. ከፍተኛ ___

8. በ24 ሰዓታት ውስጥ ስንት ጊዜ አስቀምጦት ነበረ? ___

9. ከተቅማጡ ጋር አብሮ ትውከት ነበረን? የለም ___

   አዎን ___

10. ተቅማጥ ለያዘው ልጅ ምን ምን አደርገውለት ነበረ? /መልስ ሰጪው የተናገረውን ቃል በቃል ይጻፍ/

____

11. ሌላ ተጨማሪ ያደረጉለት ነገር አለ ወይ?

____

____

ለተራ ቁጥር 12ና 13 መጠይቆች ሁኔታ መልስ ሰጪው በተራ ቁጥር 10ና 11 መጠይቆች ውስጥ መልስ ከሆነ ትክክለኛ መልሱን ምልክት ያድርጉበት፣ ነገር ግን ያልመለሱት ከሆነ የሚከተሉትን 12ና 13 መጠይቆች ይጠይቁ።

12. የፈሳሽ አወሳሰዱ እንዴት ተደርጎለት ነበረ?

____ 0 ጡት ብቻ እየጠባ ነው

____ 1 ፈሳሽ እንዳይወስድ ተደርጓል

____ 2 ከበፊቱ የፈሳሹ መጠን ተቀንሷል

____ 3 የበፊቱን ያክል ፈሳሽ ተሰጠው

____ 4 ከበፊቱ የበለጠ ፈሳሽ ተሰጠው

13. የምግብ አወሳሰዱ እንዴት ተደርጎለት ነበረ?

____ 0 ምግብ አልጀመረም

____ 1 ምግብ እንዳይወስድ ተደርጓል

____ 2 ከበፊቱ የምግብ መጠን ተቀንሷል

____ 3 የበፊቱ ያክል ምግብ ተሰጠው

____ 4 ከበፊቱ የበለጠ ምግብ ተሰጠው

14. ተቅማጥ ለያዘው ልጁ ፈሳሹን መስጠት ያሳቆሙ ከሆነ ፈሳሹ ምን ምን የያዘ ነው? /መልስ ሰጪው የተናገረውን ይጻፉ/

____

____

15. በተራ ቁጥር 14 መጠይቅ ላይ በተመለሰው መልስ መሠረት በአብዛኛው ጊዜ የተሰጠው ፈሳሽ አይነት ምልክት ያድርጉበት

1. የጥራጥሬ ዱቄት ከጨው፣ ስኳርና ከውሃ የተሠራ

2. ነፍስ አድን ንጥረ ነገር /ቤት የተሠራና በገበያ የተዘጋጀ/

3. አጥሚት

4. ሌላ አይነት

ይጠቀስ ______________

16. ተቅማጥ ለያዘው ልጅ የሌላ ሰው እርዳታ ጠይቀው ነበረን?

____ 0 የለም

____ 1 አዎን

17. አዎን ያሉ ከሆነ ተቅማጥ የያዘውን ልጅ ወዴት ወሰዱት?

1. ወደ ቅጠላ ቅጠል መድሃኒት አዋቂ
2. ወደ መለኮታዊ አድርጎት ቦታ /ፀሎት፣ ጠበል/
3. ወደ ወጌሻ ቤት
4. ወደ ግል መድሃኒት ቤት
5. ወደ ጤና ኬላ
6. ወደ ክሊኒክ
7. ወደ ጤና ጣቢያ
8. ወደ ሆስፒታል
9. ሌላ ቦታ /ይጠቀስ/ ____________

18. ከስንት ቀን ተቅማጥ በኋላ የሌላ ሰው እርዳታ ጠየቁ፣

____ 0 ተቅማጥ በያዘው እለት

____ 1 ተቅማጥ ከያዘው አንድ ቀን በኋላ

____ 2 ተቅማጥ በያዘው ከሁለት ቀናት በኋላ

____ 3 ተቅማጥ ከያዘው ከሦስት ቀናት በኋላ

____ 4 ተቅማጥ ከያዘው ከአራት ቀናት በኋላ

____ 5 ተቅማጥ ከያዘው ከአምስት ቀናት በኋላ

____ 6 ተቅማጥ ከያዘው ከስድስት ቀናት በላይ በኋላ

19. የሌላ ሰው ዐርዳታ በጠየቁበት ቦታ ምን ተደረገለት?

____ 0 ምንም አልተደረገለትም

____ 1 መርፌ ተሰጠው

____ 2 የሚዋጥ ክኒን ተሰጠው

____ 3 ሆዱን ታሸቷል

____ 4 ዱዱ ተነቀሷል

____ 5 ቅጠላ ቅጠል ተሰጠው

____ 6 መለኮታዊ አድራጎት ተፈጸመለት

____ 7 ነፍስ አድን ንጥረ ነገር ተሰጠው

____ 8 የጥራጥሬ ዱቄት በጨው፣ ከስኳር፣ ከውሀ የተሠራ እንዲሰጠው ትምህርት ተሰጠኝ

____ 9 ሌላ፣ ይጠቀስ____________

20. የተቅማጡ ውጤት በመጠይቁ ወቅት እንዴት ነበረ?

____ 1 የልጁ ሕይወት አለፈ

____ 2 ተቅማጡ ባሰበት

____ 3 ተቅማጡ ምንም ለውጥ አላሳየም

____ 4 ተቅማጡ ተሻለው

21. በአሁኑ ጊዜ ተቅማጡ ቆሟልን? 0 የለም ____
1 አዎን ____

22. ለተራ ቁጥር 21 ጥያቄ አዎን ከሆነ ከስንት ቀን በኋላ ተቅማጡ ቆመ፣

_____ ቁ፣ ት

23. ተቅማጥ ለያዘው ልጅዎ ሁሉ አይነት ሕክምና ምርጫ በፎርያት የትኛውን ይመርጣሉ፣

____ 1 መርፌ

____ 2 የሚዋጥ ኪኒን

____ 3 ሆዱ መታሸት

____ 4 ደዱ ማስነቀል

____ 5 ቅጠላ ቅጠል መስጠት

____ 6 መለኮታዊ አድራጎት

____ 7 ነፍስ አድን ንጥረ ነገር

____ 8 የጥራጥሬ ዱቄት፣ ውሀ በስኳር ወይንም በጨው የተዘጋጀ

24. ተቅማጥን በማከም የትኛው ሰው ጥሩ ውጤት የሚያሳይ ይመስሎታል?

____ 1 የቅጠላ ቅጠል መድሃኒት አዋቂ

__2 መለኮታዊ ሥራ የሚችል ሰው

____ 3 ወጌሻ

____ 4 የግል መድሃኒት ባለቤት

____ 5 ጤና ባለሙያተኛ

____ 6 ቀበሌ ጤና ተጠሪና የልምድ አዋላጅ

ከዚህ በታች ላሉት መጠይቆች የለም ወይም አዎን በማለት ይመልሱ፡፡

25. ሕፃኑ ጥርስ ለመጀመሪያ ጊዜ ሲያበቅል ተቅማጥ ሊይዘው ይችላል?____

26. ዝንቦች ተቅማጥ በሽታን ማሰራጨት ይችላሉን?____

27. በመኖሪያ ቤት አካባቢ መገኘት ተቅማጥን ሊያስከትል ይችላል?____

28. በሽንት ቤት መጸዳዳት ተቅማጥን ሊቀንስ ይችላል?____

29. እናት እጁዋን ታጥባ ልጁዋን ብትመግብ ተቅማጥ ሊቀንስ ይችላል?____

30. ከከፍታ ቦታ ልጁ ቢወድቅ ተቅማጥ ሊይዘው ይችላል?____

31. በቆሻሻ እጅ መመገብ ተቅማጥ ሊያመጣ ይችላል?____

32. የወንዝ ውሃ በመጠጣት ተቅማጥ ሊይዝ ይችላል?____

33. የተጠበቀ የምንጭ ውሃ በመጠጣት ተቅማጥ ሊይዝ ይችላል?____

34. ተቅማጥ ከቤተሰብ አባላት ወደቤተሰብ አባላት ሊተላለፍ ይችላል?____

35. መርፌ ባይሰጠው ተቅማጥ የያዘው ልጁ ሊሞት ይችላል?____

36. ተቅማጥ ሆዱን ለማጠብ ይጠቅማል?____

37. ተቅማጥ በሽታ የሰውነት ፈሳሽ እንዲቀንስ ያደርጋል፡፡

38. ብዙ ፈሳሽ ተቅማጥ የያዘው ልጁ ቢወስዱ ሊያባብሰው ይችላል?____

39. ተቅማጥ የያዘው ልጁያ ፈሳሽ ባይወስድ ሊሞት ይችላል?____

40. ተቅማጥ ለያዘው ልጁ ንጹህ ውሀ ብቻውን መስጠት ጥሩ ነውን?____

41. ተቅማጥ ለያዘው ልጁ በሚሰጠዉ ፈሳሽ ውስጥ ጨው መጨመር ጥሩ ነውን?____

42. ተቅማጥ የያዘው ልጁ ተጨማሪ ተውከት ካለው ምግብ ሆነ ፈሳሽ በአፉ መስጠት የለበትምን?____

43. ተቅማጥ የያዘው ልጁ ተጨማሪ ተውከት ካለው ትንሽ በትንሹ ሳይቆይ ቶሎ ቶሎ ፈሳሽ መስጠት ጥሩ ነው ወይ?____

44. ነፍስ አድን ንጠረ ነገርን ያውቃሉን?____

45. ከጥራጥሬ ዱቄት፣ ከጨው ወይንም ከስኳርና ከውሀ የተሠራውን ነፍስ አድን ንጥረ ነገር ያውቃሉን?____

46. የመልስ ሰጪው የትምህርት ደረጃ፡፡

____ 0 ከማይምነት ያልተላቀቀ

____ 1 መሠረተ ትምህርት የጨረሰ

____ 2 ከ2ኛ እስከ 6ኛ ክፍል

____ 3 ከ7ኛ እስከ 11ኛ ክፍል

____ 4 12ኛ ክፍልና በላይ

47. ስለ ተቅማጥ መነሻ ምክንያቶችና መፍትሔያቸው መማር ይፈልጋሉን?____

48. ለ47ኛ ጥያቄ አዎን ከሆነ ከየት ቢማሩ ደስ ይልዎታል።

____ 1 ከባሕል ሕክምና አዋቂ

____ 2 ከወጌሻ

____ 3 ከጤና ባለሙያዎች

____ 4 ከ ቀበሌ ጤና ተጠሪ/ልምዱ አዋላጅ

____ 5 ከጤና ኮሚቴ በኩል

____ 6 ከሴቶች ማህበር በኩል

____ 7 ሌላ፣ ይጠቀስ____________

መጠይቁን የሞላው ሰው ስም____________________

ፊርማ ቀን____________________

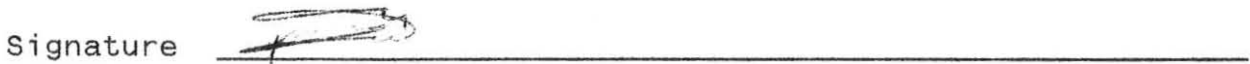
መጠይቁን የተቀበለው ኃላፊ ስም____________________

ፊርማ ቀን____________________

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 Petros Olango, M.D.



Signature

Place Addis Ababa, Ethiopia

Date of Submission April, 1989