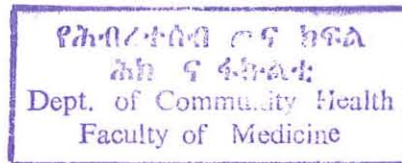


**ADDIS ABABA UNIVERSITY
SCHOOL OF GRADUATE STUDIES**



**HEALTH PROBLEMS AND HEALTH COPING STRATEGIES
OF AREAS EXPERIENCING FOOD SHORTAGE:
PREPAREDNESS AND RESPONSE OF THE COMMUNITY
AND OF THE RESPONSIBLE BODIES**

Muluken Melese, M.D.

December 1998

**DEPARTMENT OF COMMUNITY HEALTH
ADDIS ABABA UNIVERSITY**

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TO THE SCHOOL OF GRADUATE STUDIES OF
ADDIS ABABA UNIVERSITY
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List of abbreviations

CDC	- Centres for Disease Control and Prevention
CMR	- Crude Mortality Rate
CSA	- Central Statistics Authority
DPPC	- Disaster Prevention and Preparedness Commission
FGD	- Focus Group Discussion
GNP	- Gross National Product
MOH	- Ministry of Health
MOWMR	- Ministry of Water and Mineral Resources
PEM	- Protein Energy Malnutrition
PRA	-Participatory Rural Appraisal
S.D.	- Standard Deviation
UN	- United Nations
WFL	_ Weight For Length
WHO	_ World Health Organisation
WFP	- World Food Programme

DEFINITION OF TERMS

The following standard or operational definitions are used for this study:

1. **Capacity:** Qualitative assessment of human and material resources. According to the WHO, capacity for emergency management implies: information, authority, institutional arrangement, skills and know-how, plans, resources and procedures for their activation/mobilisation.
2. **Coping Strategy:** Remedial actions undertaken by people whose survival and livelihood are compromised or threatened.
3. **Disaster:** A serious disruption of the functioning of a society, causing widespread human, material, or environmental losses which exceeds the ability of the affected society to cope using only its own resources.
4. **Disaster response:** A sum of decisions and actions taken during and after disaster, including immediate relief, rehabilitation, and reconstruction.
5. **Drought:** Period of deficiency of moisture in the soil such that there is inadequate water required for plants, animals and human beings.
6. **Emergency:** A sudden and usually unforeseen event that calls for immediate measures to minimise its adverse consequences.
7. **Environmental Degradation:** Unfavourable modification of the ecological state and environment through natural process and/or human activities.

8. **Famine:** A catastrophic food shortage affecting large numbers of people due to climatic, environmental and socio-economic reasons.

9. **Food insecurity:** A situation in which the individuals of a society have neither the physical nor the economic access to the nourishment they need.

10. **Risk:** A threatening event, or the probability of occurrence at a potentially damaging phenomenon within a given time period and area.

11. **Land degradation:** Progressive deterioration of land quality or landforms resulting from natural phenomena or human activity.

12. **Mitigation:** Measures taken in advance of a disaster aimed at decreasing or eliminating its impact on society and an environment.

13. **Prediction:** A statement of the expected time, place and magnitude of a future event.

14. **Preparedness:** Activities designed to minimise loss of life and damage, to organise the temporary removal of people and property from a threatened location and to facilitate timely and effective rescue, relief and rehabilitation.

15. **Prevention:** Encompasses activities designed to provide permanent protection from disaster.

16. **Relief:** Assistance and/or intervention during or after disaster to meet the life preservation and basic subsistence needs. It can be of emergency or protracted duration.

17. **Rehabilitation:** The operation and decision taken after a disaster with a view to restoring a stricken community to its former living conditions, whilst encouraging and facilitating the necessary adjustment to the changes caused by the disaster.

18. **Hazard:** Expected loss (of lives, persons injured, property damaged and economic activity disrupted) due to particular hazard for a given area and reference period. Based on mathematical calculations, risk is the product of hazard and vulnerability.

19. **Staple food:** A food that is regularly consumed in a country or community and from which a substantial proportion of the total calorie supply is obtained.

20. **Starvation:** The state resulting from extreme privation of food or of drastic reduction in nutrient intake over a period of time leading to severe physiological, factional, behavioural, and morphological differences.

21. **Vulnerability:** Degree of loss (from 0%-100%) resulting from a potentially damaging phenomenon.

ABSTRACT

A cross sectional study was conducted with the objective of assessing health problems, health coping strategies and health care demand of non-displaced communities which are in food crisis. The study consisted of a household survey (n=531 households), Focus Group Discussions(N=10 groups) and an individual in-depth interview of government officials (n = 9) through which quantitative and qualitative data were collected.

The study *Woreda* (district) of North Wollo Zone, Amahara Regional State, Ethiopia. The district was highly affected by the famines of the 1970s and 1980s and has been facing repeated food shortages ever since.

In the three months recall period 748(29.4%) of the 2,547 household members reported being ill, out of which only 122 (16.3%) sought western-style medical care. The main reason (72.7% of the responses) for not seeking medical care was lack of money to cover the medical cost and/or for transportation and accommodation. Most households had not recovered from the past famines' economic shock, due to the recurrent nature of food production failure. The annual per capita income in the surveyed population was found to be 310.4 (US \$ 43.7). Information was obtained from 148 households on the health- cost coping mechanisms; these were 72(48.6%) of the households from the sale of animals and animal products, 32(21.6%) from the sale of grains and the rest from loans, savings, sale of household utensils and fire-wood, and working in food-for-work or cash-for work programmes. The most vulnerable groups who were severely affected by the current food crisis were elders, women-headed households and those who have no productive assets, i.e, the poor. About half of the 531 studied households had no single animal; 55.5 were currently dependent on food aid. This finding shows the exhaustion of the health-cost- coping strategies of the communities. A relatively high number of the households (24.6%) were found to consume a famine food (*Lathyrus Sativus*) which causes neuro-toxicity when consumed for along period as a main diet. The line ministry offices, from the region to the district, lack trained manpower in disaster management; there is a tendency for them to forward all disaster issues to the specific government authority for disaster management issues, the Disaster Prevention and Preparedness Commission (DPPC).The study recommendations are as follows: a) Health aid should be part of food aid package; b) Special attention should go to the most vulnerable groups of the community; and c) Training of disaster managers at all levels is mandatory for a better handling of disasters.

1. INTRODUCTION

Between 1992 and 1996, world-wide the number of people affected and killed by disasters has been in a decline, while in Africa it was increased, mainly due to conflicts in the Great Lakes region. In this period worldwide the annual average number of people affected by disasters was 177,641,958 and 31,422 killed; floods affected most people followed by droughts and famines (1).

Disasters can be classified i) according to their speed of onset (sudden or slow), ii) according to their cause (natural or man-made), or iii) disasters with only one cause versus those due to the joint effects of several causes (2, 3). Disasters can be further identified by their origin (3) i.e.:

METEOROLOGICAL:

- Hurricanes, cyclones, tornadoes, typhoons.
- Heavy rains, thunderstorms, floods, snowstorms.
- Droughts and famines.
- Heat-waves and cold waves.

TOPOGRAPHICAL:

- Land slides and avalanches.

TECTONICS AND TELLURIC:

- Earthquakes.
- Volcanic eruptions.

TECHNOLOGICAL AND MAN-MADE:

- Industrial accidents.
- Fires and explosions.
- Environmental conditions.
- War and civil strife.
- Structural failures (dams, mines, buildings, bridges etc.).

EPIDEMICS: such as diseases.

INFESTATIONS: such as locusts, etc.

It has long been recognised that all disasters, whether natural or man-

made, may have long-term as well as short-term repercussions on the health of the affected population. The health consequences of disasters will differ according to the kind of disaster and to the characteristics of the stricken area (i.e., the population, climate, pre-existing health condition, development of health services, the economy of the country, traditional coping mechanisms, and the state of preparedness of the health service and of the population in general)(4).

The actual and potential health consequences of disasters do not all occur at the same time and may vary in importance within a disaster-affected area. In natural sudden disasters (e.g., floods and earthquakes), casualties occur mainly at the time of the impact and require immediate medical care; the risks of increased disease transmission take longer to develop and are greatest where there is overcrowding and where the standards of sanitation have declined. Epidemic outbreaks may develop suddenly and last for weeks. In contrast, famine situations usually develop slowly over a long period of time (4).

Given that famine is the most important disaster in Sub-Saharan Africa (52), and that the present study is concerned with health in relation to famine and food insecurity, an in-depth examination of famine is needed. Famine is defined in a variety of ways by academics, by policy-makers, and by the people actually experiencing it. Blaikie(5) reviewed over sixty such definitions; and found that most definitions describe causes, processes, symptoms and impact (i.e., the number of people who are affected and who died). Deriba(6) found the following definition from the central highland Ethiopian community: "Famine is an inability to preserve seeds for the next season; being landless and/ or having too little land; being unable to meet family needs for clothing, health and school fees; a lack of income opportunities; an inability to pay back debts; being forced to sell grain to pay off debtors; and being unable to meet consumption requirements throughout the year". The core concepts of this definition are impoverishment and hardship, which, in most cases, do not include the last stage of the disaster, that is death.

Famine is generally defined as a slow-onset disaster which may be precipitated by factors such as prolonged drought (countries generally can

withstand two or three years of successive drought) or civil strife. Traditionally, famines have been assessed in terms of cases, rates, or degrees of malnutrition, and/or the number of deaths from under-nutrition. Such indicators qualify the damage - much of which is irreparable - that has already taken place, but they are of limited use in terms of prediction and prevention. Currently, three types of indicators have been developed to predict famine: i) leading indicators, ii) intermediate indicators, and iii) trailing indicators (7, 8). The leading indicators deal mostly with the means of production such as the land, the rain, and others; they are "early warning" signs of an imminent crisis. The intermediate indicators are concerned with the amount produced, the market value of crops, livestock and other commodities; these are "late warning" signs. Deaths of people is a trailing indicator; the crisis has already turned to an emergency and people are dying.

A failure to monitor, analyse and respond promptly to warning signs leads to a decline in nutritional status, and to increased morbidity and mortality, first among the vulnerable groups of a society and subsequently among all those affected by a food shortage. The most vulnerable groups for famine/ food shortage may be categorised: 1) at the regional level, i.e., communities living in marginal areas with a weak asset base; 2) at the community level, i.e., the landless peasant families or female-headed households; and (3) within a family, i.e, young children, pregnant and lactating mothers, and the elderly (7).

Given this variety of definitions of famine, a number of questions arise. When is the term "famine" to be used? Is it when all the stages, i.e., leading, the intermediate or the trailing indicator are reached? Who is to declare a famine? If deaths are considered, how many deaths are needed to declare a famine, and how can these deaths be substantiated in a country where vital records are not kept? Tool(7) suggests that the authorities responsible for famine response should shift their attention from the traditional "trailing" indicators to more appropriate "leading" indicators, or perhaps to "intermediate" indicators. De wall(9) argues that mortality (a trailing indicator) should not be a necessary condition of famine, and that famine should be recognised as an episode where

people do not die, or sometimes even scarcely go hungry.

Having considered famine, let us discuss the concept of food insecurity. Food insecurity is defined as a situation in which the individuals of a society have neither the physical nor the economic access to the nourishment they need (10). Based on this definition, the difference between food insecurity and famine is very fine, though one can think of famine as a continuum of timely, unresponded to, and prolonged food insecurity.

Food insecurity can be chronic or transitory, as defined by The World Bank: "Chronic food insecurity is a continuous inadequate diet caused by inability to acquire food. It affects households who persistently lack the ability either to buy enough food or to produce their own. Transitory food insecurity is a temporary decline in household's access to sufficient food. It results from the instability of food prices, food production, or household incomes and in its worst form it produces famine". Food shortages and famine conditions may be viewed as outcome variables in an equation with multiple inputs (political, social, technological, meteorological, and economic)(12). Food insecurity leading to famine causes serious human suffering and dislocation (loss of assets, family breakdown, distress migration, and death). The interaction between food production, population, food intake and nutrition is shown in Appendix VII.

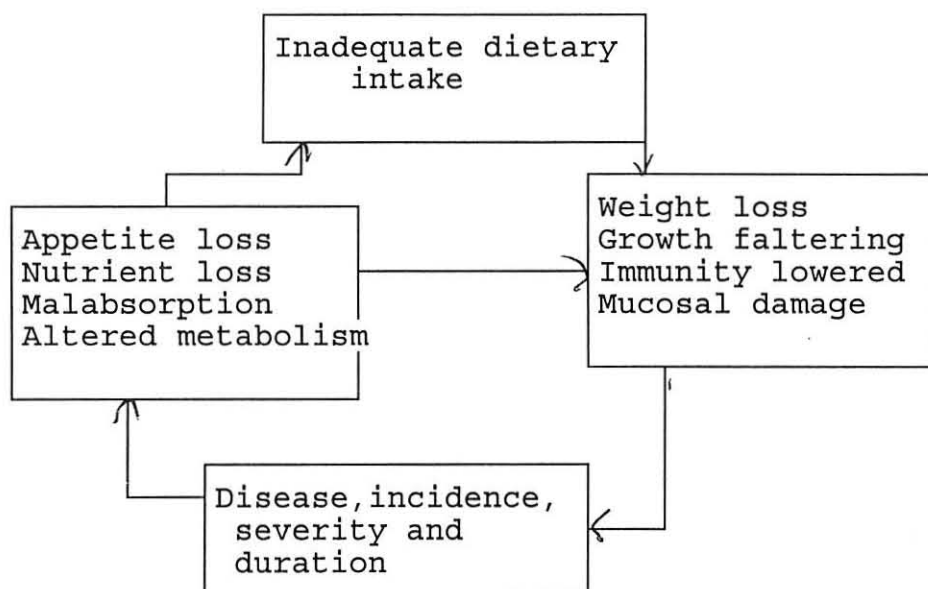
According to a recent policy study of sub-Saharan Africa, the annual growth rate of food production fell from 2.6% in 1960-70 to 1.6% in 1970-1980s ; meanwhile the per capita growth rate of food production fell below 0.1% to -1.1% for the same period (6). In view of the accompanying rapid population growth and declining economy, this declining food production in Sub-Saharan Africa points to increasing problems in maintaining food security in the future (6). If these trends persist, famine may become a continuous disaster in the region. During famine, it is not only the food, which are lacking, but also the health, education and other requirements for human survival, which are affected.

The human cost of famine/food insecurity must remain in the forefront of any analysis of famine issues. The first manifestation of famine/food insecurity

is a raise in malnutrition levels; this translates into poor physical and mental growth in children (or reduced potential for the foetus if the mother is malnourished), greater susceptibility to disease, and poor work performance. Thus, the mental and physical potential of an entire community may be affected by food shortages. In a broader context, social relations and familial patterns may be disrupted, and thereby rendered vulnerable to future fluctuations in food availability (12, 13, 14). The human body can adjust to food shortages to some extent by using existing energy reserves. Healthy, well-fed individuals can probably avert death from starvation for around two months as their body adjusts to steady weight loss; eating only small amounts of carbohydrates and proteins will allow such persons to function normally until 10% of the body weight has been lost. As the period of semi-starvation proceeds, the rate of weight-loss slows down since physical activities will be considerably reduced. In the final stages of starvation, symptoms of extreme body stress appear, vital organs stop functioning, and life-sustaining physiological processes come to a halt. Death from starvation usually occurs when one third of the body weight has been lost (15). However, one should note that those most affected by food shortage are the poor and under-privileged, of whom a great majority already suffer from chronic under-nutrition; people with low energy resource can die from starvation within two days(15,16).

In reality, infectious diseases usually hasten deaths from starvation. The synergetic relationship between under nutrition and infection is of particular importance in famine situations given that the immediate cause of death amongst famine victims is often infectious diseases (12, 17). Research has shown that under-nutrition weakens the body's defence mechanism thereby making individuals more vulnerable to diseases, and less capable of combating them. Diarrhoea diseases among famine affected populations may be common, especially in camps where water supply and sanitation facilities are often inadequate. Data indicate that deaths from unusual diseases are relatively rare, while common diseases such as measles, diarrhoea, and pneumonia claim the greatest number of lives (8). The interaction between infection and malnutrition is illustrated in Figure 1.

Figure 1. The interaction between malnutrition and infection.



Reference (14) .

Communities and families experiencing food shortage/famine have mechanisms to cope both with food shortage and with health problems. Such coping strategies are process-tuned to the growing level of stress. The food shortage coping strategies may be categorised into three groups(11, 22). These coping strategies can also apply, in most cases, to coping with adverse health conditions. The categories of coping strategies are: i) risk immunisation ii) risk absorption , and iii) risk taking. These categories may be defined as follows(22):

i. **Risk immunisation** :- Individuals insure against risk in an environment of limited credit and insurance markets through measures of savings, investments, accumulation, and diversification.

ii. **Risk absorption** :- This process involves calling in loans and reaching for new credit. As the capital for investment dwindles, the consumption of food and non-food items becomes restricted, stores of food are drawn down, and the number and variety of potential income sources available become crucial to survival.

iii. **Risk taking:** - This process is inevitable if the food shortage becomes severe, famine persists and if food aid does not arrive. It involves the collapse of the normal system of survival and the adoption of abnormal ones. At this point, households sell their last assets, including their fields, homes, clothing, and the diet is dominated by unusual "famine foods" (roots, leaves, rodents, etc.). If they are still able to do so, some households break-up and leave and search for assistance among distant relatives or at relief camps. If they are unable (or unwilling) to move, individuals are forced into a passive conservation of energy (saving waiting), and many ultimately die. The patterns of migration usually involve women and children departing first and the men staying behind, hoping to cultivate in the event of rain. Many old and/or sick persons are abandoned during this migration.

The available literature on health coping mechanisms during times of food shortage is scarce. However, as mentioned above, the coping mechanisms with regards to food shortages such as borrowing, seeking credit or doing nothing and waiting for death are likely to apply to coping with health needs as well.

The management, whether to food shortage/famine or any other disaster, can be classified into four groups ; these are (43):

1. Disaster prevention (mitigation)
 - Hazard perception (Hazard assessment).
 - Adjustment.
 - Vulnerability (capacity and Susceptibility).
2. Preparedness:
 - Planning.
 - Warning.
3. Response:
 - Pre-impact mobilisation like rapid assessments.
 - Post-impact mobilisation.
4. Recovery:

- Restoration (6 months or less), since the end of the disaster.
- Reconstruction and rehabilitation (6 months or more).

Preparedness or response to any disaster can be at the individual, group, organisation, community, society or international level. It can operate individually, or in various combinations depending on the magnitude and severity of the problem and on the capacity at each level (22, 43).

Given that infectious diseases are major killers in a malnourished population, it is of great interest to study the morbidity burdens, the health coping strategies, the demand for and utilisation of health care in areas experiencing food shortage, as well as the preparedness of the community and of the bodies responsible for famine/food shortage. This is the aim of the current study. It is hoped that the study will provide policy-makers and organisations involved in disaster operations with the necessary information about health issues during times of food crisis. Before proceeding with details about the study, a review of the relevant literature is presented in the next section.

2. LITERATURE REVIEW

Over the past three decades, the most common emergencies affecting the health of large populations in developing countries have involved famine and forced migration (8). The public health consequences of mass population displacement have been extensively documented (23). Although the morbidity and mortality rates of famine-affected populations who have been displaced are relatively better-documented, reliable information on the mortality and morbidity of populations in Africa who are facing food crisis but who are undisplaced is scarce. Very little information is available on mortality which can be reliably related to changes in the quantity or quality of food available, to changes in nutritional status or even, in many cases, to an adequate description of the economy of the population concerned (24).

The most direct and obvious results of famine/food shortages are severe under-nutrition and death. Longitudinal studies have demonstrated that undernourished persons, particularly children, are at higher risk of mortality, and that the immediate causes of death are usually communicable diseases (e.g. measles, diarrhoeal disease, malaria, or acute respiratory tract infections) which may account for 60%-90% of all deaths (8, 24, 25). Groups who are at higher risk of mortality during non-famine times, namely, the poor, the elderly, women, young children, and members of female-headed households are the same groups that are most at risk for the morbidity and mortality caused by famine (7,8).

In the 1985 Ethiopian famine, Protein Energy Malnutrition (PEM) prevalence as high as 70% was recorded for children under five years of age (26). In Chad in 1985, acute PEM (less than 80% of median weight-for-height of the reference population) of 25.8% to 56% were reported (29); in Liberia in 1990, 35% of PEM (< 80% of W/L for the reference population) were registered (8). In February 1998 in Wagehemera and in North Wollo (Ethiopia), the mean weight-for-length was 89.4% and 92.4%, respectively (27). PEM reported during famine is usually accompanied by micronutrient deficiencies (17,28). Micronutrient

deficiencies leading to diseases and increased morbidity are often encountered (8,17). Common problems include vitamin A deficiency which can lead to blindness and is related to increased mortality in children; vitamin C deficiency leading to outbreaks of scurvy; iron and folate deficiencies resulting in anaemia, particularly among pregnant and lactating women; and vitamin B complex deficiencies (8, 17). These various deficiencies arise not only because of insufficient food in the famine-affected communities, but also when distributed food rations are unbalanced and do not meet the standard micronutrient requirements (8).

Mortality rates are the most dramatic indicators of the health status of emergency-affected populations. It is usually reported that mortality is higher for displaced populations compared to populations who remain in their original village and homes (8, 25). Actually, a comparison of mortality in displaced versus non-displaced famine affected populations is not appropriate because displacement itself may reflect a more serious baseline situation (25). Nonetheless, studies have shown that displaced and refugee populations experience a markedly higher crude mortality rate (CMR) than non-displaced population(8, 25).

Few reports are available on internally displaced populations. In Mozambique (1983), Ethiopia (1984-1985), and the Sudan (1988), CMRs estimated by surveillance or by population-based surveys of internally displaced persons ranged between 4 and 70 times the death rates in non-displaced populations in the same country(8). In the Korem area of Ethiopia, CMRs recorded among camp populations displaced by famine in 1985 were 7-10 times those of settled villagers in a similar highland zone affected by the famine(8). In Monrovia, Liberia, the death rate among civilians displaced during the 1990 civil war was 7 times the pre-war death rate (8).

With regards to mortality in undisplaced populations facing food shortage; the 1973-74 CDC survey of the west Africa Sahel drought found an

excess mortality of 7% (over an assumed normal mortality for west Africa of 24/1000/year) in a group of nomads in Niger(31). A village study in Niger found a high but stable death rate in the drought years 1969-973 (CMR of 21.4, 17.2, 19.5, 16.4, 15.4, in successive years) followed by an abrupt increase in 1974 (CMR of 432/1000/year); the increase reflect the deaths of scores of children, particularly those born during the drought years, as many succumbed to epidemic meningitis (32).

In Ethiopia in the early 1970s, data were collected in parts of Raya and Kobbo districts of Wollo province among undisplaced populations (30). The data suggest a CMR in the year of famine of 70/1,000 per year, implying a total of excess mortality of approximately 4% of the population (taking no account of migrants who had not returned, at the time of the survey). A total of 40,000 mortalities were reported from a total of one million people (which was above the usual level). In 1973-74 famine of the Ethiopian Ogaden, mortality in infants under one year of age was 414-485/1000/year, and for children aged one to four years was 267-278/1000/year, for the population of north and south Ogaden, respectively (30). No comparative data were available from more normal years, but these rates are clearly abnormally high. Again in the 1984-85 Ethiopian famine, CMR values of 91.6/1000/year based on seven-day recall, 106.1/1000/year based on thirty-day recall, and 68.2/1000/year based on a three-month recall were found (33).

Another health problem, which may be associated with famine/food shortages, is that of food toxicity. Persons may consume poisonous foods with which they are not familiar in order to avert hunger. Lathyrism is a neurotoxin which has been reported in Ethiopian famine-affected populations who, for long time periods, consume a type of grass-pea called lathyrus in large amounts without combining it with other food items(18). In Dembia and Fogera sub-districts of Gondar, Ethiopia, it was found that 26.6% of the population were affected in the 1976-77 famine-caused epidemic of lathyrism(18). In that study, the majority of the victims developed lathyrism after consuming grasspea for over

three months although 12% reported consuming grasspea for only one month before contracting the disease(18). The substance which causes the disorder in the *Lathyrus* pea is a neurotoxic amino-acid excitatory Beta-N-Oxalylamino-L-Alanine (BOAA)(19). In Ethiopia consumption of wild plants called "Muzulo" in Silite area was observed in the 1984-85 famine and the 1994 food shortage, which causes abdominal complaints(51). In 1998, the North Wollo DPPC (Personal communication) reported cases of spastic paralysis (Lathyrism) in the adjacent *Woreda* of our study area from eating of *Lathyrus* pea. Another example of food toxicity are reports from Mozambique in 1983-1984 which described many deaths in starving villagers who ate parts of the Cassava plant containing cyanogenes that break down into cyanide(20).

Even when malnutrition, morbidity and mortality are high, the poor or marginal households often choose to reduce consumption down to dangerous levels in order to conserve assets, thereby making a trade-off between long-term economic recovery potential and increased short-term risk from under-nutrition (25,34). Joldhan, in 1975, recognised that in Indian famines, people may choose to go without food rather than sell their productive assets(34). De wall in the Sudan(26), and Devereux in northeast Ghana(34), found that maintaining normal levels of consumption is not the only objective of poor households faced by declining incomes and food shortages but that rationing consumption is an important option, and households make careful and repeated calculations about the long-term costs and consequences of all possible action. These calculations include not just the immediate market value of an asset in terms of the food it can be used to obtain, but also the future stream of financial returns, social utility, and other benefits over time which the asset will yield (34). In sequencing responses to food shortages, there are two critical trade-offs, the first between the possible reduction in consumption and the value of assets which must otherwise be disposed of to maintain consumption, and the second between an asset's current entitlement value and its impact on future entitlement(34). Making these trade-offs crucially affects the health of people affected by food shortage in two ways: the first being that starvation predisposes to diseases (8, 17, 25, 34), and the

second that due to the adjustment mechanism of conserving assets, health expenditures will be low, while diseases are high.

Studies on the health demand and the utilisation pattern of populations in food crises in Ethiopia are not available, however, one can examine studies from least developing countries (LDCs). Income and the ability to mobilise resources are highly associated with the utilisation patterns of health service by the community. Non-users frequently report that they have not sought services because the utilisation costs are too high (35,36). The most vulnerable groups affected by low income are the poor(37, 38), rural populations, children, elderly, and isolated populations(40). Studies in Zaïre showed that major increases in cost have a negative impact on the utilisation of health services; cost seemed to be a major criterion in the choice of resources in contexts where many people are poverty stricken(39). In rural Zaïre, utilisation of health services diminished by close to 40% over 5 years, and 18 to 32% of that decrease is explained by cost(39).

The other important factors which determine the health service utilisation in the LDCs are time price, cash price, travel price, the total price of nutrition inputs, and the total effect of the social environmental inputs (e.g Community, family)(36). Other studies suggest that health care demand is a function of the severity of the illness, age(adult or children), and type of illness (36). For example in a study in Nigeria, all symptoms included in the survey (cough, fever, stomach pain, diarrhoea, weakness, headache, etc) were tested both individually and in various combinations, while controlling for severity(defined as the number of days the patient was unable to carry on normal activities because of health problems). Only stomach pain and diarrhoea were found to be statistically significant predictors of the health care choices which included various public and private-western type providers, but not traditional care(36).

Studies in LDCs on health care demand showed that 26 to 62% of those who are ill do not gain access to any health care(36). In Dominican Republic, Bitran found that as much as two-thirds of those who perceive themselves to be

ill do not seek care; in many cases, it is expected that the traditional care or self-treatment are not reported(41).

Even though famine has not been declared in Ethiopia in 1998, the national Disaster Prevention and Preparedness Commission (DPPC) estimates that 4.2 million people are in need of food aid in 1998(44). The DPPC used a number of leading indicators and intermediate indicators as early warning signs of famine. The leading indicators were: erratic and poor rains, pests, and low acreage under cultivation. The intermediate indicators were: poor livestock conditions and deaths of animals especially in the eastern areas of the country; distress sale of animals; lack of seasonal dips of crops, and decrease of opportunities for waged farm labour due to the poor harvest. Trailing indicators of famine were not reported(44).

The populations affected by food shortages in 1998 are mainly concentrated in the middle and lowland areas of Tigray, Amhara, eastern part of Oromia, and Southern Nations Nationalities , People Regional Government (SNNPRG). These areas are mostly located in the "belt" of highly vulnerable and chronically food insecure areas where relief assistance has been frequently supplied in the last 10 years (44). The vulnerability map of the DPPC and the World food Programme is shown in Appendix I.

3. OBJECTIVES OF THE STUDY

3.1 General Objective:

To investigate the morbidity burden of a community experiencing food shortage, and to evaluate its capacity to cover the cost of health services.

3.2. Specific Objectives:

3.2.1. To study the morbidity burden of individuals in a food shortage area.

3.2.2. To study the demand for and the utilisation of health services of a population facing food shortage.

3.2.3 To study the health coping strategies of individuals in food shortage area.

3.2.4. To assess the capacity for disaster management of the local health institutions and the concerned government sectors in relation to food shortage situations from the Woreda to Regional level.

4. SUBJECTS AND METHODS

4.1 Data Collection Methods

In order to meet the broad objectives of the study, a combination of quantitative and qualitative data collection methods were used. The cross-sectional community-based information on health problems, disease patterns, and health service demand and utilisation were collected from a sample of households in a cross-sectional study design.

Focus group discussions (FGDs) were conducted with various socio-economic status groups from the community who were selected by participatory rural appraisal (PRA) technique. Institutional interviews were conducted with concerned government bodies, from the *woreda* level to the regional government level. Reviews of relevant policies, documents and reports were carried out. A summary of the data collection methods used in the study is presented in Table 1.

The study was conducted in June - July, 1998. This is the time where the main rainy season starts; farmers sow at this period.

Table 1- Data collection methods

Method of Data Collection	Source of data	Types of data collected
Stage 1- Focus Group Discussion (FGD) supported with participatory rural appraisal (PRA)	Selected groups in the community (The groups are listed in the sampling section)	<ul style="list-style-type: none"> - Food production. - Disease patterns. -Health problems. -Coping mechanisms. - Health service demand and utilisation. -Mortality.
Stage 2 - Household level data collection	- Sampled households	<ul style="list-style-type: none"> - Health problems. - Disease patterns. - Socio- demographic information. - Health service demand and utilisation. -Health coping mechanisms.
Stage 3- Individual in-depth interview	<ul style="list-style-type: none"> - Health managers - DPPC, and MOWMR officials at each level from the Woreda to the Regional ministry office. 	<p>Government</p> <ul style="list-style-type: none"> - Preparedness. - Response. - Mitigation.
Stage 4- Review of documents	Records and reports of health institutions and policies at various levels.	<ul style="list-style-type: none"> - Disease patterns. - Service. - Capacity and utilisation. - Staffing. - Policies, strategies and regulations.

4.2. Study Area

The study was conducted in North Wollo Zone which is one of the eleven zones of the Amhara Region. The Zone has a total area of 11890 sq. kms. It has four agro-ecological zones divided as follows: 23.3% high-land (*Dega*), 45.4% mid-land (*Weyena Dega*), 29.3% low-land (*Kola*), and the rest 2.0% frost (*Wourchie*)zone

The North Wollo Zone is divided into nine Woredas with a total of 1.4 million people(North Wollo Zone MOH report, 1997). The Zone has one rural hospital (located in the Zonal capital of Woldiya), 6 health centres, 62 health stations and 16 health posts. The Zone is labelled as a chronic food insecure area by DPPC and WFP. Out of the nine Woredas in the zone, Mekeite Woreda was selected randomly for this study (see the vulnerability map in Appendix I). Mekeite Woreda is located in the north highlands of Ethiopia between 38.30' and 39.35' east and 11.35' and 11.55' north. The Woreda has a total area of 2,196 sq.km(49) and had a population of 193,683 according the 1994 census (50).

The *Woreda* consists of a highland plateau and of the gorge of the Tekezzie river to the north. The plateau is a spur of the main escarpment of northern Ethiopia and runs broadly in an east- west direction from the highest point above Woldiya towards Nefas Mewuchia and Mountain Guna, forming the watershed between the Tekezzie and Jita- Beshelo rivers(49). Altitude in the woreda ranges from 3,400 Meters above sea level at the eastern end of the woreda to less than 1,700 Mts. at the Tekezzie river.

The *Woreda* is highly mountainous and its fertile top soil has been eroded in most areas. The only large trees remaining are found surrounding the orthodox churches indicating that in the past the area was covered with Olive, Junipers, Oak and acacia trees. In the Woyna dega, Eucalipytus trees are taking over the farm land. In the remaining areas, scattered small bushes are seen.

An all-weather road links the capital of North Wollo, Woldya to Baher

Dar, the capital of the Amhara Region (Region 3). The road follows the line of the watershed on the plateau. A newly completed all-weather gravel road also connects the Woreda to the town of Lalibela. Apart from these two roads, there are no other motorable roads in the Mekeit Woreda.

The *Woreda* (district) is divided into 35 peasant associations (PAs), the PA being the lowest government structure. The orthodox church traditionally divides PAs into parishes ("Deber"), named after the patron saint of the particular church. The government uses this structure as the smallest unit for team leaders when mobilising the community for any development activity; one team leader is responsible for 25 to 50 households. The "Deber" was a useful unit for the current study.

4.3. **Source Population:**

The source populations for the different components of the study were as follows:

-Cross-sectional survey:- All households in Mekeite *Woreda*.

-Focus Group Discussions (FGDs):- Households from each socio-economic stratum, selected PRA technique.

-Institutional interviews:- Health managers, DPPC, and MOWR officials, from the *woreda* to the regional government level.

4.4. **Study Population:**

The study populations were as follows:

- Cross-sectional survey : Sampled households from the selected PAs.

-FGDs: Representatives of the various socio-economic groups of the community

- Institutional interviews: Government officials of the above organisations at each level.

4.5. **Sample size and sampling Procedures:**

4.5.1. **Cross-sectional Household Survey**

The sample size for the household survey was calculated based on an assumed morbidity rate of 37% from the study by Mekonen et al.,(42) carried out in Gondar region. Based on this study, the average household size was 4.7 individuals and there were 1.75 sick individuals per household. The sample size was calculated as follows:

Anticipated morbidity rate = 37%

Confidence level = 95%

Relative precision = 3% (i.e., from 34%-40%)

$$n = \frac{(Z_{\alpha/2})^2 p(1-p)}{d^2}$$

Where:

n= sample size

Z = critical value for a given level of confidence (1.96 for 95% confidence).

d = sampling error

p = prevalence

$$n = \frac{(1.96)^2 (0.37) (0.63)}{(0.03)^2} = 995$$

Sample size for cluster sampling:- take the sample size required under the assumption of simple random sampling and randomisation of individuals and multiplying it by the inflation factor:

$$1+(m-1)$$

m = is the average size of the cluster (In this case 4.7 individuals).

= is the expected intra cluster correlation (estimated to be 0.5 for this study).

$$n' = [1 + (m-1)]n$$

$$n' = [1 + (4.7 - 1)*0.5] 995 = 2836$$

With an average of 4.7 individuals per household, the number of households to be sampled = $2836/4.7 = 603$ households.

A multi-stage sampling method was used to select the study units (household). As stated earlier, out of the nine *weredas* of North Wollo, Mekeite woreda was selected by simple random sampling. The woreda has 35 PAs, out of which ten PAs were selected by simple random sampling; the distribution was three from the *dega-worchi*, four from the *woyna dega*, and three from *Kolla*.

The lists of households from the ten sampled PAs were obtained from the *woreda* finance office's taxation list. Sixty households were selected by systematic sampling from each PA to get the total number of 600 households. The sampling frame is shown in Figure 2.

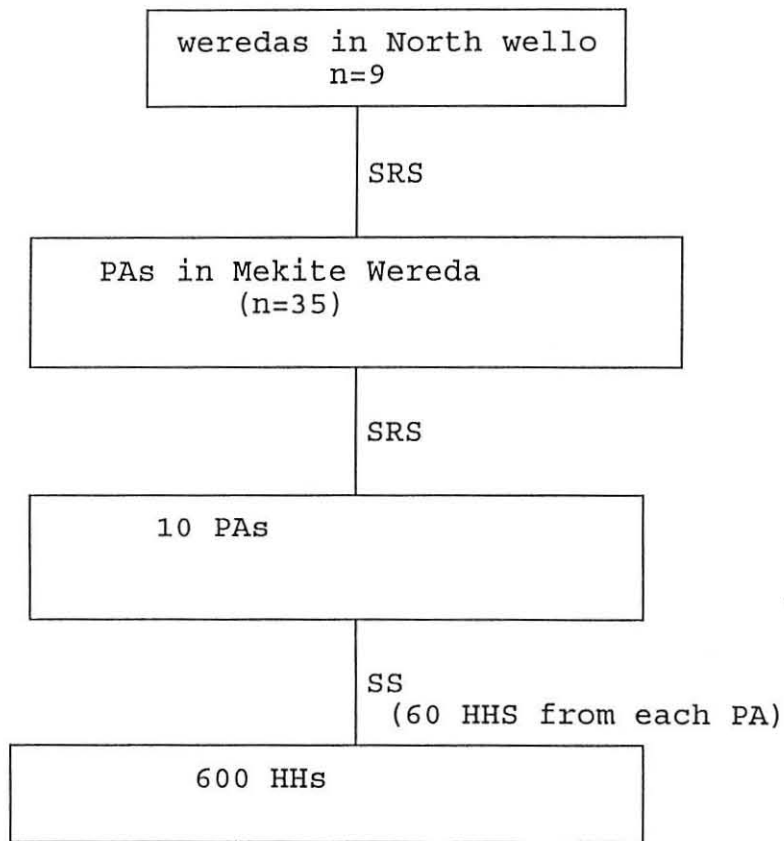
4.5.2. FGDs

Five groups were identified using the PRA technique of wealth ranking:

1. Poor farmers.
2. Middle farmers.
3. Rich farmers.
4. Elders with no one to support.
5. Women-headed households

The FGD method was selected in order to stimulate group interactions among participants, to encourage richer responses, and to allow new thoughts to emerge. In total, ten discussions were conducted, two for each of the five identified groups. Each discussion group had between eight and twelve participants.

Figure 2. Schematic representation of the sampling fram used for the household survey.



SRS= Simple Random Sampling

PAs= Peasant Association

HHS= Households

SS= Systematic Sampling

4.5.3. **Institutional interview**

Health managers, DPPC representatives, and MOWMR managers were interviewed from the woreda to the regional government level. The individuals interviewed were the managers or experts in their field.

4.5.4 **Review of policy documents**

All relevant documents in relation to disaster management were reviewed.

4.6. **Inclusion and Replacement Criteria**

Inclusion criteria:- For the household survey, either the head or any household member age 18 years and above, who knows the household's economic and health status was interviewed. For the FGD, the head of the household participated in the discussion.

Replacement Criteria:- Households who were registered in the Woreda finance office's taxation list but who had migrated with all the family during the study period were replaced with the immediately neighbouring household.

4.7. **Data collection and Management**

4.7.1. **Household survey questionnaires**

The principal data collection instrument for the household survey was the survey questionnaire. Other useful instruments were the list of peasant associations and the list of household names from the woreda finance office. The questionnaire was developed after reviewing documents with direct or indirect relevance to the study topic, and with the support of the thesis supervisors. The household survey questionnaire is divided into six major parts:- i) household characteristics; ii) family health conditions for the one month period preceding the survey; iii) health service utilisation; iv) health coping strategies; v) health service afford ability; and vi) income of households (see Appendix II).

The household questionnaire has two broad objectives: 1) to identify household characteristics, and 2) to identify family members who were ill in the past three months and to determine the severity of the illness and the type of health care given to the sick. The study was designed to assess the demand for

and the utilisation of health care services by the households in food shortage situations; the study of health service afford ability compares the current situation with the good harvest years in terms of people's ability to pay for health services.

Identifying the coping strategies of people in food insecure areas helps in understanding the communities alternative methods of coping during the adverse years. A question on income was designed to compare the total income of households in the good harvest years versus the current year, and to see income's effect on health expenditures.

The questionnaire was initially developed in English and commented on by supervisors before being translated into Amharic by the principal investigator. The Amharic version was commented on by colleagues for its correct translation. Amharic is the mother tongue spoken in the survey area.

4.7.2 Focus Group Discussions

The data collection instrument consisted of a topic guide which is a summary statement of the issues and objectives that need to be covered in the discussion. The guide had two parts: (i) the food production situation and trends, and (ii) the health conditions and coping mechanisms at times of food shortage and famine. The topic guide was prepared by the principal investigator and strengthened by supervisors. It was prepared in English but was not translated to Amharic since it was for use by the moderator who was the principal investigator.

The data collection was moderated by the principal investigator, supported by two assistants. Before the day of the discussion, the PRA technique was used with five different groups of people in order to identify individuals belonging to the five categories of wealth, namely: poor, middle, rich, elders and women headed households. These categories are defined as follows:

a) Poor farmers:- They have no plough oxen, cattle or pack animals. They produce little, even at good harvest times, and they are self-sufficient in food for 3-6 months. This year, they were able to feed their families for less than 3 months. The poor are dependent on markets for petty trading, on food aid, and on selling their labour to the rich farmers, either in their area or by migrating

seasonally to Raya and Kobo planes.

b) Middle farmers:- They have one plough ox, and some have a cow, 2 to 5 small animals (goats and sheep), and/or a donkey. They are self-sufficient in food in normal harvest years only for 6-9 months. For the rest of the year, they are dependent on selling their goats and sheep, or on trading.

c) Rich farmers:- They have two or more plough oxen, a donkey, more than 5 small animals, and/or a mule. They are self-sufficient in food for 9-12 months in normal harvest years.

d) Elders:- In the rural set-up, elders are supported by their children. However, those without children and who cannot plough their field are invariably poor. They are usually dependent on relatives for their living.

e) Women-headed households:- This is a special group in the community, who is invariably poor. Most, if not all, have no plough oxen or even if they have one they may not have a son to use it for ploughing. Their field is planted with the help of relatives who have finished working on their own field, so it usually late in the season. As a result, the planted field will be short of rain and the yield will be poor. In other circumstances, they rent their land to a rich farmer for a one-third share ("seso").

4.7.3 Institutional interviews

An institutional interview guide was the main instrument; it had two major parts: (i) health institutions capacity, and (ii) mitigation, preparedness, response and recovery phases of a disaster.

4.7.4 Selection and training of data collectors

Eleven 12th grade graduates were selected as data collectors (enumerators) in cooperation with the Woreda council. All enumerators were natives of the study woreda and knew the culture and the language of the population. Training was given for five days by the principal investigator. The first three days were spent on discussing the purpose of the study, the questionnaire content, ethical issues, procedures of the interview, and methods of tracing sampled households. A mock interview was done in the classroom among the trainees and every trainee practised completing the questionnaires. On

the fourth day, the questionnaire was tried by the data collectors in a PA not included in the study. On the fifth day, a final discussion was made on problems encountered in the field during the testing of the questionnaire.

4.7.5. Field work and supervision for the household survey.

After selecting the sampled households in the ten PAs by systematic sampling, the Woreda council wrote a letter to the PA leaders to facilitate the field work. Each PA has a chairman and a secretary for the whole PA, and team leaders for each 25-50 households; the team leaders mobilise the community for any development activities. The PA chairman assigned a team leader to show the selected households to the enumerator.

At the end of each day, all the enumerators came to a central point, usually the PA's office, to spend the night. The completed questionnaires were checked by the principal investigator for their correctness. The principal investigator also supervised the enumerators daily on the site.

4.8. Data Entry and Analysis

For the household survey questionnaires, the open-ended questions were first tallied to see the common responses, and then categorised for coding; the coded responses were entered into the EPI-info version 6 statistical package. Finally, data cleaning was performed before analysis was done. Data are presented using percentages, rates, and ratios as appropriate. The FGD and institutional interview results were analysed and interpreted manually.

4.9. Ethical Considerations

The study was approved by the ethical committee of the Faculty of Medicine, Addis Ababa University. Informed consent was obtained from each sampled household after a short explanation of the purpose of the study was given.

5. RESULTS

5.1. HOUSEHOLD SURVEY

5.1.1. Characteristics of the respondents:

Out of the 600 households sampled for the study, 552 (92.0%) responded, the other 48 households were not found on the day of the survey and the immediate neighbours were also not available (for economic reasons it was not possible to return in the next day). Out of the 552 households, 21 had incomplete responses and were excluded from the analysis. The final number of households included in the analysis was 531(88.5%). Of the 531 households enrolled in the study, 446(84.0%) were male-headed households and the rest, 85(16.0%), were female headed households. Four hundred nineteen (78.9%) of the questionnaires were answered to by the heads of the household, 99(18.6%) by spouses, and the rest, 13(2.4%), by other members of the family above eighteen years of age.

Data on marital distribution show that, at the time of the survey, 84.4% of the heads of the households were married, 7.7% were divorced/separated, 6.0% were widowed, and the rest, 1.9%, were never married. A majority of the respondents (77.0%) were illiterate, 18.1% were able to read and write, 3.8% had attended elementary school, and the remaining 1.2% had grade 7 or above educational level. The socio-demographic characteristics of the respondents are shown in Table 2

5.1.2. Characteristics of the households members:

A total of 2,547 people were found in the 531 sampled households, 52.9% were males and 47.1% females. The age distribution was as follows: 45.3% were under fifteen years of age, 38.5% 15-44 years, 12.3% 45-64 years, 3.9% \geq 65 years. The age and sex distributions of the sampled population are shown in Table 3.

Table 2. Socio-demographic characteristics of the study respondents

Characteristic	Number (N=531)	Percent
1. Sex of head of household(HH)		
Male	446	84.0
Female	85	16.0
2. Respondent		
Household head	419	78.9
Spouse	99	18.6
Other member	13	2.4
3. Marital status of head of HH		
Never married	10	1.9
Currently married	448	84.4
Divorced/separated	41	7.7
Widowed	32	6.0
4. Education of head of HH		
Illiterate	409	77.0
Read and write	96	18.1
1-6 grade	20	3.8
Grade 7 or above	6	1.1

Table-3 Distribution of the sampled population by age and sex.

Age(Yrs)	Male		Female		Total	
	No.	%	No.	%	No.	%
0-4	172	12.8	177	14.8	349	13.7
5-14	438	32.5	366	30.5	804	31.6
15-44	495	36.7	485	40.5	980	38.5
45-64	184	13.6	129	10.8	313	12.3
65+	59	4.4	42	3.5	101	3.9
Total	1348	100	1199	100	2547	100

Among the 2179 individuals seven years of age and above, 1866 (85.6%) were illiterate, 195(8.9%) could read and write, 107(4.9%) had grade 1-6 education, and 11(0.5%), had grade 7 or above education.

During the one-month recall period prior to the survey, 1939(76.1%) of the 2547 household members were in good health, 281(11.0%) were sick once, 44(1.7%) were sick twice, 276(10.8%) were sick on the day of the survey, and 7(0.3%) were found disabled. The health condition and educational status of household members are shown in Table 4.

Concerning the relation of the survey population to the head of the household, 1384(54.3%) were children, 531(20.8%) head of the household, 471(18.5%) spouses, 64(2.5%) parents of the head or the spouse, 32(1.3%) siblings of the head or the spouse, 15(0.6%) other relatives, 12(0.5%) domestic servant, and the rest 38(1.5%) were unspecified.

Table 4- The educational status and health condition in the past month of the household members.

VARIABLE	MALE		FEMALE		TOTAL	
	No.	%	No.	%	No.	%
1. Educational status of subjects age ³ 7 years (n=2179)						
Illiterate	909	78.6	957	93.6	1866	85.6
Read and write	169	14.6	26	2.5	195	8.9
1-6 grade	70	6.1	37	3.6	107	4.9
³ 7 grade	9	0.8	2	0.2	11	0.5
	1157	100	1022	100	2179	100
2. Health Condition in the past month(n=2547)						
Good health	1030	76.5	909	75.8	1939	76.1
Ill once	163	12.1	118	9.8	281	11.0
Ill twice	23	1.7	21	1.8	44	1.7
Still ill	128	9.5	148	12.3	276	10.8
Disabled	3	0.2	4	0.3	7	0.3
Total	1347	100	1199	100	2547	99.9

5.1.3. HEALTH CONDITIONS IN THE PAST THREE MONTHS

Out of the 2547 household members, 748 (29.4%) were reported ill during a three months recall period, out of which 334(44.7%) were age 45 years or above, 277(37.0%) age 15-44 years, and 137(18.3%) children under fifteen years of age. For the 531 ill individuals age 7 years old and above, who are productive forces in the rural set-up, 157(29.6%) were working while they were ill while the remaining 374(70.4%) reported that the illness had prevented them from working. Out of the 374 ill individuals who were not able to work, 100(26.7%) were unable to work for less than 7 days, 208(55.6%) for 8 to 30 days, and the rest, 66(17.6%), were unable to work for more than one month.

The five symptoms most reported were: 18.1% joint pains, 18.0% abdominal complaints, 11.0% eye complaints, 10.0% fever, and 9.5% symptoms related to the respiratory system; only 0.8% of the reported symptoms were related to malnutrition.

Concerning the type of medical care received, 524(70.1%) out of 748 did nothing for the illness, 122(16.3%) were treated in health institutions, 95(12.7%) were treated by traditional healers, and 7(0.9%) bought drugs, without examination, from drug shops. The five top reasons given from the total responses for not going to health institutions in descending order were: lack of money(72.7%), there are no drugs for that type of illness(9.2%), the illness was not serious(7.4%), modern health care will not help for such type of illness (6.0%), and the health institutions are too far(1.3%). Out of the 748 reported ill individuals in the three months recall period, 371(49.6%) were cured at the time of the survey, 371(49.6%) were ill on the day of the survey, and 1(0.1%) had died; for 5(0.7%) the condition was not reported.

5.1.4. HEALTH SERVICE UTILISATION IN THE PAST THREE MONTHS

Out of the 748 individuals who were reported ill in the past three months, 122(16.3%) had visited a health institution out of whom the information was complete for 116 individuals. Out of these 116 ill individuals, 90(77.6%) had visited a health station, 13(11.2%) a health centre, and 13(11.2%) a hospital. The main reasons for choosing a particular health institution were: 88(75.9%) nearness of the health institution, 10(8.6%) the availability of medications in the health institution, 7(6.0%) being referred from a lower health institution, 5(4.3%) the presence of high professionals, 4(3.4%) low cost, and 2(1.7%) other reasons. The means of transport used to reach the health institutions were: 58(50.0%) on foot, 23(19.8%) by horse/mule, 19(16.4%) carried by human, and 16(13.8%) using public vehicles. For those who utilised public vehicles, the mean±S.D. expenditure was 8.4 ± 2.2 Birr/person. For those individuals accompanying the ill, the mean±S.D. expenditure for transport and living expenses per person for the entire trip was 36.36±57.4 Birr/ person(the expenditure varied from 1 to 230 Birr/person).

Regarding the payment to the health institutions, 86(74.1%) paid for all services, 15(12.9%) received free medical examination and whatever drugs were available in the health institution, 8(6.9%) received free services for all components, and 7(6.0%) were examined at no charge but were given prescription to buy medications. Ninety six (82.8%) of the ill were treated as outpatients, while 20(17.2%) were admitted. The mean ± S.D. payment for those who paid for medical examination and/or the whole treatment, including drugs, was 12.1± 12.2 Birr/person .

One hundred eleven (95.7%) of the patients reported taking the complete course of the medications prescribed to them, whereas 5(4.3%) did not take all the prescribed medications, either due to lack of money or due to the unavailability of the medication in drug shops or health institutions. Among the 116 ill patients who visited a health institution, 95(81.9%) were satisfied with the

medical service they received, 17(14.7%) were not satisfied, and 4(3.4%) had no opinion.

5.1.5. **HEALTH SERVICE AFFORDABILITY:**

Out of the 531 households surveyed, responses regarding health service afford ability were as follows: 270(50.8%) could pay only in good harvest years; 202(38.0%) cannot pay for the needed health services, even in good harvest years; 26(4.9%) cannot pay this year because their assets have been used to buy food items ; 23(4.3%) cannot pay for health services this year since the illnesses are too frequent this year due to the food shortage; and 10(1.9%) gave other reasons for not being able to pay.

Views of the 531 surveyed households on the cost of government-provided medical care were: 326 (61.4%) households said it should be free for the poor and with payment for the rich at times of food crisis; 92(17.3%) said free for all; 72(13.6%) said decrease the payment for all; 28(5.3%) said payment for all; and 13(2.4%) said that at times of food crisis, special medical centres should be established for victims.

5.1.6. **HEALTH COPING STRATEGIES DURING FOOD SHORTAGE:**

One hundred forty-eight households provided information on their sources of income to pay for health services: 72(48.6%) got the money from the sale of animals and animal products; 32(21.6%) from the sale of grains; 14(9.5%) from loan; 11(7.4%) from savings; 5(3.4%) from the sale of household utensils; and the rest, 14(9.5%) from the sale of fire-wood, by working in food-for-work or cash-for-work programmes, remittances, and petty trading.

Four hundred fifty four(85.5%) of the 531 households in the study were getting food aid this year, 60(11.3%) were not, and 17(3.2%) gave no response. Eighty five(16.0%) of the 531 households in the study reported that at least one family member had migrated this year due to the food shortage, out of whom

70(82.4%) migrated outside of their *Woreda*. The most frequently given reason for migration was in search of a job 74(87.1%); the rest, 11(12.9%) migrated either to beg or to go to a relative to get assistance.

5.1.7. HOUSEHOLD ECONOMY:

For the 531 households enrolled in the study, it was reported that in June-July 1997, 140(26.4%) households had no plough ox, whereas by June-July 1998, the number had reached 237(44.6%); the mean \pm S.D. number of oxen owned decreased from 1.19 \pm 0.95 in 1997 to 0.68 \pm 0.7 in 1998.

For cows, in June-July 1997, 206(38.8%) households owned cows, whereas in June-July 1998, the number of households without cows was 257(48.4%); the mean \pm S.D. number of cows decreased from 1.22 \pm 1.22 in 1997 to 0.6 \pm 0.47 in 1998.

The same decreasing trend also applied for shoats: in June-July 1997, 232(43.7%) households had no single shoat, whereas in June-July 1998, the number had increased to 330(62.1%).

With regard to pack-animals(i.e., donkeys, horses and mules) in June-July 1997, 375(70.6%) households had no-pack animal; in June-July 1998, it increased to 392(73.8%). The animal ownership status for the two years is shown in Appendix V

Out of the 531 households enrolled in the study, 182(34.3%) produced no teff in 1997 harvest, while in 1998 the number had increased to 209(39.4%) households. The mean \pm S.D. production of teff in 1997 was 2.84 \pm 1.4 quintals, and in 1998 harvest, the mean \pm S.D. production of teff was 1.9 \pm 1.07 quintals.

Again in 1997 harvest, 394(74.2%) of the households produced no wheat, and in 1998 it increased to 434(81.7%). The range was 0-30 quintals in 1997 and 0-7 quintals in 1998. The percentage change of main crops produced is shown in Table 5.

From the 531 sampled households, 382(71.9%) have no sources of additional income besides the income from crop production and animals, while 149(28.1%) do. For the few who had an additional income, it ranges from 10 to 2000 Birr/year.

Almost every household owns land , even if there are differences in the surface of holding: 57(10.7%) own one *timade* (a "timade" is a quarter of a hectare), 175(33.0%) own two *timades* , 171(32.2%) own three *timades*, 74(13.9%) own four *timades*, and 51(9.6%) own five or more *timades*; 3(0.6%) own no land at all.

Table 5. Percentage change in main crops produced between 1997 and 1998 harvest years in quintals(n=531).

Crop production in quintal		1997		1998		Change in percent from 1997 to 1998
		No.	%	No.	%	
1. Teff						
	0	182	34.3	209	39.4	+5.1
	1	44	8.3	161	30.3	+22
	2	74	13.9	103	19.4	+55
	3	231	43.5	58	10.9	-32.6
2. Wheat						
	0	394	74.2	434	81.7	+7.5
	1	29	5.5	46	8.7	+3.1
	2	33	6.2	29	5.5	-0.7
	3	75	14.1	22	4.1	-10
3 Barley						
	0	283	53.3	342	64.4	+11.1
	1	26	4.8	67	12.6	+ 7.9
	2	40	7.5	42	8.0	+ 0.5
	3	182	34.3	80	15.1	-19.2
4. Beans						
	0	385	72.5	342	64.2	- 8.3
	1	36	6.8	67	12.6	+ 5.8
	2	36	6.8	42	7.9	+ 1.2
	3	74	13.9	80	15.1	+ 1.1
5. Peas						
	0	470	88.5	501	94.4	+5.9
	1	21	4.0	23	4.3	+0.4
	2	15	2.8	5	0.9	-1.4
	3	25	4.7	2	0.4	-4.3
6. Maize						
	0	508	95.7	522	98.3	+2.6
	1	9	1.7	6	1.2	-0.5
	2	8	1.5	2	0.4	-1.1
	3	6	1.1	1	0.2	-0.9
7. Oil seeds						
	0	448	84.4	476	89.6	+5.2
	1	63	11.9	50	9.4	-2.5
	2	13	2.4	4	0.8	-1.6
	3	7	1.3	1	0.2	-1.1
Other crops						
	0	353	66.5	376	70.8	+4.3
	1	27	5.1	76	14.3	+9.2
	2	39	7.3	44	8.3	+1.0
	3	112	21.1	35	6.6	-14.5

In the food shortage year, there was no single household who was self-sufficient in food throughout the year: 293(55.2%) had produced enough for 3 months or less, 152(28.6%) for 4-6 months, 37(7.0%) for 7-10 months, and 38(7.2%) had not produced anything; 11(2.1%) did not report. In good harvest years, 279(52.5%) of the households reported being self-sufficient in food throughout the year, 111(20.9%) for 7-10 months, 69(13.0%) for 4-6 months, and 61(11.5%) for 3 months or less; 11(2.1%) households did not respond.

The staple food grains grown are barley, wheat, peas and beans in the *dega* (altitude 2,000 - 3,400 mts) and in the *woyna dega zones* (1,500 - 2,000mts), and teff in the *woyna dega* and *Kola*. In the *Kola* (less than 1,500mts) in addition to teff , sorghum is also grown in some areas. In good harvest years, peas and beans, teff, barley, and wheat are consumed by 75.8%, 69.7%, 34.4%, 16.7% of the households respectively. The other food items are oil seeds (12.0%), maize (0.9%), millet (1.7%), lathyrus (1.7%) of the households. In 1998 food shortage, the pattern of grains consumed showed some differences: millet was consumed by 78.9% of the households, maize by 33.6%, peas and beans by 28.6%, lathyrus by 24.6%, barley by 14.3%, and teff by only 6.2% of the households. Table 6 shows the change in the patterns of consumption of food grains between good harvest years and 1998.

The main reasons given for changing the food grains consumed were as follows: 86.3% because the grain items consumed during food shortage are cheaper to buy at the market; 1.3% because the newly consumed items grow easily with minimal rains and in less fertile soil (specified for lathyrus); 0.4% because the grains are given as food aid; and 12.1% gave a combination of the above reasons.

The annual per capita income of the survey population were found to be 310.40 Birr (US \$ 43.7) in 1998. At the time of the survey 1 US dollar was equivalent to

Table 6- Percentage change in the type of grains consumed between a good harvest year and 1998 food shortage year.

Type of crop	Good harvest year Percentage of households consuming	1998 Percentage of households consuming
Barley	34.4	14.3
Teff	69.7	6.2
Wheat	16.7	2.3
Peas and Bean	75.8	28.6
Oil seeds	12.0	16.4
Maize	0.9	33.6
Millet	1.1	78.9
Lathyrus	1.7	24.6
Other grains	16.2	10.9

5.2. Focus Group Discussions(FGDs)

5.2.1. General views about the current food situation:

Participants in the FGDs thought that the food production of the area has been following a downhill trend for the last 7-10 years. Most families have not recovered from the 1984-85 famine losses. Once a family has lost its plough ox, it is difficult to substitute for that loss since the production is not enough for consumption purposes let alone for selling it. Farmers who have no oxen have to sow with the help of relatives, or give a portion of their farmland in exchange for help which decreases their annual production. In addition, the late, erratic or heavy rains, pests on top of the small and degraded land, have resulted in lower production in the past 7-10 years. Most of the households have been dependent on food aid to fill the gap of the food shortage. The common finding with regard to health care is the use of home care and traditional medicines before going to health institutions, and even after receiving western-style medical care. Appendix 6 shows the community's comparison between the 1984-85 famine and the 1997-98 food shortage situation.

5.2.2 Specific findings by socio-economic group

a) Poor farmers

Most poor farmers stated that they had lost their cattle and assets in the 1984-85 famine and have been unable to restock. Others who had been middle or rich farmers sold their assets year after year due to the chronic nature of the food shortage and entered into poverty's vicious cycle.

The poor are self-sufficient in food in good harvest years for only 3-6 months. The main reasons for this are lack of oxen to plough their land, the small holding and degraded land, pests, and late, erratic and sometimes heavy rains. These factors have reduced the production of the poor households in a chronic way. This year, poor farmers were self-sufficient in food for less than 3 months, meaning a long period of dependency on food aid.

Other means of income include petty trading, but the lack of donkeys to transport grains from market to market, and the lack of seed money are obstacles.

Concerning the health conditions, morbidity, especially among children, has become high. The poor can get free treatment in government health institutions at any time if they produce a poverty certificate from the PA leaders. One problem is that no drugs are available in the health institutions; the poor are usually given a prescription to buy drugs in private drug shops which they cannot afford. The other problem is that if a poor patient is referred to the Zonal hospital, the transportation cost and the expenses for food and accommodation hinders the patient from going to the hospital.

b) Middle farmers

The farmers in this group identified themselves as having been in the rich category before the great famine of 1984-85. They lost most of their assets during the famine and later, due to the recurrent food shortages, they used what they had left and declined to their current status. Those who had been in the middle class in the previous years slid to the poor class in subsequent years; the poor class is swelling year after year.

The middle farmers are self-sufficient in food in good harvest years for only 6-9 months of the year. In the remaining months, the gap is filled by selling small animals, trading, and food aid. This year, the food gap has widened and most can feed themselves for less than 6 months.

The problems with health service utilisation were similar to those of poor group. Selling the only ox or small animals for health care is unthinkable, since selling the ox means starving the whole family. Most prefer dying at home instead of paying for medical care, especially for hospital care which is too expensive for the middle farmers.

c) Rich farmers

Richness and poorness are viewed as being relative terms by the community. They prefer "better-off" rather than "rich", since the rich are not self-sufficient either in food or other necessary services. The better-off are self-sufficient in food for 9-12 months in good harvest years; this year, they could feed their families for less than 6 months.

This year, all groups have been affected by the food shortage due to the unevenness of the rain, the low soil fertility, and pests. The only difference between the better-off and the other groups is that the former have animals to sell. The problem they face is that animal prices are very low and, at times, there is no one to buy them. The other fear is that if they sell, there is no way to replace the animals and they will fall into the poor group. The farmers explained that in the long run, this has an impact on the whole society since the social support mechanism is a means of survival for the poor. In some areas, the community divides whatever amount of food aid is supplied to the PA between all the population groups. The reason is that if the better-off sells what he has he will become poor as well.

Concerning health care at the primary level, the rich can afford to pay, but for the secondary level, they have to sell animals. The selling decision of livestock is made, in most cases, when the family member is critically ill. Such a venture for a marginal farmer pushes him/her into the middle or poor class.

d) Elders

Elders who have no one to support them, and women-headed households are described as "poor within poor". Elders have no energy to plough due to their old age, or do petty trading, and they do not have pension or assets to support themselves. Children in the rural areas substitute for pension during old age. Elders who have no children to look after them are a burden on immediate relatives; at times of prolonged food shortage and famine, they are the first to be neglected and to die. This year, the traditional support mechanism of hosting the elders has been exhausted. As elders say nobody gives a "fist of grain" for a hungry relative.

Health service utilisation for the elderly is unthinkable for two reasons: first, because they do not have the energy to travel to a health institution, and second, because they cannot afford to pay for medications and transport if these are required.

e) Women-headed households

Women who have no son to plough have a double-faceted problem to cultivate their land. Most may not have plough oxen and even if they have they may not have a son to use it to plough. What they usually do is to rent their land for one-third payment ("seso" in Amharic) to the better-off farmers. With the small land holding and generally degraded land of the northern regions, what they get from a third of the produce is not enough to feed them throughout the year.

In other situations, relatives plough for them when they finish working on their own land. However, this comes late in the season for sowing, and it markedly decreases the yield of production.

The markets in the north are too far and the topography of the area is mountainous, and it is difficult for a busy woman to be away from home for more than a day. In addition, women may not have donkeys for packing or the seed money for petty trading.

Health care is considered by them as a need but one which cannot be reached for the same reasons as those mentioned for the poor group.

5.3. INSTITUTIONAL PREPAREDNESS, PREVENTION AND RESPONSE

Ethiopia has a national policy on disaster prevention and management. The policy aims at a "congruence of relief effort and planned development to strengthen the economic fabric of the disaster-prone areas so as to mitigate the

suffering of the affected populations and to enhance their capability to face the challenge of such disasters in the future; the policy also aims at linking relief with long-term development"(45). In addition to this policy the health policy identifies disasters as one of the priority areas of the Ministry of Health(46).

The policy on disaster has been in effect since the 1972-73 famine. At that time, disaster issues were mainly the responsibility of the previous Relief and Rehabilitation Commission(RRC), now named the Disaster Preparedness and Prevention Commission(DPPC). RRC's aim was initially to provide relief to the famine victims and carry out a resettlement programme. Because RRC concentrated mostly on relief activities and it conducted most activities by itself, long-term development and inter-sectorial collaboration between the responsible ministries and organisations were poor. With the aim of strengthening the inter-sectorial collaboration and integrating development with relief, in 1993 the RRC modified its aims and was named Disaster Prevention and Preparedness Commission.

Disaster monitoring in Ethiopia functions through the work of two committees: i) the National Disaster Prevention and Preparedness Committee, chaired by the Prime Minister, and consisting of the responsible ministers and representatives of other relevant bodies; and ii) the National Early Warning Committee, composed of the responsible line ministers and organisations. The DPPC is the secretariat for the two committees.

The National Early Warning Committee(NEWC) reviews the status of rainfall, agriculture, markets, health emergencies, nutritional status monitoring, pests, and early-warning signs of disasters in the country. If there is an imminent disaster in the country, the NEWC passes the evidence to the National Disaster Prevention and Preparedness Committee(NDPPC), which is the decision-maker and can declare disasters and allocate the necessary resources. During non-emergency times, each committee meets three or four times in a year. NEWC and NDPPC equivalents exist at the Regions, Zones, and Woredas, where the head at

each level chairs the two committees. The information flows from Woreda, to Zone, to Region, and finally to the central government.

Concerning inter-sectorial collaboration, every relevant ministry, autonomous organisation, and other state organ designates a nodal officer for the early warning committee. At times of disaster, each ministry or organisation which is concerned with the disaster will be involved directly. In practice, however, there are problems with inter-sectorial collaboration; line ministries play a passive role in disasters, as they consider that the prime responsibility is that of the DPPC. At the regional and the lower Ministry of Health offices, the complaint is that there is a lack of staff trained on disasters. A certain level of confusion was observed during the interviews concerning disaster preparedness, prevention and response issues. Interviews were also conducted with the regional Water and Mineral Resources office; there was the same confusion as to whether disaster issues are part of the office's activities. The other complaint heard was the lack of a specifically assigned budget for disasters.

As to the regional and lower DPPC offices, the food security early warning system is highly organised. However, health as a disaster in food insecure areas was not considered and there was a tendency to pass the responsibility to the Ministry of Health.

Food aid was given at level of 12.5 kgs of food/person/month in those areas declared eligible for food aid, but no health aid was planned for these areas.

6. DISCUSSION

Food insecurity, especially of the chronic type, exists among households who persistently lack the resources either to buy or to produce food. In this study, the groups which were found to be most affected by the current food crisis were the poor, women-headed households, and elders with no one to support them. These findings are consistent with other studies from other countries(8). Dagne (11) found that households' income and food supply are a function of the size and the type of production asset ownership, and the availability of active labour. The poor in the study area are getting poorer year after year due to the recurrent nature of declining crop production, thereby becoming more vulnerable to food crises. When the food crisis is continuous as has been the case in the current study area for the last ten years, households dispose of their productive assets year after year, until finally they reach a situation where they have nothing left to sell (11).

The economic status of households has been declining year after year due to the current drought, pests, small landholding, and the unevenness of the rain, which have all contributed to making the food production very low. The annual per capita income, was found to be 310.4 Birr(US \$ 43.7) which is much lower than the national GNP, estimated in 1994 at US \$ 100 (48). Households in the study area have been filling the food deficit by selling their assets, by trading and by receiving food aid. These findings are consistent with other studies in food crisis situations in India(34), Ethiopia(11), and Mali(47). The major objective of selling assets ,like in this year of food crisis, is nutritional i.e., to protect consumption, and not for health care. Households make repeated calculations before selling their assets; at most times, they prefer to reduce their food consumption rather than selling all their assets. There are several reasons for this. First, they want to preserve the productive animals like ox, for next year's production. Since they do not have a guarantee about what will happen in the next year. Secondly, if they sell what they have this year, the whole family will be impoverished probably forever, and they fear that they will have nothing to give to their children when they get married. Participants indicated that girls from poor families will, at most times, not find husbands because they will not bring

property with them into the marriage. Deverux reported similar findings from other parts of Africa and from India(34).

In this study, we also found that the leaders of the peasant associations(PAs) distribute whatever amount of food aid is received to all household members in the PA, regardless of whether they are better-off or poor. The main reasons for this are: i) even the better-off have no extra property other than the minimum productive assets; ii) the price of animals and other assets in the local market is low and often there is no one to buy; iii) even if the better-off sell what they have it will enable them to buy food grains for only a few months; and iv) if the better-off households become poor, it will affect their immediate family and the poor relatives who get support from the better-off. Therefore, it is a logical measure to share whatever amount of food aid which is given to the PA if the long-term benefit of the community is viewed. Due to this reason those who did not produce anything (the case of 85.5% of the households in this study), or those who have no assets to sell would not get the required amount of food aid, which would directly affect their nutrition. It is clear from the above that health cannot be made a priority for a very good reason: food is the first priority for those who little resources.

The grain items found most in the markets in the study area are cheap ones which are not the habitual food items consumed by the community, but are imported from other areas. Millet, which was consumed by 1.1% of the households in good harvest years, was now consumed by 78.9% of them. Another unusual food item is Lathyrus Sativus (a type of grass-pea) which is cheap and grows in less fertile soil and with low rain; it is being consumed by 24.6% of households at the time of the survey as opposed to 1.7% in good harvest years. This finding is consistent with other studies in food crisis situations; when the common foodstuffs are scarce, there is increased reliance on wild, or so-called "famine foods", which were previously not eaten or which would have normally been prepared differently but which are now consumed out of desperation (7, 11). Reports from Mozambique in 1983-1984 described many deaths in starving

villagers who ate parts of the Cassava plant which contains cyanogenes that break down into cyanide(20). In 1998, the North Wollo DPPC reported cases of spastic paralysis(lathyrism) in the adjacent *woreda* of our study area due to excessive consumption of lathyrus pea (personal communication). Redda found that 26.6% of the population was affected in the 1976-77 famine-caused epidemic of lathyrism in the Dembia and Fogera sub-districts of Gondar, Ethiopia(18). The introduction of lathyrus pea in an area can cause lathyrism if the amount consumed is excessive. New food items which are not produced in the area and imported grains which over take the locally produced ones, can serve as warning signs of a food crisis.

In the three-months recall period, 29.4% of the population in the sampled households were reported ill. There are no comparable studies in the three months recall period, but there are reports in two -weeks recall period which gives some idea to compare. The study in Ethiopia by Asefa et al. found a morbidity rate of 37% in a two-weeks recall period(42). Bitran found a self-reported illness prevalence of 45%, 37%, 35%, 37%, and 11% in El Salvador, the Dominican Republic, Colombia, Peru, and Zaïre, respectively, in a two-weeks recall period(41). The study period in this study is long and may not be able to compare directly, but it gives some idea about others. The findings of the current study are lower than most of the above findings. This may be due to a different definition of illness from one community to another: an individual may report illness if he/she is unable to work, or when the illness is recognisable by another person, others may define illness with a few minutes to hours of discomfort. In this study area the weight for length immediately after harvest was 92.4% (27) and probably at the time of the survey it would be lower, but the community did not report malnutrition as a health problem. The reason may be the communities could not identify chronic malnutrition cases. This may be the other explanation for the low morbidity rate in this study. From the total of 748 individuals reported ill in the -months recall period, 70.1% had not sought any medical help. This finding is similar to findings of 83.0% in El Salvador and 69% in the Dominican Republic of those who perceived themselves to be ill did not seek care; it was only in Zaïre that 89% of the reported ill persons sought

medical care outside their home (41).

In this study, the main reason for not seeking medical care given by the majority of the respondents was lack of money, either for medical expenses or for expenses related to transportation and accommodation. Among those patients who sought medical care, the main reason for choosing a particular health unit was proximity (in 75.9% of the cases). This is in agreement with other studies in least developing countries where demand for a particular type of health care service from a given provider was a function of the quantity of that service. This was in turn, assessed by those who are willing to obtain the service as a function of the characteristics of the individuals (for example perception of need, income, location, insurance coverage), and the characteristics of all providers (for example, price, location and quality)(36, 41). Lack of money is therefore likely to be the main reason for the low health care demand observed in this study population. This finding points to the need for seeing health issues as part of the disaster, and for giving health aid together with the food aid.

Traditional medicine and home care are the first options for medical care in most communities; they are also the major coping mechanisms for the poor and for those who cannot afford to pay for western-style medical care. Unfortunately, most of these practices are not documented and may not be reported by the community. In this study, home care and traditional care were not reported as the first option of care; however, undoubtedly, we cannot neglect their major contribution, either at normal times or during disasters. The other coping mechanisms for covering health care costs as reported by the study subjects were the sale of animals and animal products (48.6% of the responses), the sale of grains (9.5%), loans (7.4%), and from savings (3.4%). However almost half of the households had no single animal, while most of the others had only one or two; the grains produced were not enough for consumption, let alone for selling it for health care; and due to the recurrent nature of the food shortage, households do not have any savings. Based on these findings, it is possible to conclude that the health coping mechanisms of the community in the study area appear to be

exhausted. Other studies have confirmed that at the final stages of food shortage, people's coping mechanisms may be exhausted and distress migrations will result(11,22).

The early warning system and the response of the regional DPPC and of lower line offices is highly organised. If that had not been the case, this food crisis would have turned into a famine. Regarding the inter-sectorial collaboration between ministry offices, starting from the Region down to the *Zone* and *woreda* levels, the structure, organisation and the assumed sharing of responsibility is well-designed. However, in actual practice, it was found that there is the problem of disasters being viewed as everyone's responsibility. The interviewed ministry offices assumed that it is the responsibility of the DPPC and they played a passive role; yet, the DPPC mostly concentrates on food security and transfers the health issues to the health offices. While economic constraints may be a major hindrance to including health aid in the food aid package, the lack of clear assignment of responsibilities between the DPPC and the health offices may be an important reason why health aid is not included along with the food aid.

7.0. STRENGTHS AND WEAKNESSES OF THE STUDY

7.1. Strengths

- The study was both community-based and institution-based.
- The study used probability sampling technique to minimize selection bias.
- The study used qualitative and quantitative data collection techniques.

7.2. Weaknesses

- There is a lack of comparative studies carried out in food secure areas.
- As with any indicator of socio-economic status, the respondents may under-report their actual assets so as to ensure being eligible for continued food aid, or to minimize taxation.
- Using of the verbal report of respondents to study the morbidity burden may under mined the magnitude of the problem.

8. CONCLUSIONS AND RECOMMENDATIONS

8.1. Conclusions

A number of conclusions can be made, given the study findings:

1. The morbidity rate seen in this study is high: 29.4% of the surveyed population were reported sick in the three-months recall period.
2. The health service utilisation is very low; this is due to the lack of money to cover the costs of medical care and/or the transportation and accommodation costs.
3. The main source of income to pay for western-style health care was from the sale of animals and animal products. However, the majority of households have no animals, and even those who have a few, fear that the sale of animals will impoverish the entire household.
4. In the study area, the food shortage is severe and the majority of the households are living on food aid; had it not been for the distribution of food aid, a famine would probably have occurred.
5. Food items which are new to the area are being used in this time of food shortage. Even if Lathyrism was not found in this study, an excess consumption of lathyrus is of concern if people consumes it alone for a long period as a main diet..
6. The Regional, Zonal and *Woreda* DPPC offices have well-organised early warning systems and response plans. The inter-sectorial collaboration is a good strategy to manage disasters, but the ministry offices, whether at the Region or Zone or *Woreda* levels, have no trained man-power and no budget allocated for disasters. Probably this may be one of the reasons for the weak intersectorial collaboration.

Based on the above findings, the following recommendations are made:-

8.2. Recommendations-

The long-term solution for famine/food shortages is development. However, in the interim, the following recommendations can help to manage the health aspects of disasters:

1. Health aid should be part of the food aid package in a community declared eligible for food assistance.
2. Training of staff on disasters at the Regional, Zonal, and Woreda levels of the health, DPPC, and Water and Mineral Resources offices is necessary to strengthen the inter-sectorial collaboration and disaster management.
4. In food crisis situations, newly consumed grains which are a health hazard, like lathyrism, due to their improper use should be identified and education given on their effects, and on how to prepare them and how much to consume. If it is possible, less toxic species of that crop can be developed and distributed in the area.
5. Special attention should be given to the most vulnerable groups of the community who are affected first in food shortage years, namely the poor, women-headed households and the elderly.
6. The large supply of new grains which are not produced in the area onto the market, and consumption of new grains by households, as opposed to their usual diets, should serve as an early warning indicator of food shortage in any area.
7. Similar studies should be conducted in food insecure and food secure areas, and the health problems, and their short-term and long-term effects on the population should be studied.

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Appendix II. HOUSEHOLD SURVEY QUESTIONNAIRE

I. MAJOR HEALTH PROBLEMS, HEALTH CARE DEMAND AND EXPENDITURE

1. IDENTIFICATION OF THE HOUSEHOLD

1.1 Household Head

1= Male 2= Female

1.2 Respondent

1= Household Head 2= Spouse 3= Other(Specify) _____

1.3 Age _____

1.4 Religion 1= Christian 2= Muslim 3= others

1.5 Marital Status

1. Never married 2. Currently married
3. Divorced 4. Separated 4. Widowed/widower

1.6 Educational status

1. illiterate 2. able to read and write
3. 1-6 grade 4. 7-8 grade 5. 9-12 grade
6. 12 + grade

1.7 Address

PA _____

Woreda _____

Code of HH _____

Codes

02= RELATION TO THE HEAD OF HOUSEHOLD 04= AGE 05 = Sex 06=Marital Status
 1=HH head of household In complete years 1= Male 2= Female 1=MM Monogamous marriage
 2= SP Spouse of HH 2=PM Polygamous marrige
 3= SD Son or Daughter of HH 3= Widow
 4= FM Father or Mother of HH 4=SD separated or divorced
 5= BS Brother or Sister of the husbands or wives 5=SP single
 6= OR other relative of HH, their wives or husbands 6= OT (others) specify _____
 7= DS Domestic servant 09= PRESENT DURING AT LEAST 3 OF THE PAST 12 MONTHS
 8= NR No relation 1=Yes 2= No

10 HEALTH CONDITION IN PAST MONTH 08= Level of education
 1=Good Health 1= Illiterate 2= read and write
 2= Was ill once 3= 1-6 grade 4= 7-8 grade
 3= Was ill twice 5= 9=12 grade 6= 12+
 4= Chronic illness
 5=Disabled

11. Child completely vaccinated
 1= Yes 2= No

12. If not Why ?

1= The service was not available
 2= The vaccination site is too far
 3= The vaccination time was not convenient
 4= Fearing the side effects
 5= Other(specify) _____

3. Table-2 Description of illness in the past three months

01	02	03	04	05	06	07	08	09
Code of the sick	Symptoms of the illness	Did the illness prevent from normal activities ?	Days of work loss	How serious was the illness?	Type of treatment given	If no treatment Why ?	Current Condition of the sick	Income per person in a year(Above 15 and below 65)

01- Enter the code of the patient registered in Table-1
02= Symptoms of the illness

- 1 = Fever
- 2 = Headache
- 3 = Vomiting
- 4= Diarrhoea
- 5 = Eye and skin diseases
- 6 = Respiratory Diseases
- 7= Injury
- 8= Malnutrition
- 9= Urinary Diseases
- 10= Joint Pain
- 11= Abdominal Diseases
- 13 = OT Other_____2= No treatment for the illness

03. Did the illness prevent from continuing normal activities ?
1= Yes 2= No

05. How serious was the illness
1= NS Not Serious
2= S Serious

06. Type of treatment sought
1 = NT No treatment
2 = H Healer
3 = PH Purchased With out prescription
4= HI Health institution

07. If no treatment why ?
08. Current condition of the ill?
1= The illness was not taken as serious
2= No treatment for the illness
3= Not enough money
4= The health institutions are too far and no one to carry the sick
5= treatment is ineffective for this illness

04. Total days of work loss including the accompanied persons

1= Healed
2= Still suffering
3= Dead
4= Unknown (left the area)

4. TREATMENT AT HEALTH INSTITUTION

4.1. In the course of the last three months, have you or any household member visited any health institution ?

1= Yes 2= No (Go to 5.0)

4.2 How many times ?

4.3 Why did you seek care in this place ?

- 1= It was accessible(nearby)
- 2= It was not expensive
- 3= It was not too crowded
- 4= I was referred from other units
- 5= All other means were attempted and failed
- 6= The necessary medicines were available there
- 7= It had highly qualified health workers
- 8=The service is Free
- 9 = Other reason (specify)_____

4.4 How long does it take to get the health institution from your residency ?

_____ Hours

4.5 What means of transportation was used to transport the patient ?

- 1= On foot
- 2= On Horse/ Mule
- 3= Carried by villagers
- 4= Vehicle
- 5= Other(specify)_____

4.6 How many persons over the age of 7 years accompanied the sick person ?

_____ Persons

4.7 For how many days each person accompanying the sick stay outside of their home ?

- 1. _____ persons _____ days
- 2. _____ persons _____ days
- 3. _____ persons _____ days

4.8 If a vehicle was used, how much was paid ? (Round trip)

4.9 What was the mode of payment for the service rendered at the health institution ?

1= Free

2= Paid for consultation and received prescription for medication to be bought in a pharmacy.

3= Free for the consultation and for supplies available in the health institution. The rest was bought at the local pharmacy.

4= Free for the surgical/delivery services.

- 5= Paid for all services
 6= Other(specify)_____

4.10. Was the patient admitted or treated as an outpatient ?

- 1= Admitted
 2= Outpatient
 3= First as an outpatient and then admitted
 4= First admitted and then as an outpatient

4.11. If the patient was admitted for how many days ?

_____ days

4.12 If you paid for the consultation, how much ?

_____ Birr

4.13 If you paid for the drugs, how much ?

_____ Birr

4.14 Did you buy all the drugs prescribed ?

- 1= Yes
 2= Partially since no money
 3= Partially since some of the drugs were not available locally.
 4= None were bought due to lack of money
 5= Other(specify)_____

4.15 If the drugs and consultation were free, what do you think is the reason ?

- 1= Because I produced a paper from the PA/Kebele
 2= Health service has been declared free due to the current food shortage.
 3= Other(specify)_____

4.16 Were you satisfied with the care and treatment provided at the health institution ?

- 1= Not satisfied at all
 2= Satisfied
 3= Very satisfied

4.17 Did the patient finish the treatment as prescribed ?

- 1= Yes 2= No

4.18 If No, for what reasons ?

- 1= The patient did not improve
- 2= Treatment was not available
- 3= Lack of money
- 4= The patient improved
- 5= Other(specify)_____

4.19 How much money was spent on the person(s) accompanying the sick ?

_____Birr

4.20. If the person(s) accompanying the sick stayed in a relative's house for how long was the stay ?

_____ days.

5.0 HEALTH SERVICE AFFORDABILITY (FOR ALL HOUSE HOLDS IN THE STUDY)

5.1 Do you have the same money or asset available to spend for health care as in a good harvest year?

- 1= Yes, I was poor even before and I could not afford it
- 2= I was poor but I could afford partial payment
- 3= I could afford to pay
- 4= During this food shortage period, illnesses are too frequent and most family members are affected so that I can not afford to pay.
- 5= All the money and assets are invested on food, therefore I can not afford to pay.

5.2 What mode of payment for services should the government provide at this food shortage time ?

- 1= Free for the poor and partially free for the rich
- 2= Payment for all
- 3= Free for all
- 4= Reduce the cost to all
- 5= Establish special centres until the end of this food shortage
- 6= Other (specify)_____

6.0 HEALTH COPING STRATEGIES OF PEOPLE DURING FOOD SHORTAGE

(For those who did not visit a health institution, go to 6.5)

6.1. Where did you get the money for the treatment ?

1 = Household savings

2= Sale of animals and/or products

3= Sale of agricultural product

4. Sale of household assets

5= Gift from a person outside of the household

6= Loan from a person outside of the household

7= Remittance from out migrated family member and or daily labour

8= Contribution from traditional institutions like "Ider" and "Ikub".

9= Sale of fire wood selling

10= Cash for work

11= Petty trading

12= Sale of the food aid ration

13. Sale of local drinks

14= Other (specify)_____

6.2 If you received a loan, who was the source of lending for your health care needs ?

1= Relatives

2= Friends

3=Money lenders

4= Merchants

5= Rich farmers

6= Other (specify)_____

6.3 If you borrowed money for health care in the last three months, what was the condition of borrowing ?

1= Interest free

2= With interest

3= Other (specify)_____

6.4 What support is provided to your Household by the government/NGOs during this time ?

1=None

2= Relief food assistance

3= Free health care

4= Seeds and farm implements

5= Restocking of the lost cattle

6= plough oxen

7= Food for work/cash for work

8= Other (specify)_____

6.5 Has any household member migrated to other areas during this past year ?

1 = Yes

2= No (go to 7.0)

6.6 If "Yes" where has he/she migrated to ?

1 = In the same Woreda

2= Other (specify)_____

6.7 What was the reason for migration ?

1= In search of job

2= To beg

3= To live with a well-to- do relative

4= To go to a relief camp

6= In search of grazing and water for animals

7= Other (specify)_____

6.9 Who migrated from household members listed in Table 1 ?

8.0 ECONOMIC STATUS OF HOUSEHOLDS

8.1 How many animals do your household own(complete Table 3) ?

Table 3- Animal holding situation

Type of animals				
	Number during--- good harvest year of	Total price --- year this the same month in ---(Birr)	<u>Current number of animals</u>	<u>Price at this month</u>
Draught oxen				
Breeding cattle				
Small animals (sheep & Goat)				
Transport animals (Donkey, Mule, Horse)				
Chicken				

8.2 How many quintals of crop have you produced (complete Table 4)?

Table 4- Comparison of crop production between the last good harvest season and this year harvest.

Crop type	Produced in quintals			
	Last good harvest year of-----	Price in the good harvest year of ---this the same month (Birr)	1997/1998 harvest	Current month price (Birr)
1. Teff				
2. Maize				
3. Wheat				
4. Barley				
5. Beans				
6. Peas				
7. Oil seeds				
8. others				

8.3 If there are additional source of income for the household how much is estimated for this year ? (e.g daily labour, sale of animal products, remittance..etc)

_____ Birr

8.4 How many "Timades" of land does your household own ?

_____ Timades

8.5 During normal harvests for which months of the year is the household self-sufficient in food supply ?

1= October- May

2= November -May

3= October- April

- 4= November- April
- 5= December- April
- 6= Sufficient throughout the year
- 7= other (specify)_____

8.6 This year, for how long were you self sufficient ?

- 1= Less than 2 months
- 2= 2 months
- 3= 3 months
- 4=4month
- 5= I can feed my family throughout the year
- 6= Other (specify)_____

8.7 How much food relief do you receive per month per person ?

- 1= Cereals ____ Kgs
- 2= Pulses _____ Kgs
- 3= Oil _____Kgs
- 4= Sugar _____Kgs

8.8 What were the foods consumed during normal harvest years ?

8.9 What type of foods (wild or domesticated) are being consumed during this harvest year ?

8.10 If there are change in the food items consumed during this year compared to good harvest years, what are the reasons for these changes ?

- 1= The price of the new items is lower
- 2= The new items can be produced with the minimal rain
- 3= The new items are given as a relief food
- 4= Other (specify)_____

Appendix III. GUIDING QUESTIONS FOR THE FOCUS GROUP DISCUSSION

1. Can you tell me the trend of food production of the last ten years ?
2. What do you think are the causes of food insecurity/ low production for your area ?
3. What solutions can you think of in order to become food-self sufficient ?
4. How is the overall health condition of your area and what do you think are the major problems ? (Tell seasonal and year variations for the good harvest year and this year)
5. How is the health service situation for your area ?
6. How you cope with the health problems during food shortage years ?
7. Do you participate with the government or other agencies in information collection and decision-making concerning health problems of your area ?
8. Do you think that diseases and deaths have increased during this year ? compare to what ? Who is affected more ?
9. How was the market situation for cattle, shoats, and grain at this year's harvest, and how is it at this time ? compare with the good harvest year.

Appendix IV. HEALTH PREPAREDNESS QUESTIONS

1. Is there a national health policy regarding emergency /disaster preparedness and relief including famine ?
Is the policy currently being implemented ? _____
2. Is there a person in MOH and DDPC at each level in charge of promoting, developing and coordinating health emergency preparedness activities ?

3. What coordination mechanisms for emergency preparedness activities exist between the health sector, DPPC, Water Resources Ministry, NGOS, UN and others?
4. Are there operational plans for health response to natural, man made or other emergencies (famine as one of disasters)?
5. What health/ nutritional surveillance measures have been taken for the early detection and response to health emergencies in famine?
6. What preparedness steps have been taken by the environmental health sectors to respond to emergencies and disasters?
7. Have facilities or areas been identified or designated as temporary settlements in the event of disasters ? What provisions have been made for health care (such as generalized or special health services, staffing, water and sanitation etc) ?
8. What types of activities are planned to facilitate a rapid health response? (communications, emergency budget, access to transport or emergency medical supply) ?
9. How much funding have you received for the health emergency care for areas in food shortage ?
10. Is there a mechanism for updating the information on the key human and material resources needed for an emergency health response?
11. What opportunities exist for testing the effectiveness of emergency plans for example through simulation exercises, dumb and etc?.....
12. How many kilograms of food are distributed per person per month? (for DPPC)
13. How do you select people who are eligible for food supply?

HEALTH INSTITUTIONS ASSESSMENT

1. What is the distribution of facilities in terms of the number of beds, Ambulance service etc ?
2. What are the number of staffs by type?
3. What are the major health problems identified during this famine (major illnesses, number of admission)?

4. What special preparedness measures are taken for areas in food shortage in terms of staffing, additional fund, patient accepting ... etc?
5. What mechanisms exist, for reporting ?
6. What gaps exist for example in terms of technical expertise, material supplies, emergency logistics, communication, managerial skill?
7. Do you think that the health service delivery system needs special arrangement during food shortage/famines ?
8. What is the immunization coverage by type of antigen?
9. What special arrangements are made to manage the increased number of malnourished children for example, are there vitamins and minerals supplies, in addition to feeding ?

Appendix VI- Comparison of the 1984-85 famine with the 1997-98 food shortage by the community.

	1984-85	1997-98
1. Areas affected	Highland areas were less affected.	All areas are affected
2. Grain availability in the market.	It was available in the market but we had no money.	We have no money and there are no grains. Grains in the market are sold as "spices" in small quantities.
3. Assets available	Most families had assets to support them for some time.	The assets have been exhausted because of the recurrent nature of the food shortage. Most people are dependent on food aid.
4. Deaths	The deaths mostly occurred in July and August 1984.	No deaths have yet occurred, but if food aid does not arrive, it will happen in the future.
5. Migration	Migration to the highland and other areas was high.	Migration is segmental i.e. only the very poor are starting to migrate. If the food aid does not arrive soon, there will be mass migration in the near future.
6. Populations affected	There were rich farmers who supported the poor, especially in the highland areas.	From year to year, the population is becoming poorer; the poor and rich are affected homogenously.
7. Social support mechanisms	Social support mechanisms were better.	The social support mechanisms are weak.

Appendix VII - Change in animal ownership between years of 1997 and 1998(N=531).

Animal ownership	1997		1998		Change in Percent (1997-98)
	No.	%	No.	%	
Oxen					
0	140	26.4	237	44.6	+18.2
1	195	36.7	225	42.4	+5.7
2	162	30.5	67	12.6	-17.9
³ 3	34	6.4	2	0.4	-6.0
Cows					
0	206	38.8	257	48.4	+9.6
1	161	30.3	221	41.6	+11.3
2	91	17.1	48	9	-8.1
3	52	9.8	5	0.9	-8.9
³ 4	21	4.0	0	0	-4.0
Pack animals					
0	375	70.6	392	73.8	+3.2
1	84	15.8	107	20.2	+4.4
2	37	7	26	4.9	-2.1
3	23	4.3	6	1.1	-3.2
³ 4	12	2.3	0	0	-2.3
Chicken					
0	201	37.9	180	33.9	-4
1	34	6.4	120	22.6	+16.2
2	100	18.8	121	22.8	+4
3	90	16.9	64	12.1	-4.8
³ 4	106	20.0	46	8.7	-11.3
Shoats					
0	232	43.7	330	62.1	+18.3
1	14	2.6	42	7.9	+5.3
2	17	3.2	47	8.9	+5.7
³ 3	268	50.5	112	21.1	-29.4