ACCESSIBILITY AND USE OF NUTRITION INFORMATION IN ADDRESSING UNDERFIVE CHILD MALNUTRITION IN MOROGORO URBAN, TANZANIA

By
Wanyenda Leonard Chilimo

A Dissertation submitted in partial fulfillment of the requirements for the degree of Master of Arts (Information Studies) of the University of Dar Es Salaam

University of Dar Es Salaam
July, 2002

CERTIFICATION

The undersigned certifies that she has read and hereby recommends for acceptance by the University of Dar es Salaam a dissertation titled: *Accessibility and use of nutrition information in addressing under-five child malnutrition in Morogoro urban,* in partial fulfillment of the requirements for the degree of Master of Arts (Information studies).

.....

Prof. J. Nawe

(Supervisor)

Date 23.7.2002

ACKNOWLEDGEMENTS

This study would not have been possible without the assistance that I got from various organizations and individuals.

I would like to extend my sincere gratitude to the German Academic Exchange Services (DAAD) for financing my studies and my employer Sokoine University of Agriculture for granting me the study leave.

I owe my profound gratitude to my supervisor, Prof. J. Nawe, for her tireless guidance, patience, constructive criticism, moral support and understanding from the initial stage of developing the proposal to the production of this dissertation.

My appreciation also goes to the MCH coordinators and other staff of the MCH clinics for providing me the data. Without their help and support, data collection would not have been possible.

My sincere appreciation is also extended to my sisters and brother Deborah, Edna, Frida and Keja for their prayers, moral support, and a conducive social environment that they offered during the whole period of my study and my brother in law Anthony for his guidance and assistance in data analysis.

I am also grateful to my collegues and classmates and all those who in one way or another made the completion of this work possible. May God bless them all.

Lastly but not the least, I want to thank the almighty God for giving me the strength and the perseverance needed to complete this work.

ABSTRACT

This study was undertaken to examine the access to and use of nutrition information in addressing the problem of malnutrition in Morogoro urban district Tanzania. The study investigated the Maternal and Child Health clinics (MCH) nutrition information delivery systems; variables that determine accessibility and use of information; extent of the use of nutrition information in addressing malnutrition and the relationship between the information that mothers have and the nutritional status of their children.

Survey research method was used for data collection whereby questionnaires and face-to-face interviews were used for collecting data.

The study found that although the MCH health and nutrition education sessions are an important aspect in disseminating nutrition information to mothers, these sessions are seldom conducted and the attendance of mothers to these sessions is poor; awareness of mothers concerning different nutritional aspects is still low due to lack of information; and education is the most important variable that determines use and access to nutrition information.

The study concludes that: Access to reliable nutritional information is an important aspect in addressing child malnutrition and therefore efforts should be made to ensure that mothers have access to adequate and reliable nutritional information.

The study recommends the establishment of information units within the MCH clinics; frequent organization of nutrition seminars for mothers; and that nutrition information providers in MCH clinics should pay more attention to the less educated women.

TABLE OF CONTENTS

CHAPTER THREE - METHODOLOGY

CHAPTER TWO - LITERATURE REVIEW

CHAPTER FOUR – PRESENTATION AND DISCUSSION OF FINDINGS

CHAPTER FIVE - CONCLUSIONS AND RECOMMENDATIONS

LIST OF TABLES

LIST OF ABBREVIATIONS

CSPD	-	Child Survival and Development Project
FAO	-	Food and Agricultural Organization
MCH	-	Maternal and Child Health Clinic
MCHA	-	Maternal and Child Health Aid
NCHS	-	National Center for Health Statistics
ORS	-	Oral Rehydration Salts/Solution
PEM	-	Protein Energy Malnutrition
PAR	-	Participatory Action Research
PRICOR	-	Primary Health Care Operation Research Project
WHO	-	World Health Organization
SD	-	Standard Deviation
SPSS	-	Statistical Package for Social Sciences
UNDP	-	United Nations Development Programme
UNICEF	-	United Nations International Children's Emergency Fund
URT	-	United Republic of Tanzania
TV	-	Television

CHAPTER ONE

INTRODUCTION TO THE STUDY

1.1 Introduction

Malnutrition is still one of the major community health problems in Tanzania today, despite the significant improvement in the provision and accessibility of health services (Dal Lago et al, 1988). According to Carol (1998) over 50% of about 12 million deaths of children under five years of age each year in developing countries are attributed to malnutrition while over 200 million children under the age of five are malnourished. Malnutrition is associated with more than half of all deaths of children worldwide (Smith and Haddad, 2000). In Tanzania 29% of children under the age of five are said to be moderately or severely malnourished (UNICEF, 1996). A reproductive and child health survey conducted by the Tanzania Bureau of statistics in 1999 indicates that for the past five years, the level of stunting and underweight among children in Tanzania has remained unchanged at around 44% and 31% for rural and urban areas respectively. Tanzania is estimated to have a child mortality rate of 93 per 1000 live birth (UNDP 1998). In Morogoro urban it was discovered that the most prevalent forms of malnutrition are underweight 80.1%, kwashiokor 10.2% and marasmus 9.1% (Ishengoma, 1992).

The problem of malnutrition is very wide and its causes can be explained in the context of many different sectors and their associated activities such as food, medical reasons, ignorance, economy and poor community development and mobilization. Addressing the problem of the under-five malnutrition requires concerted and coordinated efforts of all these different sectors. Therefore, the type of intervention

that facilitates inter-sectoral action in addressing malnutrition is likely to be more effective (Kavishe, 1993).

Malnutrition causes a great deal of human suffering, and it is a violation of child's human rights. A child with malnutrition falls ill more often. People who survive a malnourished childhood are less productive physically and intellectually and suffer from more chronic illness and disability (Smith and Haddad, 2000: 5).

Anan (1998: 2), in the foreword to the state of the world's children says that:

> This human suffering and waste happens because of illness, much of it preventable; because breast-feeding is stopped too early; because children's nutritional needs are not sufficiently understood; and because long-entrenched prejudices imprison women and children in poverty.

Besides mortality, some of the childhood physical and mental undergrowth from nutrition deficiency cannot be corrected in later years even when food becomes available (Nyange, 2001). Child nutrition has important implications for the quality of future labor force. So eradicating malnutrition remains a tremendous public policy challenge and efforts should be made to find out the kind of intervention that will have the greatest impact on reducing child malnutrition.

Different methods/approaches have been devised to deal with this problem. Such efforts include; increasing food production and availability increase in women education, fortifying staple foods with essential nutrients, and also enhancing the spread of practical information concerning different nutritional aspects (Carol, 1998). But Smith and Haddad (2000) observe that alleviating the problem of malnutrition requires more than just increasing availability of food. People need to have appropriate information concerning the available food resources. Consequently, in

addressing this problem, communication technologies which aim at providing information have been used alongside food supplements, oral rehydration salts, inoculation, rehabilitation centres and home gardening as major ingredients in health and nutrition programmes (Royal, 1983).

Availability of appropriate nutritional information to mothers can have a significant role to play in alleviating this problem. According to Friedrich (1997), nutritional education component, which aims at improving knowledge, attitude and practices (in other words information) was more successful in alleviating this problem than the activities that aimed at increasing food availability. Regular surveillance of growth, early management of childhood diseases and health education will decrease the level of malnutrition in a community (Adie et al, 1985). Chowdhury (2000) also observes that a major element in the fight against child malnutrition is the information available to the household, especially the mother. Therefore, there is a need to ensure that women and families in general have access to nutrition information and are in a position to use that information properly in order for them to be able to address this problem effectively, especially at the household level.

1.2 Background to the Problem

The study concentrated on the role of nutrition information in addressing under-five child malnutrition as one of the strategies in addressing this problem. Many authors (Pelletier, 1995; Kavishe, 1993; Chowdhury, 2000; Friedrich, 1997) have cited the role that nutrition information can play in addressing malnutrition. The success of

this strategy in addressing under-five child malnutrition depends to a large extent, on the availability, use and effective functioning of information infrastructures.

Information infrastructure such as the communication channels, delivery systems and access points needed for processing and use of information are very important aspects of any information delivery activity (Kiondo, 1998). But these alone cannot guarantee accessibility and use of information if users of that information are not information literate. Users need to be able to search, and use information effectively.

This study covered the urban population only. This is because the nutritional condition of a population and the cause of the problem depends on, among other things, the environmental characteristics of the community (Monteiro and Gross 1989). Whereas an urban society depends on a higher level of economic diversification, a rural society depends mainly on agriculture. Nutritional status of a rural community often suffers from seasonal climatic fluctuations but that of an urban population is less influenced by such changes because of its economic diversity. Therefore, any nutrition intervention should take this into consideration and because of this the nutritional information needs of these two categories of people will also be different.

1.3 Statement of the Problem

The role of appropriate information in addressing the problem of malnutrition in Tanzania has been underestimated (Masawe, 1994: 4). There is a general limited accessibility and use of appropriate nutritional information in addressing this

problem. It was also observed that the awareness of malnutrition on the part of mothers and the Maternal and Child Health (MCH) clinics' staff and the general public is poor mainly due to lack of information (Dal Lago et al, 1988). Because of lack of nutritional information the nutritional needs of children are not adequately known which result in inadequate feeding and insufficient care to children and therefore they become malnourished.

Different approaches have been used to address the problem of malnutrition, but the role that appropriate nutrition information can play in addressing child malnutrition at the individual, community and national level has not been adequately exploited. Among different strategies that have been used to combat this problem in developing countries is women education (Smith and Haddad, 2000). Increasing the education of women seems to improve the use of relevant information at the household level but only after time lags (Kavishe 1993). In addition, in Tanzania, for the past 15 years literacy rate has been decreasing from 90% in 1986 to 67.4% in 2001. In rural areas of Tanzania where about 80% of the population live, the percentage of women who are literate is only 54.5% of the total women population (Bhalalusesa, 2000 and URT, 2001). In this context, knowledge of the role of information is essential. This study assumed that information will enable even those women with minimum level of education or none at all, to understand some of the nutritional practices that can enhance the nutritional status of their children, provided the relevant information is repacked in a format that they can understand. The use of information at all levels will help to formulate strategies that will provide a preventive approach to the problem of malnutrition. For instance, access to real time information by policy

makers can enhance the quality of their decision making power and in case of mothers, it can improve the quality of care to their children and can ultimately address the problem of malnutrition.

1.4 Purpose of the Study

The purpose of the study was to investigate accessibility and use of nutritional information by mothers who attend MCH services in addressing the problem of malnutrition. The study sought to determine variables that influence the accessibility and use of nutritional information by mothers. This was to provide the necessary information to the information providers to design strategies that will help mothers to have more access to nutritional information and be able to use it in order to improve the well being of their families.

The study examined accessibility and use of nutritional information by examining the information delivery systems and the communication channels that are used by MCH clinics and by investigating the kind of nutritional information that mothers have concerning different nutritional aspects and how this knowledge is reflected in the nutritional status of their children. Knowledge on the extent of awareness of mothers on different nutritional aspects could help in identifying other intervening factors/barriers that either hinder/promotes women's effective use of information they are aware of. The information delivery systems and the communication channels that are used in MCH clinics and their source of information were studied with an ultimate aim of determining their potential weaknesses/strengths in eliminating malnutrition.

1.5 Objectives

1.5.1 General objective

To determine the accessibility and use of nutrition information in addressing under-five child malnutrition in Morogoro urban.

1.5.2 Specific objectives

- To identify the sources of nutrition information and the delivery systems / communication channels that are used to provide nutritional information to mothers in MCH clinics.
- To determine the extent of the use of information in dealing with the malnutrition problem by MCH clinics staff and mothers;
- To determine the relationship between the kind of nutrition information that mothers have and the nutritional status of their children;
- To examine variables that determine use and accessibility of nutrition information; and
- To recommend ways in which information can be effectively used in combating child malnutrition.

1.6 Research Questions

1. What are the sources of nutrition information and its delivery systems/communication channels that are used to deliver nutrition information to mothers in MCH clinics?
2. To what extent are both mothers and M.H.C staff using the information in dealing with the malnutrition problem?

3. Is there any relationship between the kind of nutritional information mothers have and the nutritional status of their children?
4. What are the variables that determine accessibility and use of nutritional information?

1.7 Significance of the Study

Successful performance of any activity requires adequate, accurate and timely information, especially nowadays when information and information technology are very essential tools for social, political and economic development of any nation. The realization of the role and contribution of information in alleviating malnutrition will encourage the use of more systematic ways of handling that information. Information could help community workers and policy makers to formulate policies/programs that can be most appropriate in dealing with the malnutrition problem.

1.8 Operational Definitions

1.8.1 Malnutrition

The term malnutrition means bad nutrition, which can be over nutrition or under nutrition. In this study, malnutrition was used to mean under nutrition as observed in children below the age of five years. The study included different forms of malnutrition such as protein energy malnutrition (PEM) for example marasmus and kwashiorkor; stunting, underweight and micro nutrient deficiencies.

1.8.2 MCH clinics

M.C.H. stands for Mother and Child Health clinics. These are the clinics that provide postnatal and ante natal care to mothers. They monitor growth of children, immunisation services, family planning and other relevant education programmes to mothers.

1.8.3 Nutrition information

The kind of information that helps mothers to take good care of their children and hence maintain good nutrition status of their children and their families.

1.8.4 Child

For the sake of this research, a child is considered to be any one from infancy to five years of age.

1.9 Scope and Limitations of the Study

The study was conducted in Morogoro urban district. The findings of this study may therefore neither be generalized to other regions where the performance of MCH clinics in providing nutrition information may be different nor to places where the awareness of mothers concerning different nutritional aspects may be different and where mothers' accessibility to the sources of information may be different.

The study involved only those mothers/care takers with children who were only below five years of age and who attend MCH clinics.

Due to the nature of the study, some mothers with children who were malnourished felt offended to participate in the study. This hindered the availability of some of the information.

The questionnaires for this study were translated into Kiswahili, the language that is understood and spoken by many people in Tanzania. This might have introduced unintended errors in the study. For instance during translation the actual meaning of some of the words may be lost or distorted.

Time constraints and lack of enough funds were also some of the limitations of this study.

1.10 Summary

This chapter has provided an introductory overview of the problem under investigation. Theoretically, it has identified the role that appropriate nutrition information can play in addressing the problem of malnutrition. In addition, this section has identified the broad and specific objectives underlying the study. It is hoped that the findings of this study provides the necessary information to the nutrition information providers to design strategies that will help mothers to have more access to nutrition information and be able to use it in order to improve the nutritional status of their children.

CHAPTER TWO

LITERATURE REVIEW

2.0. Introduction

This chapter reviews the literature relevant to the study at hand. The literature has been reviewed according to different themes that were covered by this study. These include the role of information in addressing child malnutrition, nutrition education as a source of nutritional information, use and accessibility of nutritional information in addressing child malnutrition, child malnutrition and the indices and the indicators of nutritional status. Lastly the chapter has discussed the gaps that were identified in the reviewed literature.

2.1. An overview of the term information

Information is a term that has been derived from two Latin words 'formatio' and 'forma' meaning giving shape to something and forming a pattern respectively (Dubey et al, 1994). However it is difficult to find a connotative and denotative definition that is complete in itself. Thus the definition is very broad, depending on its use. Merriam- Webster's Dictionary (2002) defines information as the communication or reception of knowledge or intelligence. It is something obtained or received through informing so as to bring about the status of knowing.

All activities going on in society involve information. Information is used in everything we do in our lives and addressing malnutrition is not exceptional. The value of information is perceived when change in decision or behaviour caused by the information is less than the cost of information. According to Haywood (1995)

"we are all avid consumers of information if physically we are what we eat, mentally we must be the information we have absorbed" denoting that in an information age, information is becoming an important ingredient in everything we do. Babu (1994:9) strongly argues that:

> Information in one form or another has consistently been a significant element in the development of human society and that it has shaped, over a long period of time the way in which we think and act. It has become an ingredient of human cycle and such that there is no life in the modern society without information. Information has become an essential commodity for the man to perform his day-to-day duties.

Information is a resource of immense economic and social value. It is vital to proper functioning of the democratic society, a crucial tool in a productive economy, an effective government and a central part of the growth and well being of an individual.

2.2 Role of information for addressing malnutrition

The role of information in addressing the problem of malnutrition can be considered at the level of household, communities and national government (Pelletier, 1995).

2.2.1. Role of information at the house hold level

Households are the basic institutional units of nutrition related actions. It is at the level of the household that malnutrition manifests itself and the immediate causes of malnutrition are most apparent. Food supply, economic and social accessibility and the level of caring are all determined at this level. Most immediate decisions with regard to nutrition are also made at this level (Kavishe, 1993). Therefore, nutritional information at this level has a role to play in influencing maternal or household behaviour in favour of improved nutrition. This role can effectively be met when the

client for this information (mothers and households) are involved in the process of problem identification, causal analysis and search for solutions. In this case the feasibility with which various options might be implemented should be assessed in light of the prevailing constraints such as availability of income and food, environment, sanitation, time and intra-household social support which may take some experimentation before sustainable solutions are found (Pelletier, 1995).

The advantage of use of information at the household level as opposed to national level is that, at the household level specific concrete information on contributing factors and implementation constraints can be immediately exchanged between mother and health worker and a solution can be found in a single session and/or the interval between sessions. The action plan can be modified and tested in weeks rather than years. But also it needs well-trained, well-supervised and well-staffed team of health workers to facilitate these changes at the household level.

2.2.2 Role of information at the community level.

The information that will bring any change within the community in economic activities, environmental sanitation, childcare practices or other aspects of life must harmonize with pre-existing household and individual behavior, socio-political institutions and ecological characteristics. This requires information on these pre-existing characteristics and some degree of prediction of changes that the innovation may induce both in domains targeted for change and those with functional links to the target domain.

There are three approaches for the community development which involve planned changes in some aspects of individual household, community and behaviour (Stuart and Archterberge, 1997). In the community, different developmental approaches can be used to ensure that members of the community get access to information and also feedback is provided. Pelletier (1995) summarizes the approaches as follows:

2.2.2.1 First approach

This approach is based on centrally designed set of political program applied uniformly across all sub population without regard to local circumstances. It is a top down approach in the formulation of nutritional programs. Programs are formulated by the top officials and applied uniformly in all settings without consideration of the prevailing local circumstances.

2.2.2.2 Second approach

This approach is based on decentralised design or implementation of programs and projects to improve the fit between programs and local needs as in regional or district level planning. This involves tailoring nutritional education message to prevailing practices based on cultural norms. This approach is emphasised by Stuart and Achterberg (1997) who argue that "any nutrition education intervention should consider the socio-cultural, economic, political and technological environment which include food and nutrition issues".

2.2.2.3 Third approach

This approach emphasises the strengthening and support of the local community to diagnose its own problems, define its own intervention strategies and implement the necessary changes with minimum support from outside the community. This approach involves community based planning.

A successful community based nutrition program contains an element of all the three approaches. The quality of information that went into the design of programs in all these approaches and the experience of the planners are as important as the decision making process. The three approaches not only differ in the extent to which local circumstances are addressed in the development process but also in the nature of the information used in decision making.

2.2.3 Role of information at the national level.

This involves multisectoral nutritional planning and nutritional surveillance. National sample surveys are a good source of information for various categories of divisions. The most commonly recognized form of nutritional surveillance in developing countries is nutrition monitoring. This refers to the system for monitoring the nutritional status of a population over time and space. This information is usually useful for a variety of purposes:

- It has a role to play in food and nutrition policy analysis;
- It can be used for estimating a variety of parameters for use in food policy such as income and price elasticity of demand; and

- It can reveal trends in malnutrition and food consumption in the population as a whole or among important subgroups when analyzed overtime.

To satisfy information needs at household, community and national level, the focus should be on the different uses of information and the development of effective strategies for its collection and use as opposed to a more narrow focus on type of information.

Identification of the most appropriate process depends upon the level at which information will be used whether at the national level, community or the household level. It also depends on the specific application at that level. For instance, the kind of information process that is required during policy formulation is different from the one needed in program design, management and evaluation.

2.3 Nutritional communication strategies

The following are the strategies that can be used to achieve the goal of nutrition communication (FAO, 1994).

2.3.1 Information dissemination

This is the approach mostly used in least developed countries and developing countries, which have limited capabilities. The approach is centered on the belief that providing people with information is enough to get them to change their behaviour. The mechanism for providing information according to this approach can be posters, radio, television sports and non-participatory group counseling sessions where the

teacher provides knowledge to target group members (FAO, 1994). The assumption is that the mechanism will lead to improved knowledge followed by change in attitude and behaviour or practice. The approach has been used for over 100 years but it has shown to be ineffective. This is because the approach does not take into consideration other factors such as cultural and economic factors that influence people's behavior, values and attitude. It assumes that just flooding people with information is enough to help them improve their nutritional status.

2.3.2 Education communication

This method is close to the information dissemination approach but often goes beyond information dumping to application of a social advertising strategy to encourage people to try something new. The mass media is normally used to persuade people to adopt a new product, service, and/or behaviour. Education communication can be done through mass media or interpersonal education, for instance, face to face instructions in a health care clinic. This strategy is mainly based on a top-down model of communication where information is passed down the hierarchy from officials or doctors to patients.

2.3.3 Participatory action

This is a common approach among the non-governmental organizations. It is based on participatory action and empowering people to identify their problems and determine viable solutions and implement and evaluate interventions using their own resources. It is based on a participatory action research (PAR) framework and a bottom up development approach. The assumption here is that nutritional oriented

development projects cannot be sustained at the grassroots level if these are planned from the top, focused on individual component and isolated from a total development process.

2.3.4 Participatory communication

This is a recent approach that combines top-down/bottom up participatory communication process. Planners of this approach have combined the traditional creative media and interpersonal education strategy of communication with the learning by doing programs of concrete participatory action. The assumption here is that the success of a nutritional program depends largely upon the ability of the former to support the latter and not vice versa.

2.4 Provision of nutrition information for addressing malnutrition through nutrition education

Nutrition education has been defined by Andrien (1994) as that group of communication activities aimed at achieving a voluntary change in nutrition related behaviour. A distinction is often made between the terms nutrition education, nutrition communication, nutrition promotion, nutrition information, education and communication. But in actual practice there is a great deal of overlap (Graeff, Elder and Booth, 1994). Most public nutrition education programs aim at providing information that will enable populations to make better use of available resources or to know how to adapt to environmental changes (Smith 1997). Education activities can include information processing which are generally designed to inform the public through media like printing and broadcasting. For instance, radio and TV

channels use interpersonal communication, face-to-face channels such as group discussions, home visits, training and counselling (Smith, 1997 and FAO 1997).

Each channel has its own strengths and weaknesses and therefore a combination of channels has the most impact on changing behavior. Nutrition education is a strategy, which has a major role to play in achieving improvement in nutrition especially in situations where malnutrition problems could be alleviated by better use of resources (FAO, 1994). In order to improve nutritional status, women need to have accurate information on breast-feeding, weaning habits, nutritious diet during pregnancy and lactation, and hygienic preparation of food for infants and young children. To be effective, this information needs to be provided to all members of the household (FAO, 1995).

2.5 Use and accessibility of nutritional information in addressing malnutrition

Over the years there has been a continuing debate as to the main cause of malnutrition. In many cases poverty has been regarded as the main cause of malnutrition. Therefore high-level policy makers tend to have little faith in the power of nutrition information/education strategies (Mtebe et al 1988, FAO 1982, and Mohmoud, 1983). They tend to believe that without increase in income, food availability, or basic services such as health and education methods are relatively powerless to combat malnutrition. If a family does not have enough money, there is no way its members can be well nourished regardless of how much information they might be provided about what and how much to eat. However, Zeitlin (1988) argues that this conventional point of view is too simplistic and is not correct except among

the very poor because "in almost all developing countries severe endemic malnutrition occurs at the weaning age, where a major proportion of this malnutrition has been proven to be caused by ignorance and incorrect food and health beliefs, linked to poor feeding and health practices." Nutritional education can help promote the adaptation of many low cost or cost free practices such as breast-feeding to improve the nutritional status of the family's most vulnerable members, especially children.

A study conducted in Dodoma revealed that the awareness of malnutrition on the part of MCH staff and the general public is poor because of lack of information (Dal Lago et al, 1988). However, malnutrition is a condition that is caused by a number of interwoven causes and therefore no single approach can adequately combat the problem. Availability of information alone cannot eliminate the malnutrition problem, nor can the availability of food or increasing purchasing power alone. The problem of malnutrition requires an integrated approach. For instance, advice to eat nutritious food requires not only information about what food in what amount and what frequency, but also requires the development of skills to grow and prepare these foods. And in places where food is plenty, people need to be educated on the best food habits that will combat malnutrition. Smith (1997) argues that imparting information or bombarding people with nutrition messages as a strategy for fighting malnutrition is not enough to change behaviour. A host of psychological, socio-cultural, political, environmental and practical factors impinge on the decision making process towards behavior change (Stuart and Archterberg 1997:72). Thus, it is important to get people to do something differently in order to improve nutrition.

must be made to eradicate it (Lweno, 1988). In many instances people do not make better nutritional use of existing food resources because they are ignorant of different ways to prepare food or better means of storage or even new nutritious yet expensive foods (Austin 1981; Zeitlin 1981).

2.7 Child Malnutrition in Morogoro

Both urban and rural Morogoro have been covered by a project called Child Survival Development Project (CSPD) that is funded by UNICEF. Before the project was launched in 1988 malnutrition among children in the region was high but the project has helped a lot to lower the rate of malnutrition in the region. In the beginning the project was concentrated mainly in rural areas of Morogoro but from 1992 the project was extended to urban areas as well.

2.8 Some nutrition aspects that require accurate information by mothers and nutrition information providers

These are important nutritional aspects that in one way or another influence the nutritional status of a child and therefore any effort to address malnutrition should pay attention to them (King, 1992; Ross, 1996; Niemeijer and Hoorweg, 1991). Some of these aspects are low cost or no cost at all, only that accurate information is needed on the part of the nutrition information providers and mothers to be able to practice them. Some other nutritional aspects especially those attributed to poverty are difficult to address by just providing nutritional information (Gwatkin, 1985). For instance, if the family does not have money to purchase food, there is no way its

members can be well nourished regardless of how much information they might be provided about what and how much to eat. This especially is the case in urban areas.

2.8.1 Breast-feeding

Breast-feeding may be thought to be natural but still many mothers face a lot of problems in doing it successfully especially if they are young and have their first babies. Accurate information on breast-feeding is important for its successful promotion. Most of the times mothers complain that they had to stop breast-feeding or they had to start introducing food supplement to the child early because the child has refused to suckle and/or they didn't have enough milk. Women themselves are not aware that these are not the real causes of their problems (King, 1992).

Most of the times these women lack accurate information and because of that they lack confidence that their milk is by itself enough for their babies, At times the problem may be the way the baby is positioned when breastfed. Mothers may not be enthusiastic about breast-feeding their babies either. All these, cause inadequate breast-feeding which affect child's nutritional status. These mothers need to be provided with the accurate information that will help them overcome these two common problems.

Experience from the breast-feeding information group in Kenya shows that the information that was disseminated by this group to mothers and to the nutritional information providers was very instrumental in promoting breast-feeding (King, 1992).

Women need to have accurate information on the superiority of breast-feeding and how to produce adequate milk for breast-feeding their babies as well as how to ensure that babies get adequate and safe milk while they are not at home to physically breast-feed them. This information has to be available to men (husbands) as well as employers. Gwatkin (1985) notes that breast-feeding normally costs less than alternatives available, which are normally of inferior quality. Thus breast-feeding is both financially economical and beneficially healthwise. In this regard, nutrition information plays a key role in ameliorating malnutrition problems.

Dissemination of breast-feeding information can be done using mass media e.g. news papers, radio and television to reach a wider public, or it can be done though the use of posters or pamphlets. However it has been found that counseling and advising mother in a one to one situation is much more effective than any other alternative (King, 1992).

2.8.2 Weaning

Weaning is the period of transition for the infant during which its diet changes in terms of consistency and source. It is the time when a child is gradually introduced to a semi solid food and then a solid diet based on local staples (Draper, 1994). The child is very vulnerable at this time because of the risk of contamination of weaning foods with pathogens. The question of when to initiate weaning is also a fundamental issue to be considered seriously. Infants are also vulnerable because of high nutritional requirement in relation to body size due to the demands for growth (Rowland, 1986). In many developing countries including Tanzania, children are

traditionally weaned onto a gruel or porridge made from local staple food, such as cereals or tubers. But these gruel tend to have a low energy density, that is the amount of energy per unit volume of food is usually very low. This means that the quantity that must be eaten to satisfy nutritional requirement will be in excess of the amount a small child can actually eat (Draper, 1994). Low energy density or dietary bulkiness has been identified as one of the factors in the etiology of malnutrition in infant and young children (Church, 1979; Ljungqvist et al 1981; Walker and Pavitt, 1989; & Walker 1990). In this case mothers need to be informed of the shortcomings of the traditional weaning foods and to have accurate information on how to increase the energy density of these weaning foods e.g. addition of energy rich supplements to the weaning foods e.g. sugar and fat or modification of starch content through germination. Germination and fermentation offers a potential solution for the weaning dilemma in Tanzania. Kingamkono, (1995) recommends the following strategies for promoting the use of germination and fermentation in child feeding practices.

> Strengthening knowledge of the community regarding the importance of adequate child feeding and how it can be achieved within the community; Developing of teaching /learning materials (Booklets, leaflets, video and audio tapes and manuals) on germination and fermentation in child feeding and intensive and persistent advocacy on the use of these technologies in child feeding through workshops, seminars, demonstrations, drama, songs and IEC materials such as leaflets, booklets, video tapes, slides and radio and television programs.

Mothers also need to have accurate information on the accurate weaning age for the child. The recommended age is 4-6 months and a child is to be exclusively breast-fed up to this age (King, 1992: 106).

2.9 Determination of nutritional status

The most common measures of child's nutritional status are the anthropometric indices derived from age, height and weight. Weight for age is an indicator for being underweight and is an overall measure of the extent of malnutrition. This method has the advantage of being more accurate, especially when dealing with children whose heights are difficult to measure. It is also the most frequently used indicator because it is the least error prone with non-professionals as measurers (Kostermans, 1994). Other methods of measuring nutritional status include the determination of Z-scores. In this case the observed weight for age is normally compared with the expected measure of a healthy child.. The procedure involves calculation of Z-scores (a standardized malnutrition indicator). The Z-score is the deviation of an individual child's measurement from the mean of a reference population divided by the standard deviation of that reference mean (Kennedy and Haddad 1994). That is

$$Z = \frac{x - \mu}{Sd}$$

Where X = Observed weight / height

μ = Mean

Sd = Standard deviation of the reference (Expected population)

The Z-score are used to normalize the nutritional status of children with respect to a reference population. The reference population is generally the national centre for health statistics growth data. The value of the Z-score is the number of standard deviations the child is away from the median of the reference population. It is applied to height for age, weight for height and weight for age.

2.10 Indices and indicators of nutrition status

2.10.1 Stunting

Stunting refers to shortness, that is, a deficit or linear growth that has failed to reach genetic potential as a result of poor diet and diseases. Stunting is defined as low height for age and it reflects a child chronic nutritional status and is a reflection of long-term food shortage and/or frequency of sickness. In terms of Z-scores it is <-2 standard deviation (SD) of the median value of the National Centre for Health Statistics/World Health Organisation (NCHS/WHO) international growth reference. Severe stunting is defined as <-3 SD (Kostermans, 1994). A child whose height is below the third centile for her age is stunted. This is according to the anthropometric measurement of height for age. (King and Burgess, 1993).

2.10.2 Underweight

The anthropometric index weight for age represents body mass relative to age. Under-weight refers to a deficit and is defined as low weight for age. In terms of Z scores it is <-2 standard deviation (SD) of the median value of the NCHS/WHO international reference (Kostermans, 1994). According to the anthropometric measurement of weight for age a child whose weight is below the third centile for his/her age is underweight (King and Burgess, 1993).

2.10.3. Wasting

The anthropometric index weight for height reflects body weight relative to height. Wasting refers to low weight for height. In terms of Z scores it is <-2 standard deviation (SD) of the median value of the NCHS/WHO international weight for

height reference. Severe wasting is defined as <-3 standard deviation (SD) (Kostermans, 1994). Wasting represents a more accurate reflection of current nutritional status. It is more sensitive to current periods of sickness and short-term food shortage.

2.10.4 Severe Protein Energy Malnutrition (PEM)

Any child whose weight is below the third centile for his/her age and lies below 60% of the reference curve is said to be severely malnourished (King and Burgess, 1993).

2.10.5 A Healthy child

A child whose weight falls between the 3rd and the 97th centile is within the normal range and is therefore said to be healthy and well nourished (King and Burgess, 1993).

2.11. The Research Gap

From all the literature that has been reviewed, the importance and the role that pertinent information can play in addressing the problem of malnutrition has not been adequately emphasized. This role has just been mentioned and there is no specific study that has been conducted to investigate this role. In most cases, the importance of information in addressing malnutrition has been perceived in terms of nutrition surveillance data that are obtained from growth monitoring and not the information available to individual mothers that will help them make better decisions regarding the nutritional status of their children.

The literature shows that in many cases malnutrition occur at weaning age due to ignorance and incorrect food beliefs. Therefore appropriate nutrition information can play an important role in addressing this problem.

Findings from the review also indicate that despite the significant role that nutritional information can play in addressing malnutrition, nutrition information alone is unable to solve the problem of malnutrition especially among the very poor. A number of economical, social, cultural and environmental factors contribute to the problem of malnutrition. Therefore no single approach is likely to be effective in solving this problem. Other strategies such as increasing food production and distribution, immunization services, growth monitoring, increasing women education and fighting poverty have to go hand in hand with increasing access to nutrition information to mothers.

CHAPTER THREE

METHODOLOGY

3.0. Introduction

This chapter describes the location of the study area, the research design, the study population, sampling methods, and the methodology employed in conducting this study. It explains the data collection methods and the appropriateness of the methodology used with regard to the nature of the research problem and related objectives to be achieved by the study. Data analysis methods have equally been determined by the nature of the data obtained from the field.

3.1. Area of study

The study was conducted in Morogoro urban district, which is among the five districts of Morogoro region, others being Morogoro rural, Kilosa, Ulanga and Kilombero.

Morogoro municipality is the biggest urban area nearest to Dar es Salaam. Morogoro region lies between latitudes 5^0 58" and 10^0" to the south of the Equator and longitude $35^0$25" and $35^0$30"to the East. It occupies a total of 72,939 square kilometers, which is approximately 8.2% of the whole area of Tanzania mainland. According to the census projections of 2000, the population of Morogoro is approximately 1,671,589. Agriculture is the main economic activity in the region (URT, 1997). This area has been chosen because it is the most convenient area for the researcher due to time and financial constraints.

3.2 Research design

A research design entails the arrangement of conditions for the collection and analysis of data in a manner that aims to combine relevance to the research purpose with economy in procedure (Selltiz, et al 1976:90). Bulmer (1993) states that the criteria for choosing a research method to be used in a research includes the appropriateness of the technique to the objectives of the study and its validity and reliability. This being the case, it was the purpose and objectives of the study at hand that had to inform the type of the research design to be used, in order for this study to achieve its intended purpose and objectives.

The overall purpose of this study was to determine the accessibility and use of nutrition information in addressing under five-child malnutrition in Morogoro urban. The study, therefore, examined accessibility and use of information by examining the source of information and the communication channels that are used to provide information to mothers in MCH clinics, extent of the use of nutrition information in addressing this problem and the variables that determine use and accessibility to nutrition information.

Due to the nature of this study a descriptive survey was considered to be the most suitable research design to be used. This is because survey technique has the ability of determining the characteristics, opinions, attitudes behavior and beliefs of the larger population (Sanders and Pinhey 1974). The survey strategy enabled the researcher of this study to collect the intended data which helped in analyzing the demographic characteristics of the respondents, their behaviors and their attitude concerning the role of nutrition information in addressing the problem of

malnutrition. In addition survey techniques save time and money without sacrificing efficiency, accuracy and information adequacy in the research process (Busha and Harter 1980: 54)

3.3 Definition of Population

The population for this study include mothers with children less than five years of age and who attend MCH clinics in Morogoro urban, MCH staff from selected MCH clinics in Morogoro urban and the community nutrition and health workers. Mothers were selected as the respondents for this study because they are the ones who stay with children most of the time, they breastfeed them and take care of them, therefore they are in a better position to explain clearly what is being done to them and how they are being fed than other members of the family. They are also the beneficiaries of the MCH health and nutritional education sessions and other services offered by the MCH clinics.

The MCH staff were selected because they are knowledgeable of different aspects of child health and nutrition and they are the ones who provide nutrition information to mother. Most of those who were interviewed were trained as Maternal and Child Health Aids (MCHA).

The community health worker these normally mobilize people at the community level and encourage them to attend clinics and provides counseling to families with malnourished children.

3.4 Sampling Methods

The study had a sample size of 175 respondents that include 150 mother child pairs, 15 MCH staff, 5 community health workers and 5 MCH coordinators. The study

covered 5 MCH clinics in Morogoro urban, which are Morogoro regional hospital MCH clinic, Uhuru MCH clinic, Mafiga MCH clinic, Kiwanja cha Ndege mission MCH clinic and Mazimbu MCH clinic. These clinics were chosen because of their location to ensure that different social economic groups are being represented in the study. 30 mother child pairs were randomly selected from each clinic using simple random sampling in which every possible set of member of the population had an equal chance of being chosen when the sample was selected (Tripath, 1999). In this case a ballot system was used where mothers were asked to pick a piece of paper from the basket containing folded papers written yes/no. Those who picked yes were taken as the respondents provided they were willing to participate in the study.

3.5 Methods of Data Collection

The study involved multiple data collection methods. The application of more than one instrument in data collection was vital in order to provide checks and balances as regard shortfalls characterized by each of the data gathering instruments. Data was gathered from both secondary and primary sources.

Primary data was gathered using questionnaire, direct observation and face-to-face interview. Anthropometric measurements were used to get the information about the nutritional status of children.

Secondary data was gathered through library research. Documentary evidences from both published and unpublished sources were reviewed and analysed in relation to research questions, which guided the study. These included books, journal articles, conference proceedings and reports form various national and international organizations. The following methods were applied

3.5.1 Questionnaire

This method involved administering questions to the research participants in order to get the required data. The advantage of the questionnaire method was that it involved several respondents who answered the set questions.

3.5.2 Interviews

This involved face to face interview with the research participants to whom questions were put and answered in order to provide the required data. Face to face interview was conducted with senior staff at the MCH clinics and the community nutritional workers. This was considered essential not only as a supplement to the questionnaire in obtaining data and information, but also to offset the disadvantages associated with the use of questionnaire as data gathering method. Contrary to questionnaires, interviews are normally flexible and provide an interviewer with an opportunity to probe and ask follow up questions. In so doing, more information and a greater depth can be obtained from the interview than from the questionnaire (Kothari, 1992). However interviews are expensive to conduct especially when dealing with larger samples. That is why only selected few senior staff in the clinics were included in the interviews.

3.5.3 Observation

This involved observing issues that were relevant to the study. They include clinic activities, posters displayed on the walls of the clinics, the information dissemination activities and physical observations of children whose anthropometric measurement were taken to determine whether they showed any of the signs of malnutrition.

3.5.4 Content Analysis

This involved searching and analysing literature relevant to the study. The Internet and the WWW were surfed.

3.5.5 Anthropometric Measurement

Anthropometric measurement based on the weight for age measurement that is being used in the MCH clinical cards was used to determine the nutritional status of children. The determination of the nutritional status involved all children whose mothers were included in the study.

3.6 Instruments

The researcher used the following instruments to get data

3.6.1 Questionnaire

This was a set of questions applied on the issue related to the topic of research. These were distributed to the participants of the research. This was the main data gathering technique. The choice of the questionnaire as the main data gathering instrument resulted primarily from the advantage it provides when compared to other types of instruments. Questionnaires facilitate accessibility and collection of large amount of data and information in a relatively short period of time (Powell, 1985: 90). Kidder, et al (1986:22) also observe that questionnaire normally give respondents a greater feeling of anonymity which in turn encourages openness to questions and minimizes the interview bias.

Structured and standardised questionnaires with both open and close-ended questions were administered to mothers/care takers of children who were attending MCH clinics and MCH staff, during the study period. Two different sets of questionnaire were distributed to these two distinct groups. A questionnaire in a form of a schedule was used for collecting data from the respondents who did not know to read and write. Tripath (1999) defines a schedule as a set of questions which are asked and filled in by an interviewer in a face-to-face situation with another person. A schedule is therefore just the same as a questionnaire as far as the set of questions is concerned. The difference between the two lies in the fact that, whereas a questionnaire is filled in by the respondents without any direct or oral explanation or interpretation from the investigator, a schedule is filled in by the investigator himself/herself. A schedule gives an investigator an opportunity to clarify issues or points that are unclear to the respondent while conducting interviews

Mothers/care takers were asked questions related to the type of information they had concerning the malnutrition problem and other sources of information that they had apart from the MCH programs. Also they were asked questions related to how they get the information, how they use it and whether the information they get is sufficient to enhance the nutritional status of their children. Information obtained from them regarding access to and use of information was correlated to the nutritional status of their respective children based on the anthropometric measurement.

MCH staff were asked questions related to how they deliver information to mothers/care takers, their source of information, and the format/methodology that is being used to deliver that information. Finally, a general analysis of the whole information system was made to determine its effectiveness and the extent of the use of that information. Some health centers do not have daily MCH services; therefore they were visited during the appropriate time

3.6.2 Interview – Guide

These were a set of questions used during the interview on issues related to the research. (Appendix III and IV)

3.6.3 Observations Guide

This outlined issues to be observed at the clinics in order to get first hand information (Appendix V)

3.6.4 MCH Clinic Card

These were charts, which had reference weight for age curves drawn on them and they are used for growth monitoring of the children. These charts are useful because it is not possible to remember the reference weight and the range of weight for healthy children of all ages and tables of reference values are also difficult to use. In this research actual measurement was not taken. Information as it was found in individual child's MCH card was used. This is because taking direct measurement gives information about current nutritional status only while the information from the cards shows the trend of how the child has been growing over a long period of time.

The Internet, www, hard copies of articles from journals and periodicals were also used as instruments for this research.

3.7 Data Analysis and Presentation

Statistical package for Social Sciences (SPSS) was used for analysing quantitative data. The collected data was first classified into meaningful categories that were further assigned numerals/codes to assist in the analysis. Analysis was done by the use of descriptive statistics where percentages and frequencies were determined. Cross tabulation was used to determine the relationship or association between variables and then chi-square values were used to test whether the association was statistically significant or not. There after research findings were put into categories based on the research questions and then presentation was done through the use of tables.

Content analysis technique was used to analyze qualitative data and information. The components of verbal discussion and the quantitative information from the open-ended questions were analyzed in detail using content analysis method. In this way, the content of the interviews were broken down into smallest meaningful units of information or themes. This helped the researcher in ascertaining values and attitudes of respondents.

3.8 Data Quality Control

3.8.1 Pre-testing of the Questionnaire

This was done for the purpose of controlling the quality of the questionnaires and hence the information that is obtained from them. Pre-testing of the questionnaire

was done before actual data collection to determine their clarity and relevance to the objectives of the study. The questionnaires for pre testing were administered to ten mother child pairs in Morogoro regional hospital prior to the commencement of the study. The questionnaires were then modified to incorporate lessons drawn from the pre testing.

3.8.2 Triangulation

Triangulation of the source of information used in the study, methods of data collection and instruments used in data collection was also used for the quality control purposes of the collected data. Data was collected from both primary and secondary sources, different methods of data collection such as questionnaire, face-to-face interviews, and observation were also used. This was considered important because each method has its shortfalls as they have been explained under each of the method above. The only way to offset those shortfalls is to apply another method that will help to counteract those shortfalls.

3.8.3 Avoiding Bias

Careful sampling was done in order to avoid biasness. The MCH clinics that were used in this study were purposeful selected to represent different social economic groups in the study area. Mother child pairs were randomly selected using simple random sampling.

3.8.4 Rigorousness and Seriousness in procedures

The whole study was rigorously and carefully conducted in order to ensure that the information and data that is obtained is accurate.

3.9 Ethical Issues and Limitations

Some of the respondents were sensitive about revealing information about the nutritional/health status of their children, their feeding patterns and food habits. In this case the researcher had to assure them that the information they provide would only be used for the purpose of the study and not otherwise. Confidentiality about answers was also highly observed by the researcher.

Questions were also careful structured to avoid questions that may embarrass and annoy the respondents.

CHAPTER FOUR

PRESENTATION AND DISCUSSION OF FINDINGS

4.0 Introduction

This chapter presents and discusses the findings of the study. The chapter describes the demographic characteristics of the sample and presents the data by using tables. Presentation and discussion of the findings is based on the objectives of the study.

4.1 Demographic Characteristics of the Sample

A total of 150 mothers / child pairs from 5 MCH clinics in Morogoro urban were interviewed. The study included 30 respondents from each clinic. The clinics covered

include Morogoro Regional Hospital MCH clinic, Uhuru MCH clinic, Mafiga MCH clinic, Kiwanja cha Ndege MCH clinic and Mazimbu MCH clinic. All respondents in this study were women

4.1.1.Age groups

The majority of the respondents 79 (52.7%) were between 22 and 31 years old. This is because most mothers who attend these clinics are those who are within the reproductive age. 42 (28%) of the respondents were below 21 years, and 29 (19.3%) were above 31 years.

4.1.2. Levels of Education

The educational levels of the respondents in the sample ranged from those with no formal education 29 (18.8%) to college and university graduates 2 (1.3%). The majority of the respondents had primary education 103 (68.7%). Only 16 (10.4%) had secondary education.

4.1.3. Occupation

77 (51.3%) of the women in the sample were housewives, 23 (15.3%) were farmers, 22 (14.7%) were running small scale businesses, 4 (2.7%) were self employed, and 12 (7.8%) were employed in a formal sector, 12 (7.8%) were teenagers who were staying with their parents and were not having any economic activity of their own.

4.1.4. Income levels

A majority of the respondents, 66 (44.0%) had an income level of between 30,000 to 80,000Tz Shs. per month. 54 (36.0 %) had income levels of less than 30,000Tz Shs. per month, 24 (16.0%) had an income of between 80,000 and 150,000Tz Shs. 6 (4%) had an income of above 150,000Tz Shs.

4.1.5. Nutritional status of the children

The Nutritional status of the children in this study was determined by using anthropometric measurements of weight for age. According to this criterion, 112 74.7%) of the surveyed children were well nourished, 34 (22.7%) were underweight and 4 (2.7%) were severely malnourished.

4.2 Sources of nutrition information and the communication channels used in MCH clinics

The first research question in this study sought to identify the sources of nutrition information and the communication channels or the information delivery systems that are used to deliver information to mothers in MCH clinics. The following were identified to be the major sources of information and the communication channels / information delivery systems that are used to deliver information to mothers in MCH clinics.

4.2.1 Health and nutritional education sessions

This is among the various services that are provided by the MCH clinics. In all the clinics, these sessions are normally performed as the first thing in the morning before weighing starts. The duration for the session is normally 15 minutes. Each clinic has a timetable for the whole year. One topic is being taught each month. This is because mothers attend these clinics only once a month. But it was observed that in all the clinics these sessions were seldom conducted. There is shortage of teaching materials and the attendance of mothers to these sessions is not very good either as shown in Table 1. These sessions, if properly used, have the potential of being very effective in enhancing the nutritional status of children through providing appropriate nutritional information to mothers. For example, results from an integrated rural nutritional project study conducted in Kawambwa, Zambia, shows that nutritional education programs can have a significant impact on the nutritional status of children under-five years of age if conducted (Friedrich, 1997). A study conducted by the Canadian Paediatric Society revealed that health professionals plays a very

instrumental role in providing infant nutrition information. However the information required and desired by mothers was not consistently provided in either a comprehensive or appropriate format suggesting that health professionals need to make improvements in meeting their responsibility to provide information to mothers on the topic of infant nutrition (Tanaka et al 1989).

Table 1: Attendance to the health and nutritional education session by clinics

MCH Clinics	Attendants		Non Attendants	
	No.	%	No.	%
1. Regional hospital	16	53.3	14	46.7
2. Uhuru	22	73	8	26.7
3. Mafiga	13	43.3	17	56.7
4. Kiwanja cha ndege	19	63.3	11	36.7
5. Mazimbu	19	63.3	11	36.7
TOTAL	89	59.3	61	40.7

Source: Survey data (2002)

These findings imply that these sessions were not very much known by mothers and some of them do not see their importance. They have not been adequately publicised by the MCH clinics either and have not been given the emphasis they deserve in the fight against malnutrition. In this case, the information providers need to educate mothers on the importance of these sessions and make them more appealing or create demand for the mothers to attend. This is because most of the time people are either not aware that they need information or that information which can be used to solve

their problems is available. Effective use of information services by potential users is most often limited by lack of awareness on the part of potential users of their need for information (Fairer-Wessels, 1987; Kempson, 1992 and Kaniki, 1995).

4.2.2 Counselling

This is another way of providing nutritional information to mothers. Counselling is especially done to those mothers whose children have been found to have health problems during weighing them. The nurse takes few minutes to discuss with the relevant mother the cause of the problem and advises her on how to go about solving the problem or feeding the baby. But these sessions are normally short and they are only targeted to those mothers with children who have problems. Gwatkin (1985) argues that this method of delivering health and nutritional information to mothers is not likely to be effective and of adequate quality because most of the time it is offered by hurried health workers in the course of providing curative medical service. It is provided too haphazardly as an 'add-on' to the curative care by professionals with only a limited and outdated knowledge of nutrition. Research conducted by the Primary Health Care Operations Research Project-PRICOR in Zaire (1988) revealed that counselling as an aspect of growth monitoring in MCH clinics was weak. Out of all mothers whose children had no weight gain in the last two weighings, only 33% received any nutritional advice and only 23% of those mothers whose children were identified as malnourished received nutritional advice. Providing nutritional information to mothers in these clinics has been forgotten and is not considered to be an important part of the services provided by these clinics. The reason for this could be that these clinics do a lot of things such as immunization

services, antenatal care to pregnant mothers, growth monitoring and providing family planning services and as a result, providing nutrition information has been forgotten and is not considered to be an important part of all these services provided.

4.2.3 Home visits

The nutrition and health committees in the wards and villages normally conduct home visits at the community level. This is normally done as a follow up for the children that have been observed during clinic sessions to be in danger of getting malnutrition. This has been cited to be an effective way of providing nutritional information because the information providers in this case provide information on the basis of the resources that the household has and the information is provided to all members of the household and not just the mother.

Home visits have the advantage of establishing good personal relationship between the field worker and families. It can provide information about rural families that cannot be collected otherwise and it encourages families to participate in public functions, demonstrations and group work. But a field worker cannot visit every family in the community and only families in accessible localities can be visited (Royal, 1983).

4.2.4 Posters

In every clinic that was visited by the researcher, there were a number of posters on the walls except in the outreach stations where normally services are provided in a ward or village offices or under a tree. 85% percentage of mothers said these posters were useful to them and they normally read them and get information from them. But

in all the clinics there were very few posters, which had nutrition information. Posters can be a good source of information especially, if they give information that is useful to local people and make people think about nutrition problems. But in the case of nutrition, the message normally varies with local conditions and therefore locally produced posters are much more effective than the centrally prepared materials which may cover topics not important to every local area. Most posters in MCH clinics were centrally prepared. Posters are expensive and difficult to produce and it is difficult to change the messages often (King and Burgess 1993). They also do not teach people much if they are just pinned to the wall and left there. People soon stop looking at them. A good way to use posters is to start group discussions using the message provided in the poster. Since most mothers said they normally get some information from the posters, these can be a very good source of information if they are effectively and deliberately used to provide information.

4.3 Relationship between information that mothers have concerning various childhood nutritional aspects and nutritional status of their children.

Research question number two sought to find out if there is any relationship between the kind of nutritional information that mothers have and the nutritional status of their children. So an attempt was made to determine this relationship and then to find out other intervening factors that would help explain the relationship. This was done by testing the knowledge of mothers concerning selected childhood nutritional aspects and was covered by questions 9 to 24 in the questionnaire.

Mothers' response to each of these nutritional knowledge factors was cross tabulated against child nutritional status to get the percentage of those mothers who were

having accurate information and who were not in each of the three nutritional categories of the well nourished, underweight and severely malnourished. Thereafter, the chi-square test was used to test whether the association or relationship was statistically significant or not. In order to be knowledgeable of something, one has to be informed. So those mothers who were having accurate knowledge of the important childhood nutritional aspects were assumed to be well informed and to have access to different sources of information. Information is the communication or reception of knowledge or intelligence; knowledge is a sum of many bits of information and it develops largely from the flow of information. Knowledge is increased by acquiring information and by applying judgment to assess the consequences of the new information in the light of the existing knowledge structure.

4.3.1 Knowledge of the cause of malnutrition

61 (54.5%) of the mothers whose children were well nourished were able to explain the cause of malnutrition, while 42 (47%) were not and 4 (3.6%) had some other explanations regarding the cause of malnutrition. 21 (61.8%) of the mothers whose children were underweight were not able to explain the cause of malnutrition while almost all mothers whose children were malnourished 3 (75%) were informed about the cause of malnutrition. (Table 2 Summaries these findings).

Table 2: Knowledge of the mother on the cause of malnutrition VS child Nutritional status

Nutritional status	Mother's awareness of the cause of malnutrition						Total	
	Lack of enough food		Do not know		Other explanations			
	No.	%	No.	%	No.	%	No.	%
Well nourished	61	54.5	47	42.0	4	3.6	112	74.7
Underweight	12	35.3	21	61.8	1	2.9	34	22.7
Severely malnourished	3	75	1	25	00	00	4	2.7
TOTAL	76	50.7	69	46.0	5	3.3	150	100.0

Source: Survey data (2002)

However the association between the information that mothers have concerning the cause of malnutrition and child nutritional status was not statistically significant at 0.272 ($p>0.05$). Table 3 below summaries these findings. This implies that mother's knowledge of the cause of malnutrition does not directly influence/relate to the nutritional status of the child.

Table: 3 Chi-square test. Nutritional status versus knowledge of the cause of malnutrition

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	5.157	4	.272
Likelihood Ratio	5.322	4	.256
Linear-by-Linear Association	.682	1	.409
N of Valid Cases	150		

Source: Survey data (2002)

The fact that this knowledge factor failed to influence children's nutritional status may have been due to the low economic status of the mothers who were probably unable to provide more food for their children although they knew that lack of enough food causes malnutrition. This indicates that there are some intervening factors that cause the inability of the mother to put into use what she knows concerning child nutrition and in this case the economic level could probably be the intervening factor. The same phenomenon was also observed by Abbi et all (1988).

The fact that 75% of the mothers whose children were malnourished were able to explain the cause of malnutrition, may be due to the nature of the whole system of providing information in MCH clinics. Most of the time mothers with malnourished children are the ones who receive more counselling and information and very little is done to those mothers who have healthy children. These women were less educated but they were not less knowledgeable about child nutrition and they appear to be slightly better informed about this nutritional aspect than others. Probably these women were sensitized on the cause of the illness of the child. A study conducted in Kenya by Niemeijer and Hoorweg (1991) also observed the same phenomenon.

The information that these mothers with malnourished children have is useful to them but may be they got it late. Possibly they had no access to this kind of information at the time that they needed it to prevent their children from getting malnutrition. Had they received this information before their children were affected, may be would have helped them in alleviating the problem then. In order for information to be useful in effecting decision-making or supporting any activity, for instance allocation of the limited family resources for improved nutrition, it has to be

adequate, accurate and relevant. Also it has to be available to the right person at the right time and in the right place. Therefore the nutrition education efforts of MCH clinics should not be provided only to mothers with malnourished children. All mothers need information that will prevent their children from being malnourished.

4.3.2 Knowledge of the treatment of malnutrition

Knowledge of the treatment of malnutrition did not also show any statistically significant relationship/association with the child nutritional status as indicated by the chi-square value 0.062 ($p<0.05$) (see Table 4).

Table 4 Chi-square test: Knowledge of the treatment of malnutrition Vs Nutritional status

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	8. 955	4	.062
Likelihood Ratio	10.134	4	.038
Linear-by-Linear Association	.290	1	.590
N of Valid Cases	150		

Source: Survey data (2002)

78 (52%) of all the mothers who were interviewed did not know the treatment of malnutrition (see Table 5). This shows that the awareness of the cause and the treatment of malnutrition is still very low, because nearly half of the mothers who were interviewed were not aware of the cause and the treatment of malnutrition. Although the knowledge of the cause and treatment of malnutrition did not seem to influence nutritional status, this still shows that the awareness of the cause and treatment of malnutrition is low and mothers are little informed about the problem of malnutrition.

Table 5: Knowledge of the mother on the treatment of malnutrition versus child nutritional status

Nutritional Status	Knowledge of the mother on the treatment of malnutrition				TOTAL	
	Adequate food		Do not Know			
	No.	%	No.	%	No.	%
Well nourished	57	50.9	55	49.1	112	74.7
Underweight	12	35.3	22	64	34	22.7
Severely malnourished	3	75	1	25	4	2.7
TOTAL	72	48.0	78	52	150	100.0

Source: Survey data (2002)

4.3.3. Knowledge of management of diarrhea

Diarrhea is one of the most common childhood diseases in Tanzania and children under-five years of age are estimated to have three to five episodes of diarrhea per year. The case fatality ratio of this disease is about 10% usually from dehydration (Kavishe, 1993). Diarrhea represents the leading cause of malnutrition among children and is responsible for some 5 million infant and child death annually (Gwatkin, 1985). Hence accurate information about the management of children suffering from this disease is very important. This is because most of the things that are used to manage and treat this disease, which causes dehydration, are at the disposal of almost all mothers. There are low costs or no cost approaches available for the management of this disease, of which only appropriate information is needed on the part of the mother on how to use them. Prominent among these is oral rehydration solution. Regular administration of this simple inexpensive solution has proved to be highly effective in the management of diarrhea. Unfortunately this

information is not widely disseminated (Gwatkin, 1985). This was also observed by Kavishe (1993) who argued that

> Although about eight million sachets of oral rehydration salts (ORS) are distributed annually to dispensaries and health centers, there is inadequate knowledge of the proper use of these salts.

56 (37.4 %) of the mothers who were interviewed were not informed of the management of children suffering from diarrhea (see Table 6).

78 (69.6%) of the mothers whose children were well nourished said that children need to be given more food and water when they are suffering from diarrhea and only 34 (30.4%) of mothers in this category were not aware (not informed) of the management of children suffering from diarrhea. 19 (55.8%) of the mothers whose children were underweight were not informed and in case of the severely malnourished children 3 (75%) of the mothers were not informed of this knowledge factor (see Table 6).

Provision of appropriate information to mothers on this aspect can be very effective in promoting the use of these solutions and teaching mothers on the importance of continuing to encourage ill children to eat regularly despite their lack of appetite. There is also a need to discontinue such common deleterious practices as purging or withdrawing breast milk from infants while they are sick. All these will help a lot in addressing the problem of malnutrition.

Table 6: Knowledge of the mother on the management of diarrhea versus nutritional status

Nutritional status	Type of food given to a child suffering from diarrhea				TOTAL	
	More food + Water + ORS		Do not know			
	No.	%	No.	%	No.	%
Well nourished	78	69.6	34	30.4	112	74.7
Underweight	15	44.1	19	55.8	34	22.7
Severely malnourished	1	25	3	75	4	2.7
TOTAL	94	62.7	56	37.4	150	100.0

Source: Survey data (2002)

Mother's knowledge regarding the management of diarrhea was significantly related to their children's nutritional status as indicated by the chi-square values 0.029 ($p<0.05$) (see Table 7).

Table 7: Chi-square test. Diet during diarrhea versus nutritional status

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	10.824	4	.029
Likelihood Ratio	10.407	4	.034
Linear-by-Linear Association	10.574	1	.001
N of Valid Cases	150		

Source: Survey data (2002)

4.3.4 Knowledge of preparation of ORS

There was no any significant relationship between knowledge of the correct preparation of ORS and the nutritional status of the children as indicated by the chi-square values 0.346 ($p< 0.05$) (see Table 8 for details).

This possibly is due to the fact that most mothers are nowadays using the ORS provided in the sachets rather than the home made ones.

In this knowledge factor 95 (63.3%) of all the mothers who were interviewed knew how to prepare these solutions and 55 (36.7%) did not know (see Table 9 for details).

Table 8: Chi-square test. Knowledge of the correct preparation of ORS versus nutritional status

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	2.125	2	.346
Likelihood Ratio	1.922	2	.383
Linear-by-Linear Association	1.852	1	.174
N of Valid Cases	150		

Source: Survey data (2002)

Table: 9 Knowledge of the mother on the preparation of ORS versus nutritional status

Nutritional status	Knowledge of the mother on the correct preparation of ORS				TOTAL	
	Knows		Do not know			
	No	%	No	%	No	%
Well nourished	77	68.8	35	31.3	112	74.7
Underweight	16	47.1	18	52.9	34	22.7
Severely malnourished	2	50.0	2	50.0	4	2.7
TOTAL	95	63.3	55	36.7	150	100.0

Source: Survey data (2002)

4.3.5 Knowledge of the appropriate weaning age

This is the age at which a child starts to be given some solid food apart from the breast milk. This is the most critical age as far as the nutritional status of the child is concerned. Introducing foods in addition to breast milk signals the beginning of one of the most vulnerable phases in the life of young children in developing countries (WHO, 1994). In many poor societies, the most severe malnutrition is found among

children just after weaning (Gwatkin, 1985). So mothers need to have adequate information about the timing, the amount and the type of food that young children need at this age. They need also enough information to recognize the symptoms of malnutrition when they appear in order to take relevant actions (Gwatkin, 1985).

An awareness of the proper age to start weaning on the part of the mother was low. This is due to the fact that only 57 (38%) of the mothers knew the appropriate weaning age which is 4-6 months. 18 (12%) of the mothers had the perceptions that even a child, less than one month old can be weaned. (Table 11 summaries these findings). Nevertheless, there was no any statistically defined association between this knowledge factor and the nutritional status of the children as indicated by the chi-square value of 0.264 ($p<0.05$) (see Table 10).

Table 10 Chi-square test. Nutritional status versus weaning age

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	7.663	6	.264
Likelihood Ratio	7.482	6	.276
Linear-by-Linear Association	1.882	1	.1704
N of Valid Cases	150		

Source: Survey data (2002)

Table 11: Knowledge of the mother on the appropriate weaning age versus nutritional status

Nutritional Status	Weaning Age								TOTAL	
	> 1 Month		2-3 Months		4-6 Months		7-9 Months			
	No	%	No	%	No	%	No	%	No	%
Well nourished	10	8.9	52	46.4	46	41.1	5	3.6	112	74.7
Underweight	8	23.5	13	41.2	10	29.4	2	5.9	34	22.7
Severely malnourished	-	-	3	75	1	25	-	-	4	2.7
TOTAL	18	12.0	68	46.0	57	38.0	7	4.0	150	100

Source: Survey data (2002)

The findings indicate that most mothers were uninformed of the appropriate age to start weaning and the dangers associated with early weaning and the importance of exclusive breast-feeding. Appropriate information with regard to this knowledge factor can be very effective in improving nutritional status because this factor is not so much influenced by the economic position of the family but also by lack of information. In this case, appropriate information is likely to promote this behavior more effectively than other knowledge factors. In a study conducted in Kenya, it was found that 95% of the maternity unit nurses and midwives surveyed felt that babies should have pre-lacteal supplements of glucose-water and formula (Peace corps 1989). This notion is wrong and therefore both mothers and MCH clinic staffs need to be given accurate information concerning this.

4.3.6 Interpretation of information from the MCH clinic cards

Mothers' knowledge regarding growth charts had a significant relationship with their children nutritional status as indicated by the chi-square values 0.000 at (P>0.05). (See Table 12 below).

Table 12: Chi-square test. Nutritional status versus knowledge on interpretation of information from the MCH clinic cards

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	26.030	2	.000
Likelihood Ratio	28.020	2	.000
Linear-by-Linear Association	25.393	1	.000
N of Valid Cases	150		

Source: Survey data (2002)

Table 13: Knowledge of the mother on the interpretation of MCH clinic cards Versus nutritional status.

Nutritional Status	Ability of the mother to Interpret information from the growth chart				TOTAL	
	Can Interpret		Cannot interpret			
	No	%	No	%	No	%
Well nourished	76	67.9	36	32.1	112	74.7
Underweight	8	23.5	26	76.5	34	22.7
Severely malnourished	-	-	4	100.0	4	2.7
TOTAL	84	56.0	66	44.0	150.0	100.0

Source: Survey data (2002)

76 (67.9%) of the mothers with well-nourished children were able to interpret information from the growth charts and all the mothers with severely malnourished children were not able to interpret information from the growth chart. (Table 13 summaries these findings).

4.4 Variables that may determine use/accessibility of nutritional information

Research question number three sought to find out variables that may determine accessibility and use of nutritional information. These variables were assumed to be education, income levels, occupation and age. This covers questions 3 to 8 in the questionnaire.

After identifying the variables, an attempt was made to find out possible relationship or association between each of these variables and the kind of information that mothers have concerning selected nutritional aspects, the nutritional status of the children and the sources of information that these mothers have access to. Then chi-square test of independence was used to determine whether the relationship/association was statistically significant or not.

4.4.1 Education

Education plays a very important role in people's access to information. Education facilitates accessibility to information and it is a determining factor that may either facilitate or hinder one's access to information (Mwansasu, 2001). Levels of education have implications as far as access to information is concerned and low levels of education have been identified as one of the barriers in accessing information (Kiondo, 1998). Niemeijer and Hoorweg (1991) also observed that

formal education has a positive, relation with nutrition cognition of mothers. With some years of secondary education, mothers become more aware of the general principles of child nutrition and have a more positive nutrition preference.

4.4.1.1. Relationship between levels of education of the mother and the awareness of the various nutrition aspects.

Table 14: Relationship between levels of education of the mother and the Awareness of the various nutritional knowledge factors

	Level of Education				
	Did not go to school	Primary Educ.	Secondary Education	Post Sec. Educ.	Total
CAUSE OF MALNUTRITION					
*Lack of enough food	13.8% (4)	53.4% (55)	93.8% (14)	100 (2)	50.7% (75)
Do not Know	86% (25)	41% (43)	6.3% (1)	_	46% (69)
Other explanations	_	4.9% (5)	6.3% (1)	_	11.2% (6)
TOTAL	29	103	16	2	150
WEANING AGE					
> 1 Month	17.2% (5)	11.7% (12)	6.3% (1)	_	12.0% (18)
2 - 3 Months	51.7% (15)	46.6% (48)	37.5% (6)	_	46.0% (69)
*4 - 6 Months	24.1% (7)	37.9% (39)	56.3% (9)	100.0% (2)	38.0% (57)
7- 9 Months	6.9% (2)	3.9% (4)	_	_	4.0% (6)
TOTAL	29	103	16	2	150
FREQUENCY OF FEEDING					
Twice	10.3% (3)	9.7% (10)	25.0% (4)	_	11.3% (17)
Three times	86.2% (25)	53.4% (55)	18.8% (3)	_	55.3% (83)
Four times	_	14.6% (15)	6.3% (1)	_	10.7% (16)
*>Four times	3.4% (1)	22.3% (23)	50.0% (8)	100.0% (2)	22.7% (34)
TOTAL	29	103	16	2	150
DIET DURING DIARRHOEA					
* More Food + Water	34.5% (10)	67.0% (69)	81.3% (13)	100.0% (2)	22.7% (94)
Do not know	27.6% (8)	13.6% (14)	_	_	14.7% (22)
Other explanation	37.9% (11)	19.4% (20)	18.8% (3)	_	22.7% (34)
TOTAL	29	103	16	2	150
TRANSLATION OF INFOR. FROM THE MCH CARD					
* Can Interpret	24.1% (7)	58.3% (60)	93.8% (15)	100.0% (2)	56.0% (84)
Cannot Interpret	75.9% (22)	41.7% (43)	6.3% (1)	_	44.0% (66)
TOTAL	29	103	16	2	150

*** Correct explanations**

Source: Survey data (2002)

4.4.1.1.1 Cause of malnutrition

Table 14 shows the relationship between levels of education of the mother and the awareness of the various nutritional aspects by the mother. From Table 14, 75 (50.7%) of all mothers who were surveyed were able to explain the accurate cause of malnutrition while 69 (46%) were not, and 6 (11.2%) associated malnutrition with other non-food explanations or causes, for example, witchcraft and dirt. All mothers with post secondary education 2 (100%) were able to explain the correct cause of malnutrition. Those with secondary education 14 (93.8%) were able to explain the cause of malnutrition. 55 (53.4%) of primary school leavers were able to explain the cause of malnutrition. Only 4 (13.8%) of those mothers who did go to school were able to explain the correct cause of malnutrition.

The findings imply that as the level of education increases, the percentage of mothers with accurate information on the cause of malnutrition increases. The chi-square test of independence shows that an association/relationship between the knowledge of the cause of malnutrition and the level of education was significant at 0.000 ($p<0.05$). This implies that the more the mothers are educated the better they are able to explain the cause of malnutrition.

4.4.1.1.2 Weaning age

There was no any statistically defined association between the knowledge of the mother concerning the accurate weaning age and the level of education as indicated by the chi square test of independence 0.44 ($p<0.05$). However, all mothers with post secondary education were able to state the correct weaning age for children,

followed by those with secondary education 48 (46.6%), Primary education 39 (37.9%).However,only 7 (24.1%) of mothers without any formal education were able to explain the correct weaning age (see Table 14).

4.4.1.1.3 Frequency of feeding

The chi-square test of independence shows that there is an association between the level of education and the frequency of feeding. The association is statistically significant at 0.000 ($p<0.05$). This implies that the more the mother is educated the higher will be her chances of feeding her baby more than four times per day. 2 (100%) of the mothers with post secondary education said they fed their babies more than four times followed by those with secondary education 8 (50%), who fed their babies more frequently than those with primary education 23 (22.3%). Only 1 (3.4%) of those without any formal education were feeding their babies more than 3 times per day as shown in Table 13. Most mothers 83 (55.3%) feed their babies only three times per day. The majority of these were those without any form of formal education 25 (86.2%) followed by those with primary education 55 (53.4%).

The reason for this can be that with more education it becomes easier for the mother to perceive the importance of feeding the child frequently. Also with more education, access to other resources also increases for instance, financial resources and hence access to accurate information concerning what mothers should do.

4.4.1.1.4 Diet during diarrhea.

All the mothers were asked about the management of children suffering from diarrhea. Then the results were cross tabulated with the educational level of these mothers. It was observed that all mothers who do not know the proper management of diarrhea were those with primary education, while 2 (100%) of mothers with post secondary education and 13 (81.3%) of mothers with secondary education had the accurate information concerning this nutritional knowledge factor. The chi-square test of independence indicates that there was a statistically defined association between the level of education and the information that mothers have concerning this knowledge factor at 0.018 ($p>0.05$).

4.4.1.1.5 Ability of the mother to interpret information from the MCH clinic card

Table 14 shows that the percentage of mothers who were able to interpret information from the growth chart increases as the level of education increases, that is 7 (24.1%) of those without any formal education, 60 (58.3%) primary education, 15 (93.8%) secondary education and 2 (100%) post secondary education. The percentage of women who were not able to interpret information from the growth chart increases as the level of education decreases, that is 1 (6.3%) secondary education, 43 (41.7%) primary education and 22 (75.9%) those without formal education.

4.4.1.2 Possible association between child nutritional status and mother's level of education

Table 15: Level of education of the mother versus child nutritional status.

Nutritional status	Levels of education								TOTAL	
	Did not go to school		Primary Education		Secondary Education		Post Secondary			
	No	%	No	%	No	%	No	%	No	%
Well nourished	17	58	78	75	15	93	2	100	112	74.7
Underweight	11	37.9	22	21.4	1	6.3	00	00	34	22.7
Severely malnourished	1	34.4	3	2.9	00	00	00	00	4	2.7
TOTAL	29	19.3	103	68.7	16	10.7	2	1.3	150	100

Source: Survey data (2002)

Table 15 shows the relationship between the level of education of the mother and children's nutritional status. The results shows that 100 percentage of all children whose mothers had post secondary education were well nourished while in case of the mothers with secondary education, 2 (93%) of their children were well nourished. The results also show that out of the four children that were severely malnourished, three come from mothers with primary education while one comes from a mother who has never gone to school. However, the chi-square test of independence reveals that the association between the level of education of the mother and the nutritional status of the child was not statistically significant. Kavishe (1993) observes that though the relationship between education and child mortality is not always statistically demonstrated, education is normally the key to better

opportunities for employment, accessibility to information and services and to independent and correct action with regard to survival.

The majority of the mothers in this study were having primary level of education 103 (68%). If one looks at the nutritional status of their children, one will find out that 78 (75%) of them were well nourished, 22 (21.4%) were under weight and 3 (2.9%) were severely malnourished.

In case of the mothers who did not go to school 29 (19.3%) that is more than half of their children 17 (58%) were having good nutritional status.

So in the case of these two groups of mothers who represent the majority in the population of mothers at the reproductive age and who attend MCH clinic services in Morogoro urban, appropriate nutrition information can be very helpful to them. This is because although all children from mothers who have post secondary education were well nourished, not all children from less educated mothers and those who did not go to school at all were malnourished.

Appropriate nutrition information and the information on how to increase the level of their family income, helps mothers in addressing the problem of malnutrition. Nutrition education should not be given to women alone. Men also need to be informed. This is because it has been found out that the basic contradictions in gender relations and decision-making was a major constraint in improving nutrition at the household level. Most of the times, women received information but they were often constrained in taking action while men who are the main decision makers have limited information (Kavishe, 1993).

Among the variables that were assumed to determine use and accessibility to information, education has proved to be the most effective. Ishengoma (1992) also notes this factor. This is because education not only improves accessibility to different sources of information, and facilitates use of that information but also it empowers women to efficiently manage limited household resources for the nutritional improvement. Female literacy has a multiplier effect on development and income and thus contributes to nutritional improvement (Kavishe1993).

The findings of this study indicate that it is only those women with post secondary education, that is college and university education who possessed 100% accurate information concerning various nutritional issues. But these women were only 2 (1.3%) of all the 150 who were randomly selected in MCH clinics. Ishengoma (1992) also observed the same trend.

Although increasing the level of education has very positive results in addressing child malnutrition, the majority of women in Tanzania who are at the reproductiv' age and who attend MCH clinic services have only primary level of education (68.7%) followed by those without any formal education (19.3%). Enormous government efforts are being made to ensure that more and more women in Tanzania get access to formal education. But the nutrition information providers should not forget that the number of women who are less educated is still high and therefore these should not be neglected. Efforts should be made to make them have access to information that will help them to improve the nutritional status of their families.

One way to help this group is to provide them with nutritional information that will help them overcome the problem of malnutrition. In this case, these women also need information that will help them raise their earning levels such as access to credit facilities. Also they need information that will empower them to take part in decision-making at household level. This is important in improving the nutritional status of their families.

4.4.1.3 Possible association between the level of education of mothers and the sources of information used.

Table 16: Level of education versus accessible sources of information

CHANNEL	No formal Education		Primary Education		Secondary Education		Post Secondary Education	
	No	%	No	%	No	%	No	%
Only clinics	5	17.2	9	8.7	00	00	00	00
Radio	11	37.9	40	38.8	4	25	00	00
Newspapers	00	00	7	6.8	00	00	00	00
Television	00	00	6	5.8	00	00	00	00
Books	00	00	11	10.7	4	25	2	100
Seminars	00	00	1	1.0	1	6.3	00	00
Friends	9	31.0	23	22.3	4	25	00	00
Experience from school	00	00	1	1.0	2	12.5	00	00
Experience	2	6.9	3	2.9	00	00	00	00
Doctors	2	6.9	2	1.9	1	6.3	00	00
Total	29	19.3	103	68.7	16	10.7	2	1.3

Source Survey data (2002)

Table 16 shows the major sources of information that mothers use to get nutritional information compared to their levels of education. 29 (19.3%) of mothers that were interviewed did not have any form of formal education and out of these 11 (37.9 %) were using radio as their major source of information and 9 (31.0%) were using friends, neighbors and relatives. 5 (17.2%) had no access to any other source of

information apart from the information that they get from the clinics. 103 (68%) were having primary education and out of these 40 (38.8%) said they get most of their information from the radio and 23 (22.3%) said they normally refer to the more experienced friends, neighbors and relatives when they need any information

16 (10.7%) of the sample had secondary education and radio 4 (25%), books 4(25%), and friends, neighbors and relatives 4 (25%) had been their major sources of information. Two (1.3%) of the respondents had post secondary education and all of them said they normally find books to be their major source of information

4.4.2 Level of family income

Income has a significant role to play in the accessibility and use of nutritional information. Apart from providing the family with the economic power to purchase their food stuff, income also provides access to the essential sources of information that can help the family utilise the limited resources that they have for improved nutrition.

4.4.2.1 Possible association between level of family income and the awareness of the mother on various nutritional knowledge factors.

Table 17: Relationship between level of family income and the awareness of the various nutritional knowledge factors

	Level Family Income				
	<30,000	30,000-80,000	80,000-150,000	>150,000	Total
CAUSE OF MALNUTRITION					
*Lack of enough food	33.3% (18)	59.1% (39)	54.2% (13)	100.0% (6)	50.7% (76)
Do not Know	64.8% (35)	37.9% (25)	37.5% (9)	-	46.0% (69)
Other explanations	1.9% (1)	3.0% (2)	8.3% (2)	-	3.3% (5)
TOTAL	54	66	24	6	150
WEANING AGE					
> 1 Month	18.5% (10)	9.1% (6)	8.2% (2)	-	12.0% (18)
2 - 3 Months	37.0% (20)	56.1% (37)	41.7 (10)	33.3% (2)	46.0% (69)
* 4 - 6 Months	37.0% (20)	31.8% (21)	50.0% (12)	-	38.0% (53)
7- 9 Months	7.4% (4)	3.0% (2)	-	66.7% (4)	4.0% (10)
TOTAL	54	66	24	6	150
FREQUENCY OF FEEDING					
Twice	9.3% (5)	13.6% (9)	12.5% (3)	-	11.3% (17)
Three times	70.4% (38)	53.0% (35)	33.3% (8)	33.3% (2)	55.3% (83)
Four times	7.4% (4)	9.1% (6)	25.0% (6)	-	10.7% (16)
*>Four times	13.0% (7)	24.2% (16)	29.2% (7)	66.7% (4)	22.7% (34)
TOTAL	54	66	24	6	150
DIET DURING DIARRHOEA					
*More Food + Water +ORS	53.7% (29)	63.6% (42)	70.8% (17)	100.0% (6)	62.7% (94)
Do not know	16.7% (9)	10.6% (7)	25.0% (6)	-	14.7% (22)
Other explanation	29.6% (16)	25.8% (17)	4.2% (1)	-	22.7% (34)
TOTAL	54	66	24	6	150
TRANSLATION OF INFR. FROM THE MH CARD					
*Can Interpretation	38.9% (21)	63.6% (42)	66.7% (16)	83.3% (5)	56.0% (84)
Cannot Interpret	61.1% (33)	36.4% (24)	33.3% (8)	16.7% (1)	44.0% (66)
TOTAL	54	66	24	6	150

*** Correct explanations**

Source Survey data (2002)

Table 17 shows the percentage of women with correct information concerning different nutritional aspects among the various economic strata of people in this study. All the mothers who belong to the highest income group in this study said malnutrition is caused by lack of enough food and the percentage of women who did not know this have been increasing across different income groups. However, a chi-square test of independence indicates that there is no statistically significant association between this knowledge factor and the level of family income at 0.007 ($P<0.05$).

4.4.2.1.1 Weaning Age

The chi-square test of independence indicates that the association between weaning age and the level of family income is not statistically significant at 0.220 ($p<0.05$). This implies that being economically well off does not imply possessing correct information concerning the appropriate age to start weaning. 4 (66.7%) of the mothers from rich families said that appropriate weaning age is 7-9 month and only 2 (33%) said it is 2-3month.

4.4.2.1.2 Frequency of feeding

The chi-square test of independence indicates that the association between the frequency of feeding and the level of family income is significant at 0.018 ($p<0.05$), implying that those mothers with high income perceive that children need to be fed more frequently than those with low-income levels.

The knowledge of the proper management of children with diarrhea was not associated with the level of family income as indicated by the chi square value 0.057 ($p<0.05$), implying that this knowledge factor does not vary with the level of income.

4.4.2.1.3 Ability of the mother to interpret information from the MCH clinic card

Table 17 shows how this knowledge factor varies with the economic level of the family. The percentage of mothers who were able to interpret information from clinic cards was decreasing as the level of income decreases e.g. 83% from 150,000, 66.7% from 80,000-150,000, 63.6% from 30,000-80,000 and 38.9% from less than 30,000. The percentage of those who were not able to interpret decreases as the level of family income also increases (Table 17). The chi-square test also shows that there is an association between these two knowledge factors at 0.012 ($p<0.05$)

4.4.2.2 Possible association between level of family income and nutritional status

Table 18: Level of family income versus nutritional status

Nutritional status	Level of family income								TOTAL	
	<30,000TSHs		30,000 - 80,000 TSHs.		80,000-150,000 TSHs.		>150,000			
	No	%	No	%	No	%	No	%	No	%
Well nourished	30	55.6	53	80.3	23	95.8	6	5.4	112	74.7
Underweight	21	38.9	12	18.2	1	4.2	00	00	34	22.7
Severely Malnourished	3	5.6	1	1.5	00	00	00	00	4	2.7
TOTAL	54	36.0	66	44.0	24	16.0	6	4.0	150	100

Source: Survey data (2002)

Table 18 shows the relationship between the nutritional status of the children and the level of family income. It is observed from the Table that all the children who were malnourished come from families with low-income levels. The chi-square test of independence also shows that the association between levels of family income and the nutritional status of children is statistically significant at 0.003 ($p<0.05$). This implies that the percentage of children who are well nourished tend to increase as the level of family income increases (Table 18).

The reason for this may be that income together with improved purchasing power and hence improved food security to the families improves the accessibility of the mothers to different sources of information and facilitates use of that information as the economic constraints are reduced.

4.4.2.3 Possible association between levels of family income and the accessible sources of information

Table 19: Levels of family income versus accessible sources of information

CHANNEL	< 30,000		30,000-80,000		80,000-150,000		>150,000	
	No	%	No	%	No	%	No	%
Only clinics	7	13.0	7	10.6	00	00	00	00
Radio	21	38.9	24	36.4	8	33.3	1	16.7
Newspapers	4	7.5	3	4.5	2	8.3	00	00
Television	00	00	3	4.5	2	8.3	00	00
Books	3	5.6	12	18.2	2	8.3	00	00
Seminars	00	00	00	00	1	4.2	1	16.7
Friends	15	27.8	10	15.2	8	33.3	3	50.0
Exp. From Schools	1	1.9	1	1.5	00	00	1	16.7
Experience	1	1.9	3	4.5	1	4.2	00	00
Doctors	2	3.7	3	4.5	00	00	00	00
Total	54	36.0	66	44.0	24	16.0	6	4.0

Source: Survey data (2002)

54 (36%) of all mothers in the study were having the lowest level of family income. Out of these, 21 (38.9%) said that the radio is their major source of information after the MCH clinics and 15 (27.8%) normally get information they need from friends, neighbours and relatives. 66 (44.0%) of the sample were having an income level that ranges from 30,000 to 80,000Tz Shs. per month. Out of these, 24 (36.4%) said they get information from Radio, 12 (18.2 %) from books, and 10 (15.2%) get the information they need from friends, relatives and neighbours. The rest get information from other sources such as newspapers, television and doctors' advice (see Table 19). 24 (16.0%) of the respondents were having 80,000 to 150,000Tz Shs. income level per month, of these, 8 (33.3%) use the radio as their source of information and 8 (33.3%) use friends, neighbors and relatives. Three (50%) out of those with the highest level of income said they normally refer to friends, neighbours and relatives when they need any information. Therefore, it is clear that radio and friends, relatives and neighbours were the most used source of information across all the economic groups of people. The association between the level of family income and the sources of information that mothers use was statistically significant at 0.047 ($p>0.05$)

4.4.3 Age

4.4.3.1 Possible association between age of the mother and the accessible sources of information

A general observation reveals that older mothers were more experienced than young mothers when it comes to issues of childcare and the nutritional status of the

children. This is especially the case with those mothers with no formal education and those with primary level of education.

42 (28%) of the mothers in the sample were below 21 years of age and out of these 17 (40.5%) said they used friends, neighbors and relatives as their major source of information, 10 (23.8%) used radio, 4 (9.5%) used newspapers and the rest used the other sources. Those ranging between 22 and 31 years of age constituted 79 (52.7%) of the sample. 32 (40.5%) of them said they used radio and 15 (19.0%) said they used friends, neighbors and relatives as their source of information. 4 (13.8%) of those who were above 31 years of age used friends and 5 (17.2%) relied on experience as their source of information and the rest used other sources of information. The young mothers are less experienced and they tend to depend on the information they get from the more experienced mothers while the older mothers only need some current or new information to supplement the experience they have accumulated over the years.

Table 20: Age of the mothers versus accessible sources of information

CHANNEL	>21 Years		22 – 31 Years		>31 Years	
	No.	%	No.	%	No.	%
Only clinics	3	7.1	9	11.4	00	00
Radio	10	23.8	32	40.5	2	6.9
Newspapers	4	9.5	3	3.8	1	3.4
Television	3	7.1	3	3.8	00	00
Books	3	7.1	11	13.9	3	10.3
Seminars	00	00	2	2.5	00	00
Friends	17	40.5	15	19.0	4	13.8
Schools	1	2.4	1	1.3	1	3.4
Experience	00	00	00	00	5	17.2
Hospitals	1	2.4	3	3.8	1	3.4
TOTAL	42	28.0	79	52.7	29	19.3

Source: Survey data (2002)

4.4.3.2 Possible relationship between the age of the mother and child nutritional status

Table 21 below shows the number of children that are well nourished, underweight and severely malnourished across different age groups of mothers. From the Table it is revealed that 50% of the children that are malnourished belong to mothers who were below 21 years of age. According to the previous explanation, these were less experienced and therefore less informed about various nutritional aspects. This has implications for the need for the nutrition information providers to pay more attention to this group of mothers to ensure that they get the necessary information that will help them to improve the nutritional status of their children.

Table 21:Age of the mother versus nutritional status

Nutritional status	Age of the mother						TOTAL	
	<21 Years		22-31 Years		>31 Years			
	No.	%	No.	%	No.	%	No.	%
Well nourished	27	24.1	62	55.4	23	20.5	112	74.7
Underweight	13	38.2	15	47.1	6	14.7	34	22.7
Severely malnourished								
TOTAL	2	50	1	25	1	25	4	2.7
	42	28.0	78	52.7	30	19.3	150	100

Source: Survey data (2002)

4.4.4 Occupation

4.4.4.1 Possible association between occupation of the mother and the accessible sources of information

77 (51.3%) of the sample were mothers who were housewives and in this category 26 (33.8%) indicated radio and 11 (14.3%) MCH clinics as their major sources of information, followed by friends, neighbors and relatives. 23 (15.3%) of all the women interviewed were farmers. 11 (47.8%) indicated that the radio was their major source of information. Among mothers who were running small-scale businesses that is 22 (14.7%), 9 (40.9%) of them used radio and 4 (18.2%) used friends, neighbors and relatives as their source of information.

12 (8.0%) of the mothers were employed in a formal sector. Out of these 5 (41.7%) used books as their major source of information and 3 (25.0%) used the radio. 3 (75%) of the self employed mothers used the radio as their source of information while 1 (25%) used books (see table 22 below).

12 (8.0%) of the sample constituted a group of mothers who were mostly teenagers staying with their parents, and who did not engage in any economic activity of their own. Friends, neighbors, relatives, and in most cases their mothers, were their major source of every information they needed concerning childcare.

The results show that the radio is still the most often used source of information among mothers in different sectors of the economy except for those who are employed in the formal sector, who said they normally get the information they need by reading books and other printed media. The reason for this could be that these are more educated and probably they are better off economically and hence they can have more access to the printed media than the rest of the population.

Table 22: Occupation of the mother versus sources of information used

CHANNEL	House Wife		Farmer		Small scale bussiness		Employed in a Formal sector		Self Employed		No economics Activity	
	No	%	No	%	No	%	No	%	No	%	No	%
Only clinics	11	14.3	3	13.0	00	00	00	00	00	00	00	00
Radio	26	33.8	11	47.8	9	40.9	3	25.0	3	75.0	2	16.7
Newspapers	5	6.5	00	00	2	9.1	00	00	00	00	1	8.3
Television	3	3.9	00	00	2	9.1	00	00	00	00	1	8.3
Books	8	10.4	1	4.3	2	9.1	5	41.7	1	25.0	00	00
Seminars	00	00	1	4.3	00	00	1	8.3	00	00	00	00
Friends	19	24.7	3	13.0	4	18.2	2	16.7	00	00	8	66.7
Schools	2	2.6	00	00	00	00	1	8.3	00	00	00	00
Experience	1	1.3	3	13.0	1	4.5	00	00	00	00	00	00
Hospital	2	2.6	1	4.3	2	9.1	00	00	00	00	00	00
TOTAL	77	51.3	23	15.3	22	14.7	12	8.0	4	2.7	12	8.0

Source: Survey data (2002)

4.4.4.2 Possible association between occupation of the mother and child nutritional status

Table 23: Occupation versus nutritional status

Occupation	Well nourished		Underweight		Severely nourished	
	No	%	No	%	No	%
House wife	53	47.3	21	61.8	3	75
Farmer	16	14.3	6	17.6	1	25
Small scale bussness	19	17.0	3	8.8	00	00
Employed in a Formal sector	11	9.8	1	2.9	00	00
Self employed	4	3.6	00	00	00	00
Do not do anything	9	8.0	3	8.8	00	00
TOTAL	112	74.7	34	22.7	4	2.7

Source: Survey data (2002)

Table 23 shows that all the children that are malnourished belong to mothers who were either farmers or housewives. 75% of the malnourished children belong to mothers who were housewives

4.5 Extent of the use of information in dealing with the malnutrition problem by mothers

Research question number four sought to find out the extent of the use of information in addressing the problem of malnutrition. This covered questions 26 to question 33 in the questionnaire. Question 26, 27 and 30 were evaluative questions. These were directed to the nutritional education sessions that are provided in clinics. Those mothers who normally attend the nutritional and education sessions offered in

MCH clinics responded to these questions. 98% of the mothers who attend these sessions said that the format that is being used to provide nutrition information to them in MCH clinics is appropriate to them and 99% said they normally understand what they are being taught. However, when these mothers were asked if they had any suggestion that could help make these session more effective, 85% of them said they liked the sessions to be provided more frequently in order to get adequate information. 70% of them said the sessions were very helpful to them except that they were being provided very rarely.

In question 33, mothers were asked to rate the extent to which MCH clinics have been successful in disseminating information to mothers, especially in creating awareness of the problem of malnutrition and in providing appropriate information to mothers in improving the nutritional status of their children.

Most mothers were uncertain as to whether the MCH clinics have been successful or not in disseminating nutritional information to mothers.

4.5.1 Effectiveness of MCH clinics in disseminating nutritional information

Table 24: How successful the MCH clinics are in disseminating information

	Very Successful		Successful		Uncertain		Less Successful		Not Successful	
	No	%	No	%	No	%	No.	%	No.	%
(a) Creating awareness of the problem of malnutrition	46	29.9	31	20.1	55	35.7	11	7.1	7	4.5
(b) Giving appropriate Information to Mothers according to the nutritional Status of their children	43	27.9	36	23.4	49	31.8	14	9.1	8	5.2

Source: Survey data (2002)

Table 25: Sources of information that mothers use

SOURCES OF INFORMATION	PERCENTAGE OF USERS
1. Radio	54.5 %
2. Friends, neighbors and Relatives	37.7 %
3. Newspapers	31.2 %
4. Television	16.9 %
5. Books	13.6%
6. School	6.5 %
7. Doctors advice from hospitals	6.5 %
8. Experience	5.2 %

Source: Survey data (2002)

Table 25 shows the major source of information that mothers use and the percentage of mothers who have access to those sources. The radio has been cited as the most frequently used source. This is followed by friends, neighbors and relatives and then newspapers. The radio is normally a good source of information because it can be used by both literate and the illiterate people and can reach many people at a time. The radio normally offers best solutions to problems associated with literacy, language, distance and access (Mavoneka 1991: 58) The study concurs with the findings of Lettenmainer et al (1993) that the radio is the most popular source of information because of its instant accessibility to many people. Use of media like newspapers and radio is highly recommended as the most suitable way of accessing information because they are cheap. However, it is recommended that newspapers and radio programs should focus more on educational matters rather than music, stories and entertainment in general.

The media is a fast and most effective way of transferring information. It is also relatively cheaper and can easily be shared among people. Hence the nutrition information providers should utilize the media to provide information to their target groups.

Most people can afford newspapers and radio or at least have access to them. Once they are aware of the information available, they can easily make use of the services and access information. Although the media has been cited as the most useful source of information and has the potential of disseminating messages quickly, such

programs are normally short and messages in the media can only tell people about a problem and

how to solve it. They give people useful information but they do not usually persuade people to change what they do. People are more likely to change what they do if a nutritional worker whom they know and trust explains and discusses the message (FAO, 1994). A combination of media and the education sessions provided in clinics can therefore run concurrently for effective service.

Also some mothers said that they did not have time to listen to the radio due to many responsibilities at home. But if these messages can be targeted at hours/times when most mothers are at home and are relieved from their daily activities, then a good number of them could be reached.

Peers who are more knowledgeable or are more experienced in childcare also have been cited to be a useful source of information.

Table 26: Major sources of information that mothers use against child nutritional status

Nutritional status	Sources of Information						
	MCH Clinics only	Radio	News papers	TV	Books	Seminars	Friends, relatives & neighbors
Well nourished	57.1 % (8)	77.8 % (42)	87.5% (7)	100. % (6)	76.5% (13)	100.0% (2)	66.7% (24)
Underweight	35.7% (5)	20.4 % (11)	12.5 % (1)	–	23.5 % (4)	–	27.8 % (10)
Severely Malnourished	7.1 % (1)	1.9 % (1)	–	–	–	–	5.6 % (2)
TOTAL	100.% (14)	100% (54)	100% (8)	100% (6)	100% (17)	100.0% (2)	100.0% (36)

Source: Survey data (2002)

Table 26 shows the major sources of information that mothers considered to be the most useful to them. From the table it is clear that of all mothers who said they thought what they got from MCH clinics was enough to them and they did not have access to any other source of information, 8 (57.1%) had children who are well nourished, 5 (35.7%) were underweight and 1 (7.1%) were malnourished.

54 of these mothers said that in addition to what they got from the clinics, most of the time they got additional information that they needed from the radio programs. 42 (77.8 %) of them had well nourished children, 1 (1.9%) were severely malnourished and 11 (20.4%) were underweight. For those mothers for whom newspapers were the main source of information, 7 (87.5%) had well-nourished children and 1 (12.5%) had children who were underweight. All mothers who said

they received most of the information that they needed from the televisions, had children who are well nourished. The reason for this may be that these mothers are economically well off as well.

For those mothers who found books to be their major source of information, 13 (76.5%) had well-nourished children and 23.5% had children who were underweight. All mothers who said they got most of the information that they needed from seminars organized in their churches or by different non-governmental organizations had children who were well nourished. 24 (66.7%) of mothers who said they got the information they needed from their friends, neighbors and relatives had children that were well nourished, 10 (27.8%) had underweight children and 2 (5.6%) had children who were severely malnourished.

The relationship between child nutritional status and mothers access to different sources of information cannot be directly and adequately established, but information plays a very important role in facilitating decision making and influencing people's actions. Therefore, access to information combined with other factors that facilitate effective use of information such as educational and environmental factors, can make mothers information literate, which is likely to influence the nutritional status of their children.

4.6 Summary

This chapter presented and discussed the findings of the study. It was observed from the study that; Majority of the respondents 79 (52.7%) were between the ages of 22-31, 103 (68.7%) of the respondents had completed primary school education, most of them 77 (51.3%) were housewives and 66 (44%) had an income level of between 30,000-80,000TShs. per month. 112 (74.7%) of the survey children were well nourished, 34(22.7%) were under weight and 4 (2.7%) were severely malnourished.

Health and nutrition education sessions, counseling, home visits and posters were identified to be the major sources of information and the communication channels that were being used to deliver information to mothers in MCH clinics. However, the health and nutrition education sessions were seldom conducted and the attendance of mothers into these sessions was poor. Counselling was mainly done to mothers with malnourished children and very little information was provided to mothers with non-malnourished children. Consequently, this denied them the kind of information that would have helped them prevent their children from being malnourished.

The knowledge of the mother concerning various nutritional aspects was low due to lack of information. The relationship between nutritional knowledge of the mother and child nutritional status reveals that in most cases mothers whose children were either underweight or malnourished were less informed compared to mothers with well-nourished children except for the knowledge of the mother concerning the cause of malnutrition where 75% of mothers with severely malnourished children were

able to explain the cause of malnutrition. These mothers were sensitized during the illness of their children.

Education, level of family income, occupation and age were the variables that determine use and accessibility of nutrition information. Among these variables education was considered to be the most important. Education influences both knowledge of the mother concerning various nutritional aspects and child's nutritional status. This is because education improves accessibility to different sources of information, facilitates use of that information and it empowers women to efficiently manage limited household resources for the nutritional improvement.

The radio was cited to be the major source of nutritional information to mothers followed by friends, neighbors and relatives and then newspapers.

CHAPTER FIVE

CONCLUSIONS AND RECOMMENDATIONS

5.0 Introduction

This chapter discusses the conclusions and the recommendations that were derived from the study. Each of the conclusion and the recommendation has been discussed under the appropriate sub heading.

5.1 CONCLUSIONS

5.1.1 Appropriate Nutritional Information

The importance of appropriate nutritional information in improving nutritional status of underfirve children cannot be overemphasized. Mothers need appropriate information to help them take good care of their children and make better food choices and hence prevent them from being malnourished.

5.1.2 Access to Reliable Information

It was observed from the study that currently most mothers do not have access to reliable sources of information and as a result, the awareness of mothers about important nutritional aspects is not very encouraging due to lack of information. This calls for the need to strengthen the communication channels that are being used currently to deliver information to mothers and to devise some other means of disseminating nutrition information to ensure that mothers have access to reliable information whenever they need it.

5.1.3 Nutritional Education Sessions

The health and nutritional education sessions implemented by MCH clinics still play an important role in dealing with this problem but malnutrition deserves much more attention by the MCH staff. This is because malnutrition is a condition that requires a preventive rather than curative approach and nutrition education can offer a very good preventive strategy to the problem.

5.1.4 Influence of Education

Education has been identified as the most important variable that influences access to different sources of information. Education influences the knowledge of the mother about different nutritional aspects and facilitates use of information, which ultimately improves nutritional status. But it was observed that the majority of mothers still have no any form of formal education or have only the minimum level of education. Hence the nutritional information providers should consider this aspect when delivering information. The level of family income seems to influence nutritional status but it has little influence on knowledge of important nutritional aspects and accessibility to the sources of information used.

5.1.5 Role of Nutritional Information

Despite the fact that nutrition information alone cannot adequately improve nutritional status it has been observed that it can help in the adaptation of no cost or low cost nutritional approaches which can improve child nutritional status. This will help to reduce the current rates of malnutrition in Tanzania, which are still high according to international standards.

5.2 RECOMMENDATIONS

5.2.1 Disseminating Nutritional Information

The following are the recommendations, which are based on the findings of this study. It is recommended that malnutrition should be given much more attention by the MCH staff and disseminating nutritional information should be considered an important aspect in the fight against malnutrition.

5.2.2 Funding

The nutrition and health education sessions in most MCH clinics are underfunded and they are characterized by lack of trained personnel, lack of teaching aids and materials for conducting such sessions. These make them less effective and contribute to the low morale of the MCH staff who conduct them. Therefore, in allocating funds for different activities in clinics, the importance of these sessions in the fight against malnutrition should be taken into consideration.

5.2.3 Involve less educated mothers

The study reveals that the majority of women who attend these clinics are not well educated and more cases of malnutrition appeared to children of mothers who belong to this category. Therefore, it is recommended that the less educated women who are still the majority of the population should not be forgotten. MCH nutrition education effort should focus more on this group of women. Because the potentials of improving the nutritional status of the children of this group of women are still high if they are given appropriate information, that will help these women to use scarce

resources that are at their disposal appropriately. Special programs to disseminate information to this group of mothers should be devised to help them.

5.2.4 Establishment of Information Units

Establishment of information units within the MCH clinics is also recommended. These can be used to keep all the important information that mothers need. Availability of computers and photocopying facilities will also facilitate accessibility of documents by mothers and will help in the production of teaching aids. This will ease mothers' access to the sources of information any time that they need that information rather than the other sources e.g. the mass media that may provide information, which may not be needed by all users at that particular time. People need adequate, accurate and timely information to help them solve their practical problems. This should go hand in hand with creating awareness on the importance of information and promoting reading culture within the society, to enable people take advantage of the different sources of information available.

5.2.5 Nutrition Seminars

The study revealed that nutrition seminars organized by churches and non-governmental organizations were a equally very good source of information. It is thus recommended that clinics, religious organizations, non governmental organizations, women groups and organizations should be encouraged to organize nutrition seminars and workshops for mothers more frequently to help mothers get the information they need. Seminars and workshops are very effective and convenient ways of transferring information because of the following reasons: first,

in such events people get the opportunity of sharing experience and information thus making information reach its target users more effectively. Secondly, the information providers are well prepared to give useful, relevant and understandable information content, and lastly because such training has a specified period of time, mothers can plan ahead of the time and thus systematically acquire information in a relaxed manner.

5.3 AREAS FOR FURTHER STUDY

The following studies could be carried out as a continuation of this study.

- An experimental study to compare the nutritional knowledge on various nutritional aspects and child nutritional status for those mothers who attend MCH clinics and those who do not.
- Comparative study to compare accessibility and use of nutritional information between urban and rural areas.
- A study on health/nutrition information seeking behavior and information needs of mothers and MCH staff.

REFERENCES

Abbi, R.; Christian, P.; Gujaral, S. and Gopaldas, T. (1988). "Mothers nutrition knowledge and child nutritional status in India". *Food and Nutrition Bulletin* 10 (3) 54-58 pp.

Adie, H.R.; Martin, G.E.; Noudi, L. Garba, M.T: (1985). "Prevention of protein energy malnutrition in rural areas", Review of Scientific Techniques; 2 (1-2): 7-20 pp.

Andrien, M. (1994). Social communication in nutrition. A methodology for intervention. Rome: Food and Agriculture Organisation of the United Nations.

Austin, E.J. and Mirian, F.Z. (1981). Nutrition intervention in developing countries. Cambridge, Massachusetts: Gunn and Hain Publishers, Inc.

Babu, A.D. (1994). Information generation and library use by university teachers. New Delhi: Gyan Publishing House.

Bhalalusesa, E.P. (2000). The rights to basic education for girls and women: Tanzanian experience. Copenhagen: Danish Center for Human Rights 13 -14 pp.

Bulmer, M. (1993). General introduction. Bulmer, M. and Warwick, P. (Eds). Social research in developing countries: Survey and censuses I Third world, London: UCL Press.

Busha, C.H. and Harter, S.P. (1980). Research in Librarianship: techniques and interpretation. New York: Academic Press.

Church, M. (1979). Dietary factors in malnutrition: Quality and quantity of diet in relation to child development. *Proceedings of Nutrition Society* (38) 41- 49 pp.

Dal-Lago, A.M. Serventi; M. and Kimaro, D. (1988). Malnutrition the major cause of mortality among under fives in Tanzania, a few points on MCH service. Dodoma General Hospital, Pediatrics Department. Ten years of Alma Alta declaration Tanzania's experience. Proceedings of the 7th Annual Scientific Conference, Arusha, 8th – 11th November, 1988. 234 -7 pp.

Draper, A. (1994). Energy density of weaning foods. Infant Nutrition: Issues in Nutrition and Toxicology. edited by A.F. Walker and B.A. Rolls, London: Chapman & Hall.

Dubey, Y.; Menon, V. and Prasad, H. (Ed.). (1994). Information technology and national development. International Conference on Information Technology and National Development 16-17 Dec. 1991, Banaras Hindu University. India: Y.K. Publishers.

Fairer-Wessels, F.A. (1987). Basic community information needs of black women. Mousaion, 5 (1), 54 – 65

FAO. (1982). Field program management, Food and nutrition course. Leader's guide, Rome. Food and Agriculture Organization of the United Nations.

FAO. (1994). Food nutrition and agriculture alimentation. Rome. Food and Agriculture Organization of the United Nations.

FAO. (1995). Nutrition education and communication strategies for different groups and settings. Nutrition education for the public. FAO Food and nutrition paper 59. Rome: Food and Agriculture Organization of the United Nations 19-24 pp.

FAO. (1997). Preventing micro-nutrient malnutrition: A guide to food based approaches. A manual for policy makers and program planners. Rome. Food and Agriculture Organisation of the United Nations 20 pp.

Friedrich, J. (1997). "The Integrated Rural Nutrition Project, Kawambwa, Zambia": SCN News 1997 Dec; (15): 26 –7.

Graeff, J.A.; Elder, J.P. and Booth, M.B. (1994). Communication for health and behavior change. Washington: Academy for Educational Development.

Gwatkin, D.R. (1985). "Nutrition education: An overview of the issue". *Food and Nutrition Bulletin* 7 (2): 1- 6.

Haywood, T. (1995). Info-Rich-Info-Poor: Access and exchange in the global information society. London: Bowker Saur.

Ishengoma, E. (1992). Prevalence of child malnutrition and factors associated with it; case of Mororgoro Urban. Masters Dissertation. Department of Agricultural Education and Extension, Sokoine University of Agriculture, Morogoro, Tanzania.

Kaniki, A.M.(1995). "Exploratory study of information needs in the Kwa Nganase (Natal) and Qumbu (Transkei) Communities of South Africa", *South African Journal of Library Science*, 63 (1): 9 -16.

Kavishe (1993). Nutrition-Related actions in Tanzania. Tanzania Food and Nutrition Centre 20th Anniversary, 1973 -1993. Monograph Series No.1. A case study for the XV Congress of International Union of Nutritional Science, Sept. 26-Oct. 1, 1993 Adelaide. Dar es Salaam: UNICEF.

Kempson, E. (1992). "Rural community information services: guidelines for researching needs, setting up services and evaluating performance". *IFLA Journal*, 16 (4): 429 – 439.

Kennedy, E. and Haddad, L. (1994). "Are preschool from female headed households less malnourished. A comparative analysis of results from Ghana and Kenya", *The Journal of Development studies*, 30 (30): 680-695.

Kidder, L.H., Judd, C.M. and Smith, E.R. (1986). Research methods in social relations. (5th ed.). New York: Holt Rinehart and Winston.

King, F.S. (1992). Helping mothers to breastfeed, (Revised edition), Nairobi: African Medical and Research Foundation.

King, F. and Burgess, A. (1993). Nutrition for developing countries, (Second edition). New York: Oxford University Press.

Kingamkono, R.R. (1995). "Germination and fermentation: Potential solution to weaning problem in Tanzania". TFNC Nutrition Newsletter (4) 8

Kiondo, E. (1998). Accessibility to gender and development information by rural women in the Tanga region, Ph.D. Thesis, Pietermaritzburg, University of Natal, South Africa.

Kothari, C.R. (1990). Research methodology-methods and techniques. New Delhi: Willey Eastern Limited.

Ljungqvist, B., Mellander, O. and Svanberge, U. (1981). "Dietary bulk as a limiting factor for nutrient intake in pre school children: A problem description", *Journal of Tropical Pediatrics*, 27 (1) 68-73.

Lweno, S.Y. (1988). The food and nutrition unit and the interaction with horticultural activities in the country. A paper presented at the workshop for horticultural co-ordinators, Tanga, Tanzania 27-30 May 1988.

Luttenmainer, C. et al (1993). "Using radio soap operas to promote family planning" Hygie XXI (I) 5 pp.

Massawe, B. (1994). The role of IEC in maternal nutrition and safe motherhood. Proceedings of the National maternal nutrition workshop 11 - 15 Jan. 1994. Mbagala, Dar es Salaam. Compiled by R. Shirima; M Materu; G. Ndosi; B. Mduma. TFNC Report No. 1618.

Mavoneka, J. (1991). "Women Radio Listeners Club: Learning and earning in village airwaves", Mathlasedi Nov/Dec, 55-56.

Mohmoud, M. (1983). A study survey on a pattern of protein-energy malnutrition and possible contributing factors amongst under-five years children in one of the peri-urban areas in Zanzibar. Dar Es salaam: TFNC Report No. 806.

Mointeiro, A. and Gross, R. (1989). "Urban nutrition in developing countries: Some lessons to learn". Food and Nutrition Bulletin 11(2).

Mtebe, K,; Mamiro,P.; Njebele, C.W.,; Nyangali, E.E. and Malekela, S. (1988). A Survey Report on house hold food security in CSD Programme Area in Morogoro Region. TFNC Report No. 1198.

Mwansasu, M.Y. (2001). Accessibility of information to small-scale industries (SSI) In Tanzania: A case study of selected small scale industries in Dar Es Salaam. MA Dissertation, University of Dar Es Salaam.

Niemeijer, R. and Hoorweg, J. (1991). Interventions in child nutrition: Evaluation studies in Kenya. Nairobi: African Medical and Research Foundation (AMREF) 95-99, 122 pp.

Nyange, D.A. (2000). The analysis of food insecurity and malnutrition in Tanzania and its policy implication. A Ph.D. Thesis Kyoto University, Japan.

Peace Corps. (1989). "Breastfeeding information for Kenyans by the breastfeeding information group". Community Nutrition Action for Child Survival. 3(1)

Pelletier D. (1995). The role of information in enhancing child growth and improved nutrition: A synthesis. Child growth and nutrition in developing countries: Priorities for action, edited by P. Andersen, D. Pelletier and H. Anderman, Ithaca, New York: Cornell University Press.

Powell, R.R. (1991). Basic research methods for librarians. Norwood, New Jersey: Abelex.

PRICOR, (1988). System analysis points out missing link in growth monitoring programs. Zaire. Results from systems analysis. Primary Health Care Operations Research Project. Maryland: Chevy Chase 2 pp.

Ross, J. (1996). Development of a profiles application for nutrition policy dialogue in Zambia. Arlington: Virginia, Partnership for Child Health Care.

Rowland, M.G.M. (1986). "The weaning's dilemma: are we making progress?" *Acta Paediatrica Scandinavica*, 3(23), 33-42 pp.

Sanders, W.B. and Pinhey, J.K. (1974). The conduct of social research, New York: Holt, Rinehart and Winston.

Selltiz, C., Wringtman, L.J. and Cook, S.W. (1976). Research methods in social relations. (3rd ed.) New York: Holt, Rinehalt and Winston.

Smith, B. (1997). Past experience and needs for nutrition education: Summary and conclusions of nine case studies, Nutrition education for the public: Discussion paper of the FAO expert consultation, FAO Food and Nutrition Paper 62, Rome: Food and Agriculture Organisation of the United nations.

Stuart, H. and Achterberg, C. (1997). Education and communication strategies for different groups and settings. Nutrition Education for the Public: Discussion paper of the FAO Expert Consultation, FAO Food and Nutrition Paper 62, Rome: Food and Agriculture Organisation of the United Nations.

Tanaka, P.A.; Yeung, D.L. and Anderson, G.H. (1989). "Health professionals as source of infant nutrition information for Metropolitan Toronto Mothers", Canadian *Journal of public health revenue*, 80 (3): 200-4

Tanzania Reproductive and Child Health Survey. (1999). Dar es Salaam: National Bureau of statistics

Tripathi, P.C. (1999). A Textbook of research methodology in Social Sciences. Third Revised Edition, New Delhi: Sultan Chad and Sons.

UNDP. (1998). Human development report. New York: United Nations Development Program.

United Republic of Tanzania. (1997). Morogoro Region Socio Economic Profile. Dar Es salaam: Planning Commission of Tanzania.

United Republic of Tanzania. (2001). Poverty reduction strategy paper April 2000, (The First PRSP Annual Progress Report).

UNICEF (1985). Programme for child survival and development in Morogoro Region 1987-1991 46 pp. Dar es Salaam: UNICEF.

Walker, A.F. (1990). "The contribution of weaning foods to protein malnutrition" Nutrition Reserch Reviews, 3; 25-47

Walker, A.F. and Pavitt, F. (1989). "Energy density of Third World weaning foods" BNF Nutrition Bulletin, 14: 88-101.

WHO, (1994). Infant and young child nutrition. Resolution 47.5 of the 47th World Health Assembly, Geneva, 9 May 1994. Geneva: World Health Organisation.

Zeitlin, M.F. and Formaicion, C.S. (1981). Nutrition Education. Nutrition Intervention in Developing Countries: An overview, edited by F. Austin and P. Zeitlin. Washington: USAID.

Zeitlin, M.F. (1988). The potential impact of nutrition education. Effective communication for nutrition in primary health care, Massachusetts: Tufts University School of Nutrition.

REFERENCES FROM THE INTERNET

Anan, K. UNICEF: The State of the world's children 1998 <http://www unicef.org/sowc98/> (June 18, 2001)

Carol, B. UNICEF: The State of the world's children 1998 <http://www unicef.org/sowc98/> (June 18, 2001)

Chowdhury, N: Poverty alleviation and information and communication technologies. (2001)<http://www.eb2000.org/short_note_19.htm> (27th Aug. 2001)

Kostermans, K. (1994). The World Bank Groups. Nutritional status measurement. URL.<http://wbln0018.worldbank.org/rdv/food.nsf/All+Documents/AEB3E74415C FBFB3852566910073663D?OpenDocument> (5th Dec. 2001)

Merriam-Webster's Dictionary. (2002). < http://www.m-w.com/cgi-bin/dictionary>

Royal, D.C. (1983). Communication planning for effective nutrition programmes. in effective communications for nutrition in primary health care, Report of the Asian Regional Workshop, Bangkok, Thailand 3-7 Oct. 1983. edited by J.E. Andersen and A. Valyasevi, Tokyo: United Nations University Press. <http://www.unu.edu/unupress/unupbooks/80634e/80634E02.htm> (5th Dec. 2001)

Smith, L.S. and Haddad, L.: Overcoming child malnutrition in developing countries: Past Achievements and future choices February , 2000 <http://www.ifpri.cgiar.org/2020/briefs/number64.htm> (June 17th 2001)

Smith, L.S. and Haddad, L.: 2020 Vision Initiative Panel Discussion Overcoming Child_Malnutrition in Developing Countries Past Achievements and Future Choices Feb. 2000 <http://www.ifpri.cgiar.org/checknames.cfm/2020dp30.pdf?name=2020dp30.pdf&direc=d:\webs\ifpri\2020\dp> (June 17th 2001)

UNICEF: The progress of Nations: League Table of Malnutrition-1996 <http://www.unicef.org/pon96/leag1nut.htm > (20th October, 2001)

APPENDIX 1A

QUESTIONNAIRE FOR MOTHERS/CARE TAKERS WHO ATTEND MCH CLINICS.

1. Respondent serial no.....Date .....

2. Name of MCH clinic.....

3. Age of the child .....Age of the mother.....

4. How many children do you have .....

5. How many are below five years of age.....

6. Education level

(a)	Did not go to school	( )
(b)	Adult education	( )
(c)	Primary education	
	(i) (Std I-IV)	( )
	(ii) (I-VII or VIII)	( )
(d)	Secondary education	( )
(e)	University education	( )

7. Mothers/ care taker's occupation
(This include being a housewife, running small scale business or being employed)

.....
.....

8. What is the income level of your family per month?

(This means the income that you yourself or your family get from the following:
(i) Salaries.....
(ii) Self employment activities which are non agricultural e.g. small scale business, etc.....
(iii) Self employment activities, which are agricultural.....
(iv) Income from house rent.....
(vii) Grants from relatives and friends.....
(viii) Others please specify.....

- **The relationship between the information that mothers have and the nutritional status of their children**

Information on Malnutrition

9. What is malnutrition?

.....

.....

10. What is the treatment of malnutrition?

.....

.....

Information about weaning

11. At what age do you start giving solid food other than milk to the baby?

(a)	Less than a moth	( )
(b)	2-3 Months	( )
(c)	4-6 months	( )
(d)	7-9 months	( )
(f)	Above 9 month	( )

12. How many times do you feed your baby per day?

(a)	Once per day	( )
(b)	Twice per day	( )
(c)	Three times per day	( )
(d)	Four times per day	( )
(e)	More than five times per day	( )

13. What type of food should be used for weaning?

(a)	Solid foods	( )
(b)	Liquid foods	( )
(c)	Soft and semi solid foods	( )

Information about breast-feeding

14. How soon should breast feeding start after delivery?

(a)	Immediately	( )
(b)	1-3 hours	( )
(c)	4-6 hours	( )
(d)	7-9 hours	( )
(e)	10-12 hours	( )
(f)	13-15 hours	( )
(g)	Above 24 hours	( )

15. How many times should the baby be breast-fed?

(a)	Any time s/he wants	( )
(b)	Once per day	( )
(c)	Twice per day	( )
(d)	Three times per day	( )
(e)	Five times per day	( )

16. Do you breast fed your child at night?

1.	No	( )
2.	Yes	( )

17. If yes how many times?

(a)	Anytime she/ he wants	( )
(b)	Once per night	( )
(b)	Twice per night	( )
(c)	Three times per night	( )
(d)	Four times per night	( )
(e)	Other specify	( )

18. If no why?

.....
.....

19. What is the appropriate age to stop breast-feeding?

(a)	2-6	months	( )
(b)	7-12	months	( )
(c)	13-18	months	( )
(d)	19-24	months	( )
(e)	Above 24	months	( )

Information about management of diseases (e.g. diarrhea)

20. What type of food do you give to the child suffering form diarrhea? or what is the proper management of a child suffering from diarrhea

.....
.....

21. Are you aware of the oral rehydration therapy (ORT)?

(a)	Yes	( )
(b)	No	( )

31. If YES please explain

.....

.....

32. If no why?

.....

.....

33. Do you think the MCH clinics have been successful in disseminating nutrition information especially in the following areas. Please tick accordingly

	Very successful	Successful	Uncertain	Less successful	Not Successful
(a) Creating awareness of the problem of malnutrition					
(b) Giving appropriate Information to mothers according to the Nutritional status of the their children					

- **Other sources of nutrition information that mothers use.**

34. Where else do you get the nutritional information? Use numbers to indicate In order of priority, which source is more applicable than the other.

(a) Radio ( )
(b) Newspapers ( )
(c) Television ( )
(d) Libraries and information centers ( )
(e) Seminars and workshops ( )
(f) Through a friend ( )
(g) Schools ( )

35. Do you normally read and get any information from the posters on the walls of the clinics

Yes ( )
No ( )

APPENDIX IB

DODOSO KWA KINAMAMA WANAOHUDHURIA KLINIKI ZA KINA MAMA NA WATOTO

1. Namba ya msailiwa..... Tarehe .....

2. Jina la kliniki.....
3. Umri wa mtoto.....Umri wa mama.....

4. Je? Una watoto wangapi.....

5. Wangapi kati ya hao wana umri chini ya miaka mitano.....

6. Kiwango cha elimu ulichofikia

(a) Sijawahi kusoma shule ( )
(b) Elimu ya watu wazima ( )
(c) Elimu ya msingi
  (i) Darasa la I-IV ( )
  (ii) Darasa la I-VII au VIII ( )
(d) Elimu ya sekondari ( )
(e) Chuo kikuu ( )

7. Je? Una fanya kazi gani?

.....
.....
(Kazi ni pamoja na kuwa mama wa nyumbani, biashara ndogondogo, ajira n.k.)

8. Pato la familia yako ni shilingi ngapi kwa mwezi?
(Hii ina maanisha pato ambalo familia yako kwa ujumla au wewe binafi kama huna familia unalipata kutokana na yafuatayo

- Mshahara.....
- Shughuli zisizo za shamba/Mifugo ambazo ni za kujiajiri kwa mfano biashara, ufundi stadi, mama lishe n.k.....
- Shughuli za shamba/mifugo ambazo niza kujiajiri.....
- Mapato kutokana na kodi ya nyumba.....
- Fedha za msaada kutoka kwa ndugu, jamaa na marafiki.....
- Nyingine tafadhali taja.....

9. Utapiamlo unasababishwa na nini?

.....
.....

10. Nini tiba ya utapia mlo?

.....

11. Mtoto ananza kupewa vyakula vya kulikiza akiwa na umri gani?

(a) Chini ya mwezi mmoja ( )
(b) Kati ya miezi miwili na mitatu ( )
(c) Kati ya miezi 4 – 6 ( )
(d) Kati ya miezi 7 – 9 ( )
(e) Baada ya miezi 9 ( )

12. Mtoto unamlisha vyakula vya kulikiza mara ngapi kwa siku

(a) Mara moja kwa siku ( )
(b) Mara mbili kwa siku ( )
(c) Mara tatu kwa siku ( )
(d) Mara nne kwa siku ( )
(e) Zaidi ya mara nne ( )

13. Vyakula vya kulikiza vinatakiwa kuwa vya aina gani?

(a) Vyakula vigumu ( )
(b) Vyakula vya majimaji ( )
(c) Vyakula rojorojo ( )

14. Unyonyeshaji unatakiwa kuanza muda gani baada ya kujifungua?

(a) Mara baada ya kujifungua ( )
(b) Kati ya saa moja mpaka matatu baada ya kujifungua ( )
(c) Kati ya masaa 4 – 6 baada ya kujifungua ( )
(d) Kati ya masaa 7 – 9 baada ya kujifungua ( )
(e) Kati ya masaa 10-12 baada ya kujifungua ( )
(f) Kati ya masaa 13-15 baada ya kujifungua ( )
(g) Baada ya masaa 24 ( )

15. Mtoto anatakiwa kunyonyeshwa mara ngapi kwa siku?

(a) Wakati wowote anapo hitaji ( )
(b) Mara moja kwa siku ( )
(c) Mara mbili kwa siku ( )
(d) Mara tatu kwa siku ( )
(e) Mara tano kwa siku ( )

16. Je huwa unamnyonyesha mtoto usiku?
(a) Ndiyo ( )
(b) Hapana ( )

17. Kama ndiyo mara ngapi?

(a) Kila mara anapohitaji ( )
(b) Mara moja kila usiku ( )
(c) Mara mbili kila usiku ( )
(d) Mara tatu kila usiku ( )
(e) Mara nne kila usiku ( )
(f) Vingine tafadhali fafanua ( )

18. Kama hapana kwa nini?

.....
.....

19. Mtoto anatakiwa kuachishwa kunyonya akiwa na umri gani?

(a) Miezi 2-6 ( )
(b) Miezi 7-12 ( )
(c) Miezi 13-18 ( )
(d) Zaidi ya miezi 24 (miaka miwili) ( )

20. Mtoto akiugua ugonjwa wa kuharisha unampa vyakula vya aina gani?

.....
.....

21. Je? Unafahamu ORS (ORS ni aina ya maji yanayotumika kwa mgonjwa au mtoto akiwa amepoteza maji mwilini kutokana na kuharisha au kutapika kwa muda mrefu)

(a) Ndiyo ( )
(b) Hapana ( )

22. Kama jibu ni ndiyo tafadhali eleza inavyotengenezwa

.....
.....

23. Uzito wa mtoto kutoka kwenye kadi ya kliniki

.....
.....

24. Uwezo wa mama kutafsiri maelezo na ukuaji na afya ya mtoto kutoka kwenye kadi ya kliniki (Hii ilijulikana kwa kumuuliza mama maswali kuhusiana na jinsi anavyo ona ukuaji na maendeleo ya afya ya mtoto wake kwa kuangalia kadi ya kliniki na kumuuliza mama maana ya alama mbalimbali zinazo onekana katika kadi ya kliniki.

.....
.....

(i) Anaweza kutafsiri ( )
(ii) Hawezi kutafsiri ( )

25. Je umewahi kuhudhuria masomo yoyote ya elinu ya afya katika kliniki?
(i) Ndiyo ( )
(ii) Hapana ( )

* Kama umewahi endelea na swali la 26.

26. Je unafikiri muundo unaotumika kuelimisha kina mama juu ya lishe hapa kliniki ni nzuri kwako?
.....
.....

27. Je una elewa kile unachofundishwa hapa kliniki

(a) Ndiyo ( )
(b) Hapana ( )

28. Kama hapana unafikiri ni kwa nini?
.....
.....

29. Una ushauri gani ili kusaidia kufanya uelimishaji wa kina mama katika kliniki uwe wenye manufaa zaidi.
.....
.....

30. Je inakuwa rahisi kwako kutekeleza yale unayofundishwa hapa kliniki hasa katika swala la lishe?

(a) Ndiyo ( )
(b) Hapana ( )

31. Kama ndiyo tafadhali fafanua
.....
.....

32. Kama hapana unafikiri ni kwa nini?
.....
.....

33. Unafikiri kliniki zimefanikiwa katika kueneza taarifa zinayohusina na lishe hasa katika maeneo yafuatayo

	Zime fanikiwa sana	Zime fanikiwa	Sina uhakika	Zimefanikiwa kidogo	Hazijafanikiwa kabisa
(a) Kuifahamisha jamii Kuhusu kuwepo kwa tatizo la utapia mlo					
(b) Kuwapa Kina mama taarifa sahihi za lishe kulingana na hali ya lishe ya watoto wao.					

34. Ni sehemu gani nyingine unayo itumia kupata taarifa sahihi ya lishe. Tumia namba kuonyesha njia unayoitumia zaidi kuliko nyingine.

(a) Redio ( )
(b) Magazeti ( )
(c) Televisheni ( )
(d) Maktaba ( )
(e) Warsha na makongamano ( )
(f) Kupitia marafiki ( )
(g) Mashuleni ( )

36. Huwa unasoma na kujifunza chochote kutoka kwenye mabango yaliyobandikwa hapa kliniki.....
.....

APPENDIX II A

QUESTIONNAIRE FOR THE MCH STAFF

1. Respondent's serial number.....Name of the clinic.....

2. Position in the MCH hierarchy.....

3. Level of education
   (a) Primary education ( )
   (b) Ordinary level of secondary education ( )
   (c) Advanced level of secondary education ( )
   (d) Others please specify
   .....
   .....

4. Professional courses attended in the health field

Qualification	Course	Year of graduation
Certificate		
Diploma		
Degree		
Others please specify		

5. How many times do you have MCH services per week
.....

6. What type of health information programs do you provide in your clinic? (Please tick the appropriate)

   (a) Family planning ( )
   (b) Immunisation ( )
   (c) Prevention of communicable diseases ( )
   (d) STD's including HIV/AIDS ( )
   (e) Nutrition programs including information on alleviation of malnutrition ( )
   (f) Others please specify ( )

.....
.....

7. How many programs on malnutrition do you provide per week/month?

.....

.....

8. What is the source of information for your nutritional programs?

(a)	Books	( )
(b)	Libraries	( )
(c)	Own experience	( )
(d)	Doctors/professionals	( )
(e)	Non Governmental Organisations	( )
(f)	International organization	( )
(g)	Ministry of health/government	( )
(h)	Internet	( )
(g)	Others specify	

.....

.....

9. How long does each session take?

(a)	0-15 minutes	( )
(b)	0-30 minutes	( )
(c)	0-45 minutes	( )
(g)	1 hour and above	( )

10. What methods do you use to deliver nutritional information to mothers?

(a)	One way eg. Lecture method	( )
(b)	Two way interactive method	( )
(c)	Group discussion	( )
(d)	Others specify	( )

11. Do you think the information that mothers get in your clinic is enough to enhance the nutritional status of their children?

(a)	Yes	( )
(b)	No	( )

12. If yes please explain

.....

.....

13. If no Please explain

.....

.....

14. Are there special programs focusing on those mothers with children at risk?

15. If yes please explain

.....
.....

16. If no why and what do you think could be done about it.

.....
.....

17. Do you encounter any problems in disseminating nutritional information to mothers?

(a) Yes ( )
(b) No ( )

18. If yes, what are those problems? Please mention

.....
.....

19. Have you ever received any training /seminar /short course to update what you learnt in the college

(a) Yes ( )
(b) No ( )

20. If yes please explain why and subject area covered.

.....
.....

21. How long did the training take

(a) 1-2 weeks ( )
(b) 1 month ( )
(c) 3 month ( )
(d) Others please specify ( )

If no, why .....
.....

22. Do you use poster, brochures, leaflets etc as teaching materials.

(a) Yes ( )
(c) No ( )

23. What other type of teaching materials do you use, during teaching?

.....
.....
.....

24. Where do you get the education material that you use in delivering Information to mothers for instance posters, brochures etc.

(a) Produce ourselves ( )
(b) From the government ( )
(c) Non Governmental Organizations ( )
(d) Please specify ( )

.....
.....

25. What importance do you give to the nutritional education programs in the fight against malnutrition?

(a) Very important ( )
(b) Important ( )
(c) Less important ( )
(d) Not important ( )

26. What else do you do to ensure that mothers get accurate nutritional information that will help enhance the nutritional status of their children?

.....
.....

27. Do you think providing adequate, correct and timely nutritional information to mothers will reduce the problem of malnutrition?

(a) Yes ( )
(b) No ( )

28. If yes please explain

.....
.....

29. If no please explain.

.....
.....
.....

APPENDIX IIB

DODOSO KWA WAFANYAKAZI WA KLINIKI ZA KINAMAMA NA WATOTO

1. Namba ya msailiwa.....Jina la kliniki.....

2. Cheo chako.....

3. Kiwango cha elimu

(a) Darasa la 7/8 ( )
(b) Kidato cha nne ( )
(c) Kidato cha sita ( )
(d) Nyingine tafadhali eleza
.....
.....

4. Kozi uliyo/ulizosomea katika fani ya afya (Tafadhali jaza kisanduku kinacho husika)

Kiwango cha mafunzo ulicho hitimu	Fani uliyosomea	Mwaka wa kuhitimu
Cheti (Certificate)		
Stashahada (Diploma)		
Nyingine tafadhali eleza		

5. Huduma za MCH zinatolewa mara ngapi kwa juma katika kliniki yenu

.....

.....

6. Ni huduma na mafunzo ya aina gani mnayotoa kwa kina mama katika kliniki yenu? (Tafathali weka alama ya tiki kwenye kisanduku kilicho achwa wazi kuonyesha ni aina gani ya mafunzo/elimu ya afya inayotolewa katika kliniki yenu

(a) uzazi wa mpango ( )
(b) Chanjo ( )
(c) Kuzuia magonjwa ya kuambukiza ( )
(d) Magonjwa ya zinaa ikiwemo ukimwi ( )
(e) Elimu ya lishe pamoja na maelezo kuhusu jinsi ya kupambana na utapiamlo ( )
(f) Utayarishaji wa vyakula vya kulikiza ( )
(g) Unyonyeshaji ( )
(h) Jinsi ya kuhifadhi vyakula ( )
(i) Chakula bora ( )
(j) Tafadhali orodhesha nyingine ambazo hazikutajwa

.....

.....

7. Vipindi vya elimu ya afya vinavyohusiana na lishe vinatolewa mara ngapi au kila baada ya muda gani?

.....

.....

8. Utaalamu na taarifa mnazotumia kuwaelimisha kina mama kuhusu lishe au swala zima la afya ya mtoto mnazipata kutoka wapi? (Tafadhali weka alama ya tiki kwenye kisanduku kilicho achwa wazi kuonyesha baathi ya njia ambazo wewe binafsi unazitumia).

(a) Kusoma vitabu ( )
(c) Maktaba ( )
(d) Uzoefu ( )
(e) Waganga na wataalamu wengine wa afya/lishe ( )
(f) Mashirika yasiyo ya kiserikali ( )
(g) Mashirika mbalimbali ya kima taifa ( )
(h) Wizara ya afya ( )
(i) Mtandao wa komputa (Internet) ( )
(j) Vingine tafadhali fafanua

9. Je kipindi cha mafunzo cha kila siku kinachukua muda gani?
(a) Dakika 0-15 ( )
(b) Dakika 0-30 ( )
(c) Dakika 0-45 ( )
(d) Saa moja na zaidi ( )

10. Ni njia gani inatumika kuwaelimisha kina mama hapa kliniki

(a) Mihadhara ( )
(b) Majadiliano ( )
(c) Kufundisha mtu mmoja mmoja ( )
(e) Njia nyingine zinazotumika tafadhali fafanua
.....
.....
.....

11. Taarifa ambazo kimama wanapata katika kliniki unafikiri zinatosha kuwasaidia kuboresha afya za watoto wao?)

(a) Ndiyo ( )
(b) Hapana ( )

12. Kama ndiyo tafadhali fafanua
.....
.....

13. Kama hapana tafadhali fafanua
.....
.....

14. Je Kuna vipindi maalumu vya elimu ya afya (Katika ratiba zenu za kila siku za vipindi vya elimu ya afya) kwa ajili ya kina mama wenye watoto walio kataka hatari ya kupata utapiamlo?

(a) Ndiyo ( )
(b) Hapana ( )

15. Kama ndiyo tafadhali fafanua
.....
.....

16. Kama hapana ni kwanini na unaushari gani juu ya swala hili?
.....
.....
.....

17. Unapata matatizo yoyote katika kuwaelimisha kina mama kuhusu lishe na swala zima la afya ya watoto wao za watoto wao?

(a) Ndiyo ( )
(b) Hapana ( )

18. Kama ndiyo tafadhali eleza aina ya matatizo unayo yapata

.....
.....
.....

18. Je umewahi kupata aina yoyote ya mafunzo ya muda mfupi au kuhudhuria semina kuhusiana na kazi yako.

(a) Ndiyo ( )
(b) Hapana ( )

20. Kama jibu ni ndiyo semina au mafunzo hayo yalihusu nini?

.....
.....

21. Mafunzo hayo yalikuwa ya muda gani?

.....
.....

22. Je mnatumia picha za ukutani, vipeperushi na vijarida vidogo vodogo kama vifaa vya kufundishia

(a) Ndiyo ( )
(b) Hapana ( )

23. Ni aina gani zaidi ya vielelezo mnavyotumia wakati wa kufundisha?

.....
.....

24. Je? Hivi vielelezo na vifaa vya kufundishia mnavipata kutoka wapi?

(a) Tunatengeneza wenyewe ( )
(b) Wizara ya afya ( )
(c) Mashirika yasiyo ya kiserikali ( )
(d) Vingine tafadhali fafanua

.....
.....
.....

25. Je? Mafunzo mnayotoa hapa kliniki unayapa uzito gani katika juhudi nzima za kupambana na tatizo la utapiamlo.

(a) Muhimu sana ( )
(b) Muhimu ( )
(c) Muhimu kidogo ( )
(d) Siyo muhimu ( )

26. Mnafanya juhudi gani zaidi kuhakikisha kwamba kinamama wanapata taarifa za kutosha kuhusu lishe ya watoto wao?

.....

.....

27. Jc? Unafikiri tatizo la utapia mlo linaweza kumalizika/ kupungua kwa kuwatapia kina mama maelezo ya kutosha kuhusu lishe ya watoto wao.

(a) Ndiyo ( )
(b) Hapana ( )

28. Kama Ndiyo tafadhali fafanua

.....

.....

.....

29. Kama hapana tafadhali fafanua

.....

.....

.....

APPENDIX III

INTERVIEW GUIDE FOR THE MCH COORDINATORS

1. What is the general organisation of activities in your clinic?
2. How are the nutritional Education Sessions in your clinics organised?
3. How are the nutritional Education Sessions in your clinic funded?
4. What are the other means apart from the nutritional education sessions that are used to disseminate nutritional information to mothers who attend your clinic?
5. What problems do you face as far as disseminating nutritional information to mothers is concerned?
6. What are you future plans concerning the provision of nutrition information to mothers?

APPENDIX IV

INTERVIEW GUIDE FOR THE COMMUNITY HEALTH WORKERS

1. What do you do to address the problem of malnutrition in your community?
2. What do you do if there are families with malnourished children in your community?
3. Is there any sharing of information and coordination of activities concerning the problem of child malnutrition between you, the MCH clinics, Non Governmental Organizations dealing with nutrition in your area (If any) and the community at large?
4. What problems to you face in addressing the problem of malnutrition at the community level.
5. What are you future plans?

APPENDIX V

OBSERVATION GUIDE

The following things were observed:

1. Clinic activities
2. Posters displayed on the walls of the clinic
3. Information dissemination activities
4. Physical observation of children to determine whether they have any signs of malnutrition.

APPENDIX VI

PROFORMA LETTERS FROM THE UNIVERSITY OF DAR ES SALAAM.

UNIVERSITY OF DAR ES SALAAM
OFFICE OF THE VICE-CHANCELLOR
P.O. BOX 35091 • DAR ES SALAAM • TANZANIA

Ref. No: AB3/12(B)
Date: 31st October, 2001
To: The Regional Administrative Secretary,
Morogoro Region.

UNIVERSITY STAFF AND STUDENTS RESEARCH CLEARANCE

The purpose of this letter is to introduce to you **Ms. Wanyenda Leonard Chilimo** who is a bonafide student of the University of Dar es Salaam and who is at the moment conducting research. Our staff members and students undertake research activities every year especially during the long vacation.

In accordance with a government circular letter Ref.No.MPEC/R/10/1 dated 4th July, 1980 the Vice-Chancellor was empowered to issue research clearances to the staff and students of the University of Dar es Salaam on behalf of the government and the Tanzania Commission for Science and Technology, a successor organization to UTAFITI.

I therefore request you to grant the above-mentioned member of our University community any help that may facilitate her to achieve research objectives. What is required is your permission for her to see and talk to the leaders and members of your institutions in connection with her research.

The title of the research in question is **"Accessibility and use of nutritional information in addressing under-five child malnutrition in Morogoro urban".**

The period for which this permission has been granted is **November, 2001 to January, 2002** and will cover the following areas/offices: **Morogoro Urban District.**

Should some of these areas/offices be restricted, you are requested to kindly advise her as to which alternative areas/offices could be visited. In case you may require further information, please contact the Directorate of Research and Publications, Tel. 2410500-8 Ext. 2087 or 2410743.

Prof. M.L. Luhanga
VICE-CHANCELLOR

Direct: + 255 22 2410700/2113654
Telephone: + 255 22 2410500-8 Ext.2001
Telefax: + 255 22 2410078/2410514
Telegraphic Address: UNIVERSITY DAR ES SALAAM
E-Mail: vc@admin.udsm.ac.tz
Website address: www.udsm.ac.tz

UNIVERSITY OF DAR ES SALAAM
OFFICE OF THE VICE-CHANCELLOR
P.O. BOX 35091 • DAR ES SALAAM • TANZANIA

Ref. No: AB3/12(B)
Date: 31st October, 2001
To: The Officer In-charge,
Mazimbu MCH Clinic,
Morogoro.

UNIVERSITY STAFF AND STUDENTS RESEARCH CLEARANCE

The purpose of this letter is to introduce to you **Ms. Wanyenda Leonard Chilimo** who is a bonafide student of the University of Dar es Salaam and who is at the moment conducting research. Our staff members and students undertake research activities every year especially during the long vacation.

In accordance with a government circular letter Ref.No.MPEC/R/10/1 dated 4th July, 1980 the Vice-Chancellor was empowered to issue research clearances to the staff and students of the University of Dar es Salaam on behalf of the government and the Tanzania Commission for Science and Technology, a successor organization to UTAFITI.

I therefore request you to grant the above-mentioned member of our University community any help that may facilitate her to achieve research objectives. What is required is your permission for her to see and talk to the leaders and members of your institutions in connection with her research.

The title of the research in question is **"Accessibility and use of nutritional information in addressing under-five child malnutrition in Morogoro urban".**

The period for which this permission has been granted is **November, 2001 to January, 2002** and will cover the following areas/offices: **Mazimbu MCH Clinic.**

Should some of these areas/offices be restricted, you are requested to kindly advise her as to which alternative areas/offices could be visited. In case you may require further information, please contact the Directorate of Research and Publications, Tel. 2410500-8 Ext. 2087 or 2410743.

Prof. M.L. Luhanga
VICE-CHANCELLOR

Direct: + 255 22 2410700/2113654
Telephone: + 255 22 2410500-8 Ext.2001
Telefax: + 255 22 2410078/2410514

Telegraphic Address: UNIVERSITY DAR ES SALAAM
E-Mail: vc@admin.udsm.ac.tz
Website address: www.udsm.ac.tz

UNIVERSITY OF DAR ES SALAAM
OFFICE OF THE VICE-CHANCELLOR
P.O. BOX 35091 • DAR ES SALAAM • TANZANIA

Ref. No: AB3/12(B)
Date: 31st October, 2001
To: The Officer In-charge,
Uhuru MCH Clinic,
Morogoro.

UNIVERSITY STAFF AND STUDENTS RESEARCH CLEARANCE

The purpose of this letter is to introduce to you **Ms. Wanyenda Leonard Chilimo** who is a bonafide student of the University of Dar es Salaam and who is at the moment conducting research. Our staff members and students undertake research activities every year especially during the long vacation.

In accordance with a government circular letter Ref.No.MPEC/R/10/1 dated 4th July, 1980 the Vice-Chancellor was empowered to issue research clearances to the staff and students of the University of Dar es Salaam on behalf of the government and the Tanzania Commission for Science and Technology, a successor organization to UTAFITI.

I therefore request you to grant the above-mentioned member of our University community any help that may facilitate her to achieve research objectives. What is required is your permission for her to see and talk to the leaders and members of your institutions in connection with her research.

The title of the research in question is **"Accessibility and use of nutritional information in addressing under-five child malnutrition in Morogoro urban".**

The period for which this permission has been granted is **November, 2001 to January, 2002** and will cover the following areas/offices: **Uhuru MCH Clinic.**

Should some of these areas/offices be restricted, you are requested to kindly advise her as to which alternative areas/offices could be visited. In case you may require further information, please contact the Directorate of Research and Publications, Tel. 2410500-8 Ext. 2087 or 2410743.

Prof. M.L. Luhanga
VICE-CHANCELLOR

VICE CHANCELLOR
P. O. BOX 35091

Direct: + 255 22 2410700/2113654
Telephone: + 255 22 2410500-8 Ext.2001
Telefax: + 255 22 2410078/2410514

Telegraphic Address: UNIVERSITY DAR ES SALAAM
E-Mail: vc@admin.udsm.ac.tz
Website address: www.udsm.ac.tz

UNIVERSITY OF DAR ES SALAAM
OFFICE OF THE VICE-CHANCELLOR
P.O. BOX 35091 • DAR ES SALAAM • TANZANIA

Ref. No: AB3/12(B)
Date: 31st October, 2001
To: The Officer In-charge,
Mafiga MCH Clinic,
Morogoro.

UNIVERSITY STAFF AND STUDENTS RESEARCH CLEARANCE

The purpose of this letter is to introduce to you **Ms. Wanyenda Leonard Chilimo** who is a bonafide student of the University of Dar es Salaam and who is at the moment conducting research. Our staff members and students undertake research activities every year especially during the long vacation.

In accordance with a government circular letter Ref.No.MPEC/R/10/1 dated 4th July, 1980 the Vice-Chancellor was empowered to issue research clearances to the staff and students of the University of Dar es Salaam on behalf of the government and the Tanzania Commission for Science and Technology, a successor organization to UTAFITI.

I therefore request you to grant the above-mentioned member of our University community any help that may facilitate her to achieve research objectives. What is required is your permission for her to see and talk to the leaders and members of your institutions in connection with her research.

The title of the research in question is **"Accessibility and use of nutritional information in addressing under-five child malnutrition in Morogoro urban".**

The period for which this permission has been granted is **November, 2001 to January, 2002** and will cover the following areas/offices: **Mafiga MCH Clinic.**

Should some of these areas/offices be restricted, you are requested to kindly advise her as to which alternative areas/offices could be visited. In case you may require further information, please contact the Directorate of Research and Publications, Tel. 2410500-8 Ext. 2087 or 2410743.

Prof. M.L. Luhanga
VICE-CHANCELLOR

Direct: + 255 22 2410700/2113654
Telephone: + 255 22 2410500-8 Ext.2001
Telefax: + 255 22 2410078/2410514

Telegraphic Address: UNIVERSITY DAR ES SALAAM
E-Mail: vc@admin.udsm.ac.tz
Website address: www.udsm.ac.tz

SPE
RJ2