NUTRITION PERFORMANCE IN PRIMARY HEALTH CARE IN KISUMU DISTRICT

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This thesis is my original work and has not been presented for a degree in any other University

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DEDICATION

This work is dedicated to my late parents whose selfless love and endurance enabled me to be what I am today. Their devotion and struggle towards my education will remain stamped in my heart all the days of my life.

The work is also dedicated and special tribute goes to my two lovely children Clarence (Cla) and Achieng (chichi) for their relentless patience and endurance. They were such inspirations to the accomplishment of this noble task. I cherish you all. You are indeed my special pearls. Their patience and love were the driving force towards the completion of this exercise. May the almighty God continue bless you ever so richly for being just you. God's mighty blessings to each of you.

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ACRONYMS:

ACC/SCN	Administrative Committee and Coordination Sub Committee on Nutrition
AKF	Aga Khan Foundation
AMREF	African Medical Research Foundation
CBS	Central Bureau of Statistics
CDC	US Center for Disease Control
CRC	Convention on the Rights of the Child
COBASHECA	Community Based Health Care
DHIC	District Health Committee
ESAR	Eastern and Southern Africa
FAO	Food and Agriculture Organization
FIF	Facility Improvement Fund
FGD	Focus Group Discussion
GOBI	Growth Monitoring, Oral Dehydration, Breastfeeding Promotion and Immunization
GOK	Government of Kenya
HAZ	Height for Age Z score
HD	Human Development
HDA	Human Development Approach
HDI	Human Development Index
HFA	Health For All
ICN	International Conference on Nutrition
KDHS	Kenya Demographic Health Survey
KEPI	Kenya Expanded Program for Immunization
KPHC	Kisumu Primary Health Care
KNH	Kenyatta National Hospital
MCH/FP	Maternal Child Health/Family Planning
MMR	maternal Mortality Rate
MOH	Ministry of Health
NCCK	National Christian Churches of Kenya
NCHS	National Center for Health Statistics
NHIF	National Hospital Insurance Fund
NGO	Non Governmental Organization
NIC	Newly Industrialized Nations
OAU	Organization of African Unity
ORT	Oral Rehydration Therapy
PHC	Primary Health Care
ROK	Republic of Kenya
SAP	Structural Adjustment Programs
SCN	Sub Committee on Nutrition
UNICEF	united Nations Children Education Fund
UNDP	United Nations Development Program
WAZ	Weight For Age Z Score
WHZ	Weight For Height Z Score
WHA	World Health Assembly
WHO	World Health Organization

ABSTRACT

The present picture in the nutrition space in Kenya indicates that trends in nutritional status of the under five-year-old children have significantly deteriorated after initial improvement in 1982. National statistics indicate that one out of every three children in Kenya is not growing and developing as expected for their age (UNICEF, 1999). Similarly, one in every five children in Nyanza does not live to see its fifth birthday (KDHS, 1993). It has also been documented that a staggering 115,000 under five year olds are denied their right to survival each year (GOK/UNICEF, 1998).

It is in the light of the foregoing that this current study was undertaken to establish the nutritional performance in Primary Health Care (PHC) in Nyanza with special reference to Kisumu District. The district has apparently been one of the PHC model regions in the country.

The study aimed at accomplishing the following objectives:

1. Establish the nutritional status of the under five-year-old children in the study community.
2. Determine the relationship between the nutritional status and the incidence of infections amongst the under five years olds.
3. Identify how PHC has responded to meeting the food security needs of the study communities.
4. Determine a trend analysis in nutritional status of the under five-year-olds between 1982- 2000.
5. Examine the effectiveness of nutrition education programmes with a view to charting out innovative strategies for change.

This study made use of both qualitative and quantitative approaches to data collection. The method of sampling used was multi-stage. The study population consisted of the following categories of people, namely: household members, under five-year-old

children, women groups, non governmental organizations, government ministries handling nutrition issues, and mothers attending health care centers. In total, seven hundred and fifty respondents participated in the study.

Data collected were processed and analysed both qualitatively and quantitatively according to the objectives of the study. Frequency distribution of samples, cross tabulations was utilised to analyse quantitative data. Both quantitative and qualitative data were thus combined for an in-depth analysis of sampled data and conclusions drawn.

The study found out that despite the implementation of PHC in the Kisumu Primary Health Care region, the district depicts adverse infant/child health and nutrition problems thus calling for special attention. Overall, 31.1 percent of the children were stunted. The highest prevalence of stunting was found among the age group 12-23 months old. This suggests that this age group should be targeted for interventions. Similarly, 15.2 percent were established to be underweight while 9.1 percent were wasted.

It was equally evidenced from the study that a network of nutrition risk factors interacted to influence the child's nutritional status amongst some of which were noted to be; poverty, access to health care, the incidence of infectious diseases, parental demographic factors, the HIV/AIDS, caring capacity of the mothers and the food security status. Almost all the variables in the data set had significant effect on the child's nutritional status.

Nutrition education did not appear to cause substantial behavioural change. One reason why nutrition education had not succeeded in impacting change, was that messages were not well-formulated and that there was an over-emphasis on *"do's and don'ts"*. It was therefore recommended that community-based participation in the formulation of concepts and messages should form an indispensable part of future nutrition education programs.

In the meanwhile, if nutrition education and intervention programs are to make significant changes towards influencing health-changing behaviours, then multi-sectoral and multi-dimensional approaches are deemed necessary. Nutrition programming therefore needs to be integrative and holistic in nature. In view of the above findings, this study concluded that the provision of PHC has been inadequate both in impact and sustainability and that a new paradigm shift is essential. It is in this light that integration of Human Development Approach (HDA) in nutritional development is deemed feasible in producing sustainable effects.

CHAPTER ONE

1. INTRODUCTION

In 1977, the governments of the world decided at the World Health Assembly that: "something much more effective needed to be done to help improve the health of nations", and hence the well known resolution, "Health For All by the year 2000" was adopted (Fry and Hasler, 1986:v).

The following year, 1978, the World Health Organization and UNICEF sponsored World Health Assembly in Alma Ata, USSR, during which the concept of Primary Health Care (PHC) was declared and Kenya was signatory to the Alma Ata Primary Health Care resolutions (Kanani, 1979).

In 1982, Kenya officially adopted a Primary Health Care strategy dropping her hitherto Community-Based Health Care (COBAHECA) which had been introduced by the Ministry of Health in 1972 (Were, 1977). Since then, many donor agencies namely, multilateral, bilateral, and non-governmental organizations have been working collaboratively with the Ministry of Health to implement Primary Health Care programs in Kenya. By mid 1980s, therefore, Western Kenya had been designated as a Primary Health Care model region.

In sub-Saharan Africa, UNICEF which had been a major multilateral agency was reporting a milestone in health care as was evidenced by the West African Bamako Conference in 1987, hence the popularly known Bamako Initiative, which today has much of its roots in many countries of sub-Saharan Africa. Nonetheless, after two decades (1982-2000) of Primary Health Care performance in Kenya, PHC critics still argue that the program has been deeply flawed as there has been virtually no success story on a reasonable scale to be proud of (Wisner, 1989). The Kenyan traditional supporters on the other hand tend to point out considerable progress that has been made

while COBAHECA initiators argue that Primary Health Care strategy should be abandoned. PHC supporters on the other hand tend to point that considerable progress has been made and all that now needs to be done is to re-define and re-focus PHC objectives in planning towards the year 2000 and beyond.

This study contends that if this millennium is to be approached with confidence in improvements in health and nutrition, then there is need to re-evaluate Primary Health Care performance between 1982 to date in terms of its achievements and shortcomings.

1.1 Background to the study

The 1970s saw the health situations in most countries of the world not only getting poorer but in most cases worsening rather than improving. It was therefore no surprise that the governments of the world decided at the World Health Assembly in 1977 that something much more effective had to be done and the well-known resolution on "Health For All 2000" was adopted.

It was recognized that the misery associated with ill health could not continue since it impeded economic, social and cultural development. It was against this background of mounting costs, ill-adapted services and continuous deterioration of health status of most people in the developing countries that the concept of Primary Health Care was conceived. This philosophy was seen not only to apply to the Third World countries, which of course deserved top priority, but also to the developed countries. In 1978, therefore, the World Health Organization/UNICEF convened at Alma- Ata, USSR, to consider the health dilemmas of the countries of the world. The conference produced a document "Health For All by the year 2000' and the strategy of Primary Health Care was proposed as an appropriate approach that could assist in reversing the alarming health trends.

The World Health Organization in Alma-Ata Declaration set out the following health goals emphasizing that by the year 2000, the following health issues would have been achieved in all member states, namely:

Table 1: HFA 2000 Goals

By the year 2000 in all countries...

1. **HFA would have received endorsement as a policy at the highest official level.**
2. **Mechanisms for involving people in the implementation of strategies have been formed or strengthened and are functioning.**
3. **At least 5 percent of the Gross National Product is spent on health.**
4. **A reasonable percentage of the National Health Expenditure is devoted to local health care, i.e. the first level of contact.**
5. **Resources are equitably distributed.**
6. **Well-defined strategies for Health For All, explicit resource allocation, are receiving sustained support from more affluent countries where necessary.**
7. **Primary Health Care is available to the whole population with atleast the following:**
   - **Safe water in the home within 15 minutes distance and adequate sanitary. facilities in the home or immediate vicinity.**
   - **Immunization against Diphtheria, Tetanus, Whooping cough, Measles, Poliomyelitis, and Tuberculosis.**
   - **Local health care including availability of at least 20 essential drugs, within one hours walk or travel.**
   - **Trained personnel for attending pregnancy and childbirth, and caring for children up to at least one year of age.**
8. **The nutritional status is adequate.**
9. **The infant mortality rate for all identifiable sub groups is below 50:1000 live births.**
10. **Life expectancy at birth is over 60 years.**
11. **Adult literacy rates for all genders exceed 70 percent.**
12. **The Gross National Product per head exceeds US$ 500.**

Ben Wisner, 1889:56-57

Kenya was signatory to the PHC convention and in order to implement the PHC strategy, ten elements relevant to the health challenges in the country were identified and Nutrition and Food Supply was perceived as one of the critical areas of social development needing scrutiny. However, before pursuing a discussion on the PHC concept, it would be worthwhile to shed some light on the historical development of Primary Health Care in

Kisumu District as a way of understanding where we are coming from and where we are at the moment in the health and nutrition landscape.

1.1.1 Evolution of the Kisumu Primary Health Care Project

The Kisumu Primary Health Care Strategy evolved from the Aga Khan Foundation/ World Health Organizations Conference held in 1981 on "The Roles of Hospitals in Primary Health Care". The outcome of this conference was a seminar on PHC by the Aga Khan Foundation and the Ministry of Health at which the participants recommended that the Kisumu Project be launched.

In 1982 as a follow-up, the Aga Khan Health Services jointly with the Aga Khan Foundation sponsored a planning seminar on Primary Health Care in Kisumu and from the deliberations of this seminar came the recommendation that the Kisumu Primary Health Care be launched in collaboration with the Ministry of Health and the Municipality of Kisumu.

In 1983, due to the recognition of the Global Strategy of PHC as the most practical means of meeting the basic health needs of the people in the developing world, Aga Khan Foundation became involved in the PHC initiatives in the Kisumu Primary Health Care Project (KPHC). Program activities took off in 1984 and between 1984-1986, efforts were largely devoted towards community mobilization and training of health workers.

The Project sites were identified in the following administrative locations of Kisumu district, namely: North Nyakach, Central Nyakach, Gem Rae, Kabodho, Kandaria and Kajulu. The first two are rural areas with poor soil quality, inadequate water supplies, and very unpredictable rainfall periods occasioned by either floods or droughts. In contrast, Kajulu is a peri-urban area within the vicinity and boundaries of Kisumu Municipality, and located at the foothills of Nandi Hills thus enjoying a favorable climate as well as fertile alluvial soils.

High infant and child mortality rates and poor health delivery infrastructure characterized all these locations. The KPHC's major goal was to achieve an improvement in the community's health and nutritional status, specifically targeting the under five-year-old children and women of child bearing age. This goal was to be achieved through a community-based approach. Besides, the program had the goal of establishing a sustainable PHC program based on active community participation.

Between 1984-1985, the Kisumu project team met with communities and most of these meetings consisted of informal gatherings where ideas on various topics were freely exchanged. Sub-location workshops were organized by community leaders to share the proposed program with the wider audience and the project team was invited to all these workshops. Community leaders drew the objectives of the workshops with the assistance of the project team.

These workshops marked the historical reference points at which each sub-location community-based health care was developed. Each community identified its most pressing needs and what it perceived as solutions to those problems. Once the communities identified its needs, it went on to identify available community resources and objectives respectively.

Community activists were then identified as members who would perform the required tasks and it is from these activists that the community health workers and village health committees were selected. These community activists were then trained on their respective roles. This was the structural development leading to the implementation of the Kisumu Primary Health Care Project.

The Aga Khan Foundation then began its support for the community-based Primary Health Care by emphasizing regular household visits by community health workers. These programs set out to promote maternal/child health & family planning services, immunization, oral rehydration therapy, growth monitoring, and pre-natal care through

simple curative care and basic drug distribution. The program also trained traditional birth attendants to promote pre-natal care, safe labor and delivery.

The Kisumu Primary Health Care approach was dominated by a debate on the two controversial and conflicting models, namely, the "comprehensive approach" elaborated at the Alma Ata conference on PHC in 1978 and the "selective approach" which contended that the best use of scarce resources should concentrate on covering high risk population groups with a limited range of interventions.

While advocates of selective PHC emphasize growth monitoring, oral rehydration therapy for management of acute diarrhoea, and fertility control, including immunization and breastfeeding promotion. Advocates of comprehensive PHC on the other hand recognize the importance of these interventions but argue that even in the presence of severe resource limitations, improved water supply, environmental sanitation, food production, income generation and education of women must be promoted to achieve lasting improvements in health status, productivity and quality of life.

In a bid to implement Primary Health Care in Kisumu District, the Aga Khan Foundation therefore pursued a so-called "middle mix" between the selective and comprehensive models described above. To this end, while the KPHC project had very good intentions, the reality of its implementation posed serious problems, some of which will form the basis of this thesis.

It is however, now two decades since the World Health Assembly declared PHC health goals but specifically,

- To what extent have PHC goals been realized not only in the developing countries of the world, like Kenya, but more specifically in Kisumu District?
- Has PHC influenced health and nutritional status of the intended populations? If so, in what ways?

- To what extent have nutritional strategies been part and parcel of the on-going PHC programs, and how has it influenced the quality of household lives?
- Has PHC strategy been effective in terms of accessibility to health care services, coverage and community participation?
- What needs to be done within the context of "Nutrition in PHC" so that the most vulnerable groups of the population can survive, grow and take advantage of their potential to become able citizens in the 21st century?

These are the questions concerned with closing the gaps in PHC that will constitute the basis of this current thesis. They are questions of dynamics since the health and nutrition situation is more complex now and varied than it was at Alma Ata. New threats to PHC have since emerged and are multiplying at each step, and all combine to shape the future of PHC than in the previous years.

The current study therefore attempted to focus on the nutritional performance within the confines of primary Health Care initiatives in the Kisumu Primary Health Care Region. The study was restricted to Kisumu District of Nyanza Province in Western Kenya.

1.2 Statement of the Problem

Nyanza Province is alleged to be one of the highly assisted provinces in Kenya with many donor agencies and health programs. Yet, Nyanza is today one of the most food insecure and undernourished regions in Kenya. Majority of its population still drink water from contaminated sources while poverty levels are on the increase if not worsening thus lowering the health quality index. Consequently, morbidity, mortality and malnutrition are on the rise while life expectancy has stagnated to about 46 years.

Yet, since 1982 when the Kenyan Government officially adopted Primary Health Care, some of the outstanding PHC goals were improvements of the nutritional status, provision of safe water supply, disease control and poverty alleviation respectively. At

the Alma Ata conference on Primary Health Care, community participation was accepted as the basic strategy for achieving Health For All by the year 2000 and one of the ten priority areas for action identified was Foods and Nutrition. However, a close observation at the Primary Health Care Project in Kisumu District reveals that food and nutrition have not been accorded the priority and attention it deserves.

Apparently, foods and nutrition intervention strategies have been weak under the current health promotion strategies advocated by the donor agencies in Kisumu District despite the pertinent role which nutrition plays in healthy growth and development of a population. Primary Health Care has apparently been limited in scope and to this end, nutrition programs remain untargeted within the PHC framework. Indeed, many children in Nyanza are still going to bed hungry, despite the resolution at Alma- that no child should go to bed hungry (Fry and Hassler, 1986).

As a consequence, while numerous health care efforts have been undertaken by implementing agencies in the region, Nyanza continues to register poor health quality index and to this end, amidst strong PHC advocacy of "Health For All by the year 2000", Primary Health Care has performed unsatisfactorily in Nyanza, and one is forced to wonder, why?

Even in communities where Primary Health care programs have been in existence for nearly a decade, both health and nutritional status of the vulnerable groups especially the under five year olds continue to worsen. Probably factors contributing to poor health and nutritional status are multi-faceted and are yet to be clearly understood.

This current study therefore paid special attention to the role Primary Health Care has been playing in nutrition promotion and food security strategies in these hungry communities. How nutrition has performed under Primary Health Care strategy formed the focus of this study.

1.3 Purpose of the Study

According to the PHC goals, by the year 2000, all nations of the world ought to have been food secure, less poor, have lower infant mortality and life expectancy rates above 60; disease free especially from environmental disorders; have access to clean water and essential drugs including hospitals within easy walking distance. But the extent to which Kenya has achieved these set PHC goals of Health For All by the year 2000 especially in Nyanza Province remains an issue of research concern likely to be unearthed by the present study.

1.4 Scope of the Study

The study focused on five divisions of the current eight divisions in Kisumu-Nyando District; namely Lower Nyakach, Central Nyakach, Kadibo, Nyando and Winam respectively. Exact research locations included: Kandaria, Gem Rae, Wawidhi B, Kochieng and Kajulu.

The above listed communities are PHC regions, and the main donor with PHC activities in the KPHC region was for over ten years the Aga Khan Foundation. The Foundation eventually pulled out having been in Lower Nyakach between 1986-1996, under the belief that it was high time these communities became self-sustaining in PHC efforts.

Multilateral agencies with some health projects in some parts of the region include United Nations agencies such as UNICEF and international NGO's e.g. the Aga Khan Foundation. Similarly, Non Governmental and Governmental Organizations with development projects in this same region include AMREF, CARE (K), and the Lake Basin Authority. It is therefore apparent from the above that the district is well supported by programs of varied nature and by various donor agencies and it is this massive donor attention that provoked interest in the current study.

1.5 Objectives of the Study

Specifically, the study paid attention to the following objectives, namely, to:

1. Establish the nutritional status of the under five-year-old children in the study community.

2. Determine the relationship between the nutritional status and the incidence of infections amongst the under five-year-olds.

3. Identify how PHC has responded to meeting the food security needs of the studied communities.

4. Determine a trend analysis in nutritional status of the under five-year-olds between (1982 – 1998).

5. Examine the effectiveness of the nutrition education programs with a view to suggesting innovative strategies for change.

1.6 Research Questions

1. What is the nutritional status of the under five-year-olds in the study community?

2. Is there any relationship between the incidence of infectious diseases and nutritional status of children in this community?

3. How has PHC responded to the food security issue in these communities?

4. To what extent have there been changes in nutritional status of the under five-year-olds between 1982-2000?

5. How effective are the current nutrition education programmes and what innovative strategies should be set in place for their effective implementation?

1.7 Significance of the Study

If PHC has to be promoted beyond the year 2000, then, it must be assessed in terms of the past, present and future performance. It must also be assessed in terms of the gaps, biases, failures and strengths. The rationale for this study therefore lies in the substantial contribution it is likely to make in terms of documenting pertinent issues in the PHC strategy. The issues addressed by this study will no doubt broaden the existing knowledge base concerning the PHC concept and this is bound to be invaluable for systematic, concrete and effective policy formulation regarding a framework for effective nutrition programs in the country.

Currently of the 4,000,000 persons in Nyanza Province, 75% are food insecure, while poverty increased ten times between 1982-1992 alone. Childhood mortality on the other hand continues to remain high while environmental disorders are a cause for concern (K'Okul, 1991). To this end, there is increased need to ensure that PHC pays more attention to issues of food security, poverty alleviation and disease control respectively. Achieving these goals will mean paying more attention to structural oriented policies meant to:

- Promote nutritional status.
- Promote health status.
- Improve average life expectancy rates so that people will live beyond the current 46 years.

All these efforts will require new PHC visions in which hunger is viewed as a 'disease' if right measures have to be developed. Similarly, marginalization of PHC to certain segments of the society must be discarded so that right activities and strategies are developed that will focus on all demographic groups at risk.

This study is therefore an attempt to capture the present debates and discussions on health and nutrition and how these indicators of social development can be enhanced in the midst of the huge challenges faced.

1.8 Working terminologies

1.8.1 Primary Health Care (PHC)

Is a new form of health strategy in which communities are empowered to identify their health needs and ways of implementing suggested solutions in a pragmatic manner using local resources and means as much as possible. PHC is a health care strategy that is practical, acceptable and cost effective. It is the first level of contact between the individual and the health care delivery system, bringing health as close as possible to where people live and work.

1.8.2 Comprehensive Primary Health Care

Implies a holistic manner of identifying health problems and sponsoring related health needs in a "totalistic" or "universal manner".

1.8.3 Selective Primary Health Care

Implies a strategy of isolating health disorders and solving them in a reductionist manner of only key aspects according to available resources.

1.8.4 Preventive Primary Health Care

Implies a strategy in which health disorders are managed with a mind to promote measures that will prevent and solve the health problems.

1.8.5 Health

Is a state of well being both socially, physically, mentally and psychologically.

1.8.6 Health Quality Index

A state of well-being as measured by sickness or wellness either physiologically or materially.

1.8.7 Nutrition

The term will be used in this study to describe both input (consumption of nutrients) as well as a set of outcomes. Perceived as input, the focus will be on food. On the other hand, as an outcome, the other factors, as disease will need to be considered.

1.8.8 Poverty

Is defined as inability to attain a minimal standard of living, welfare or well-being. While the definition of poverty however varies according to ones social class, on the overall, poverty has various manifestations including lack of income and sufficient productive resources to ensure sustainable livelihood, hunger and malnutrition, ill health, limited access to education and other basic services, increased morbidity and mortality from illness, homelessness and inadequate housing, unsafe environments and social discrimination and exclusion. Poverty is also characterized by lack of participation in decision-making.

1.8.9 Poverty Eradication

Is seen by most as the ultimate goal. This task is generally considered so daunting that few policy makers would rather want to even think about it or put it on the agenda as an achievable objective. In Kenya, for instance, both poverty and food security issues have persistently been moving on equal worsening trends even though the manifestations seem to be region-specific. Poverty eradication implies an all-inclusive approach to participation in optimal realization of basic needs and basic rights.

1.8.10 Malnutrition

A functional definition of malnutrition is used in this study to denote a state in which the physical function of an individual is impaired to the point where he/she can no longer

maintain adequate performance in such processes as physical growth, resisting and recovering from disease and participation in physical work. Malnutrition in this context will focus primarily on inadequate food intake characterized by problems of food deficit rather than excess.

1.8.11 Household Food Security

Is used in this study to mean sustainable access to safe food of sufficient quality and quantity for healthy life. It also implies the ability of households to produce or buy adequate food in terms of quality, quantity and safety to meet the dietary requirements of all household members at all times. Food insecurity is in turn the lack of access to adequate food. Ideally, food security should result in absence of hunger and malnutrition. However, for food security to be a reality, households must have enough resources to produce or obtain food.

1.8.12 Food-Based Dietary Guidelines

Food-Based Dietary Guidelines (FBGD) is a more integrated way of looking at human diet, and does address foods beyond the food groups. It looks at food within the broad contexts of food production, preparation and processing with sensitivity to traditional foods and its cuisine. FBGD is therefore user friendly and very practical and is adaptable by all populations with the goal of improving nutritional status.

CHAPTER TWO

2.0 LITERATURE REVIEW

2.1 Introduction

In order to develop a clear understanding on the literature concerning the nutritional performance in this study, the current survey was guided by a Human Development (HD) paradigm and a conceptual framework was developed as a basis of consensus building on emerging dynamics of nutritional challenges. The study contends that the framework is the bedrock upon which concurrent discussions in the study are based.

2.1.1 The Conceptual Framework

While the human development approach has been applied to varied socio-economic indicators, the link with nutrition per se, is just beginning to receive attention. This study further believes that without emphasis on human development approach, no gains may be realisable in the nutritional arena. Given this scenario therefore, the next sections that follow will offer a discussion on what human development is and how best it is likely to influence nutritional developments in the society.

Human Development Approach as perceived by this study is concerned with improving human well-being and human welfare in all aspects of human life. Specifically, human development within the context of nutrition involves the need to put people at the centre of all developmental initiatives. It implies a concern for people, and ideally, it should provide an enabling environment for people to enjoy long and healthy lives through nutritionally adequate diets.

Human development is further visualised as a process of enlarging all human choices ranging from nutrition, health, income, education and so forth. Human development in

this respect is a measure of empowerment indicating how far nations can adequately strive to meet the basic needs of its people.

The human development approach is an emerging concept that has been developed by the United Nations Development Program (UNDP), and this is a paradigm aimed at enhancing both the social and economic potentials of populations in the developing countries of the world. The genesis of this concept dates back to the works of such classical United Nations administrators as William Draper 111 who like Julius Nyerere believed that "development has to be woven around the people and not the people around development" (UNDP, 1995).

In view of this realisation, Human Development approach begins and ends with the people. It involves investing in people through enhanced health status, improved nutrition and basic education. All these factors are likely to result in increased productivity and well-being which in turn is bound to generate economic growth so much needed by the countries of the developing world like Kenya.

The human development has been measured by the Human Development Index (HDI), in which investments in human beings is perceived within quantitative and qualitative contexts. Quantitatively, human development involves average life expectancy, morbidity and mortality patterns, and income per capita purchasing power. Qualitative measurements on the other hand involve the skills, knowledge base and other attributes essential for human abilities to do productive work. Quantitatively and qualitatively, most countries in the sub-Saharan Africa have scored rather poorly on the Human Development Index

Given the scenario surrounding the human development paradigm, this study contends that the number of people now living in abject poverty and despair in this country is increasing steadily and to date, poverty is a major drawback to all gains previously made towards tackling undernutrition and ill-health. Poverty contributes to the spread of

diseases and undermines the effectiveness of health services, including the quality of life. It is in this light that good health and nutrition of the people is therefore both a resource for and a measure of sustainable Human Development.

2.1.2 Nutrition-Centred Approach to Human Development

The nutrition-centred approach as developed in the framework below value health and nutrition and recognize that without good health and nutrition, individuals, families and nations world over cannot hope to achieve their social and economic goals no matter how sound the national policies may be. The recognition of nutrition as an indicator of human development is therefore indisputable.

In light of this recognition, the following issues on health and nutrition strategies are pertinent to Human Development:

- Enhanced household food security is essential to child nutritional status.
- A culture of health that supports the right to adequate nutrition and health equity is crucial to Human Development Approach.
- Nutrition education and health messages must be reviewed constantly in the light of new knowledge and with a view to meeting the nutritional needs of the people.
- Reform in health systems should be integrally linked to broader national reforms since changes in economic, social and development policies have profound implications for health and nutrition systems and for the health of all people.
- Governments must demonstrate unwavering political support for nutrition and health systems by ensuring that all nutrition and health systems are financially stable.

- Continued attention and equity in access to both food security and health services must further be ensured.

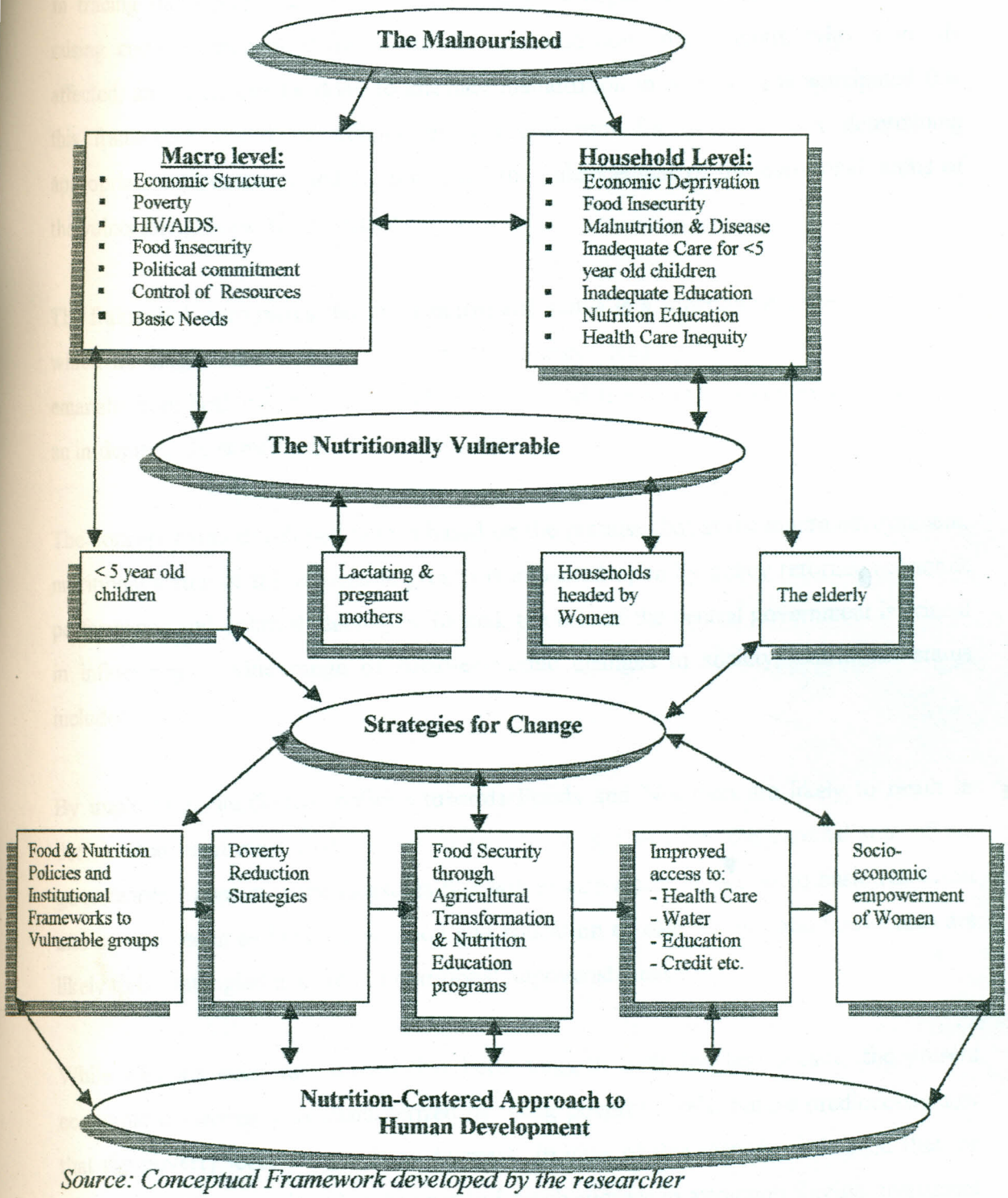
- Human Development is impossible without gender equality. As long as women are excluded from the development process, any developmental efforts will not be realizable. Sustainable nutrition and health development implies engendering the development paradigm.

- Political back-up is key to the Human Development approach. Political commitment and will are central to effective implementation of Primary Health Care under which nutrition and health are netted. Sustainability of the above programs can further be assured under the climate of good political will.

- Partnerships and networking must be forged with all stakeholders for purposes of financial and technical assistance in nutrition programs.

Finally, it is with these ideas in mind that this conceptual model has been developed towards the realization of an enhanced nutritional status in society. It has defined and categorized the different elements of interventions with respect to both planning and implementation of effective nutrition programs within the context of the Human Development Approach. Figure 1 below is an illustration of the pertinent place of nutrition within the human development paradigm.

Figure 1: A Framework for Better Nutrition-Centred Approach to Human Development:



Source: Conceptual Framework developed by the researcher

2.1.3 Discussion of the Conceptual Framework

In tracing the logical sequence of malnutrition as depicted by Figure 1, this study is raising certain pertinent issues about how malnutrition comes about, who is mostly affected, and what can be done to alleviate malnutrition in society. It is anticipated that this framework could be utilized as a useful tool for planning and determining appropriate interventions and strategies for the enhancement of the nutritional status of the vulnerable groups of populations.

The framework recognizes that poor nutritional status is a function of varied factors for which no single intervention is appropriate. Factors leading to malnutrition in society emanate from both macro and household levels, and therefore it is important to develop an in-depth understanding of all these dynamics.

The concept being developed here is based on the premise that at the macro environment, nutritional status of the vulnerable groups is impacted upon by policy reforms, economic performance and political ideologies. Indeed, the role of the central government is critical in influencing a wide range of socio-economic changes in society, nutritional status included.

By implication, ineffective policies towards Foods and Nutrition are likely to result in deteriorated nutritional performance in society. It is, therefore, the cardinal role of the government to set in place measures that will ensure equity in access to basic resources and services such as health care, food and education or else families and households are likely to be entangled in a web of nutritional impoverishment.

While Kenya's economic growth has been sluggish over the last decade, the present economic environment is characterized by rising poverty levels. Future predictions show that the poverty level is unlikely to decrease. In view of this scenario, it is clear that the current macro economic policy has not had much success in attracting foreign investment

and investor confidence in the country is in decline. Donor confidence has equally been drastically affected and many investors are reported to be leaving the country. Similarly, donor aid has stagnated and this is now reflected in the economic deterioration of such sectors as healthcare systems, education, and food insecurity respectively. Communities across the board whether at national, district or household levels are noted to lack basic services very much needed for enhanced quality of lives.

One major explanatory factor to the donor freeze and related investor confidence is due in part to poor economic performance characterized by corruption, poor management of public resources including utilities such as electricity, water and deterioration of infrastructures. All these factors are contributing to poor economic growth and the effects are felt at the household levels.

This study believes that the current economic structure is showing little evidence of economic transformation. Given that Kenya depends heavily on rainfed food crops, any shocks such as drought conditions are bound to impact on the food and nutrition situation and the present economic scene is showing little evidence towards agricultural transformation. In this context, the country has not set in place insulation measures from the devastating effects that lead to repeated crisis in food insecurity.

It is therefore needless to say that the discussed macro factors have a tickle down effect to the household level where they are characterized by and translated into economic deprivation, food insecurity, lack of access to basic services, malnutrition and disease.
At the household level, these factors are further complicated by the rising incidences of HIV pandemic and children are now at risk of either direct or indirect impact of HIV AIDS. The loss of parents predisposes children to malnutrition, inaccessibility to healthcare, to education and to child caring capacities.

If positive measures are to be instituted, then policy initiatives must be complimentary, mutually reinforcing and must lay greater emphasis on the Human Development

Approach. As advocated by this study, this approach is dependent on the following key determinants;

Human development approach begins and ends with the people. It involves investing in people through enhanced health status, improved nutrition and basic education. All these factors will yield increased skills, productivity and well being which in turn will generate economic growth and rising incomes especially for the majority of the poor who reside in rural communities.

The human development concept stipulates that the productive and human capacities acquired and enhanced through sound health, nutritional status and education in the long run results in useful measures of outcomes in the development process. For instance, investments in nutrition require a substantial amount of political commitment. Some nutritional programs have sometimes failed due to lack of government involvement and under-investment in basic health services. Political commitment has both short and long term effects towards the promotion of people's health and nutritional status.

One important element of the human development is the economic empowerment of the poor. In addition to equity and access of basic services, credit services for all is central to this empowerment process. For instance, food production capacities of the small-holder farmer can only be promoted through an integrated approach if such measures including the development of market structures; labour saving technologies; agricultural research; agricultural inputs; skills training; as well as credit facilities are given due consideration.

Given the sharp differences in socio-economic roles coupled with gender disparities in society, more attention should be given to gender programming in the planning, monitoring and evaluation of nutrition programs. Focused attention is needed towards female development within human development e.g. intensified girls education; targeting maternal child health through appropriate nutrition interventions; Special health and

nutritional needs for the most vulnerable and high risk groups; and women's access to credit due to entrenched disparities, are all key to human development.

Popular participation and social partnerships are central to pursuits in human development. The elements of human development are so complementary and reinforcing. Intensified partnerships and networking is key to the effectiveness of the Human Development Approach. Under this approach it is envisaged that all stakeholders work together to motivate, mobilize, and empower each other towards the achievement of stated goals. It is when all these elements interact and reinforce each other that sustainable effects in nutritional performance can be accomplished.

Based on the above observations, unless sound economic reforms are put in place to foster development and ensure efficiency in the management of public resources, the plight of the nutritional status of households will remain a daunting challenge, and the future of Kenyan children will be an illusion. To make headway therefore, it is the survival of children that should receive a first call in the country's development agenda.

2.1.3.1 Making Nutrition and Health Central to Human Development

Health and Nutrition is part and parcel of human development. The two are a function of social, physical, mental, economic, and cultural environment of the communities in which people live. Yet the fact that malnutrition constrains people's ability to fulfil their potential has so far not been taken seriously in this country.

It is a common sense proposition that hunger and malnutrition will affect people's abilities to undertake work; to attend school; and once in school hunger will limit learner's abilities to concentrate and participate in learning. On the contrary, improved nutrition can serve as a crucial springboard to improved livelihoods and overall economic growth. But the contributions of nutrition to economic development remain underrated in this country.

The health and nutrition of the people especially that of the most vulnerable groups is an indicator of the soundness of a nation's development and a human-centred approach values health and recognizes that without sound health and nutrition, individuals, families, communities and nations cannot hope to achieve their social and economic goals.

The emergence of human development as a guiding principle for nutritional performance is therefore an eye opener in this study to the extent to which contributions in improved nutrition can result in overall development. This section therefore recognizes that community-based nutrition initiatives are imperative to overall development. To this end, this framework reaffirms the relevance of nutrition to development, and the starting point must be the importance of nutrition in under five year olds.

2.1.3.2 The Centrality of Children in Human Development

Putting children at the centre of development is a vision for future development. Childhood is the period in life when minds, bodies, values and personalities are formed, hence any damage done during childhood can inflict lifetime damage on human development.

Children embody the future productive potential of any society as well as future reproduction, parenting, civic organization, and democratic participation. Their health, education and growth therefore cannot be taken as a welfare issue but rather, is key to any developmental thinking. Their survival in terms of their health and nutritional status as well as their education are critical areas of investment for this society in its path towards future economic growth and development.

Given the vulnerability of children, it follows that the fragile years of childhood should get the 'first call' in any nations developmental agenda. Unquestionably, children deserve the first call in human development. Meeting their basic human needs through investing in their healthy development and education will help redress the future problems of poverty, disease, malnutrition and all the other social ills that today bedevil our society.

If children of destitute and poor parents could be provided with adequate food, health and education today, then as adults they will weave their way out of poverty. Investing in the poor today reduces the chances that the next generation will be clipped in a vicious circle of malnutrition, disease and poverty.

Investing in children therefore provides a key component of a strategic vision for development. Human Development Approach recognizes that although improved health and nutrition are developmental ends in themselves, healthy and educated human beings are also the principal means for achieving development. The 'returns' in investment to

young children are realizable in 15-25 years if measured in terms of gains in labour productivity, output and socio-economic outcomes.

These gains also have huge benefits for the future generations: it is now widely documented that well-educated and healthier parents tend to have healthier, better nourished, better educated and generally fewer children thus raising growth rates per capita. Returns in investment to girls and women are particularly strong as a result of this relationship.

An approach that takes children at the centre of development will also yield high visible immediate and short-term benefits for families. For instance, expanding access to good quality basic education will promote productivity in the medium and short term. Access to basic health care is not only a good investment but also an immediate safety net for the poor and the marginalized. Interventions like nutrition education, micronutrient supplementation, immunization, oral rehydration therapy, etc are also means of avoiding serious costs invested in the health care of poor families, and in preventing sickness and disease in the long run.

As part of the conceptual approach to development, the human development approach to nutrition should adopt a child conscious and child friendly approach in the design and implementation of programs and activities. Such an approach is deemed essential since the total welfare and well-being of children is a moral obligation of any society.

This section has offered a broad discussion on what human development means and its relevance to the enhancement of nutritional status. What has come up in this framework is that if the nutritional status of communities is to be sustained then a human development approach is necessary.

Unless the elements discussed in the framework are given attention, then efforts towards improved health and nutritional status in society will be in vain, and this implies that

Health For All advocated by the World Health Organization will remain an elusive goal and a pipe dream.

2.2 Literature Review:

Having shed light on the conceptual approach, the following sections of discussions that follow will describe the reviewed literature on issues related to nutrition in Primary Health Care. This section recognizes that while literature regarding Primary Health Care is now in abundance, it is important to note that literature related to Nutrition in Primary Health Care is rather scant. Therefore the current literature review will adopt a thematic approach and the issues documented here will be dependent on the human development paradigm. In this regard, therefore, Nutrition Performance in Primary Health Care will be reviewed under the following key areas:

- The nutrition factor in Primary Health Care: an Africa wide perspective
- Child mortality and malnutrition in sub-Saharan Africa
- Poverty and the nutrition gap in PHC
- Highlights on Kenya's health and nutrition status since Alma Ata
- The Primary Health Care strategy in Kenya.
- Health Care delivery systems in Kenya.

2.2.1 The Nutrition Factor in Primary Health Care: an Africa-wide Perspective

Although Africa has made tremendous efforts in reducing mortality and morbidity, the health indices are still worse than those of any other region in the world. Projections worldwide currently indicate that the scourge of chronic undernutrition is shifting from South East Asia to sub-Saharan Africa and that by the year 2010, thirty two percent of Africa's population will be malnourished.

Recent snapshots by UNICEF (1998) show that child mortality rates in sub-Saharan Africa are still almost twice the world average. The causes of these deaths are not a lack of food alone. Overworked and undernourished mothers, curtailed breastfeeding, poor weaning and child feeding practices are factors leading to a peak of undernutrition in the second year of life.

Frequent illnesses such as diarrhoea and malaria coupled with inadequate health services and unhealthy environment all contribute heavily to malnutrition. Overworked and poorly nourished mothers in many cases affected by iron deficiency aneamia are unable to give birth and raise well nourished children (UNICEF, 1997: OAU, 1992; Morgan, 1997). The poor nutritional status of nearly half of African women and children presents a massive loss of present and future productive potential (Morgan, 1997).

Empirical evidence available reveals that the early childhood period in Africa is beset with many problems of infectious and nutritional nature. The nutritional problems leading to under five child mortality rates in Africa are protein-energy malnutrition; nutritional aneamia; vitamin A and iodine deficiency disease.

The prevalence of protein-energy malnutrition as manifested by underweight among children has been established to be 30 percent (Kavishe, 1997), while nutritional aneamia has been studied to affect 200 million pregnant women and children in Africa. Similarly, 18 million Africans are at risk of Vitamin A deficiency in 20 countries in drier parts of Africa.

Over the past decade, the food and nutrition situation in Africa has been characterized by food shortages, famine, and high rates of maternal and child malnutrition. Indeed, the dramatic deterioration of nutrition situation in Africa is of serious concern and demonstrates the vulnerability of much of the Africa's population. For many African countries, the food supply situation remains critical to the effect that hunger and

malnutrition continue to pose great challenges and the consequences of such widespread malnutrition are apparent.

Sub-Saharan Africa is today worse off nutritionally than it was a decade ago and focusing at the future, chronic undernutrition is expected to remain a major problem affecting about 650 million people (FAO, 1992). Throughout the last decade, the rates of malnutrition in most countries of the sub-Saharan Africa have remained the same or worsened (ACC/SCN, 1992; ACC/SCN, 1994; Kavishe & Mwadime, 1996).

But despite the above figures which reflect a pervasive and grim reality, Richard Morgan the UNICEF's Regional Program Planning Officer for ESARO notes that it is encouraging to realize that African societies do show impressive resilience even in the face of civil upheaval, economic adversity and endemic disease.

Africa wide data now show that 75 percent of the present child deaths could be averted if both the mother and the child were in optimal nutrition. Although the current child deaths are associated with the negative synergistic effects of disease and undernutrition, somehow, 25-40 percent of these child deaths are preventable through improvements in the micronutrient status related to iron, iodine and Vitamin A deficiency (Kavishe, 1997).

Trends in the micronutrient malnutrition in Africa reveal that three micronutrient nutrient deficiencies of iron, iodine, and Vitamin A now have widespread and far-reaching nutritional consequences on child growth and development. While iron deficiency is the commonest nutritional problem in the world, it is however the most neglected in terms of intervention (Pollitt, 1990; ACC/SCN, 1989).

In Africa, more than 200 million people, especially women in their reproductive years and pre-school children are anaemic. The figure for Eastern and Southern African region is about 20 million or 50 percent of women of reproductive age. Anaemia is the most serious outcome of iron deficiency with its worst consequences on pregnant women and

pre-school children. Causes of anaemia other than iron deficient diets include malaria, intestinal parasites, and some genetically determined errors of haemoglobin formation like the sickle cell disease. The commonest cause of aneamia in Eastern and Southern African region is either a deficiency or low bioavailability of iron from common diets.

If uncorrected, iron deficiency aneamia leads to increased severity, diminished learning ability, reduced work capacity including that of males, increased susceptibility to infection and greater risk of death associated with pregnancy and childbirth (Pollitt, 1985; UNICEF, 1997). Data now abound to show that more than 40 percent of sub-Saharan Africa's maternal deaths of 980/100,000 live births have aneamia as the underlying cause (Kavishe, 1997).

Notwithstanding, this micronutrient interferes with the academic progress of school children, hence in those settings where prevalence is high, it is acting directly against educational efficiency (Pollitt, 1990).

Considering that socio- economic impact of aneamia is serious, control and preventive measures through appropriate policies and programs including nutrition education are an important and urgent priority. Reducing iron deficiency improves child and maternal survival, worker productivity, aptitudes and capacity to focus attention and school attendance and lowers health care costs because of fewer health complications and illness.

A close observation at Vitamin A and resultant visual impairment among schoolchildren has not received due attention within the education sector (UNESCO, 1980). Children with Vitamin A succumb easily to frequent infections, which result in increased school and work absenteeism and overall reduction in learning and performance (UNICEF, 1997).

Meanwhile, many children with severe Vitamin A deficiency, especially pre-school children die while others become blind and are unable to enter school. It is now confirmed that the prevalence of Vitamin A and risk of blindness actually peak at the age of five, one year before school enrolment (WHO, 1987; WHO, 1991).

The number of children handicapped and at educational risk due to Vitamin A deficiency is significant (Pollitt, 1990). There is now therefore an urgent need to examine the impact of Vitamin A on schooling and define effects of blindness and literacy due to this deficiency.

Iodine deficiency disorders on the other hand affect some 60 million people in Africa and in severe instances, result in cretinism and severe mental retardation that preclude children from schooling. Mild iodine deficiency has functional effects ranging from hearing impairments to motor cognitive deficits. Children living in iodine deficient areas are shown to have hearing deficits, which impede learning (Pollitt, 1990).

UNICEF in a study on Eastern and Southern African Region (ESAR) documents that iodine deficiency can reduce intelligence by as much as 13.5 – 2.1 IQ points and that if this situation occurs during pregnancy, it can result in severe forms of mental deficiency including cretinism, which is irreversible. In adults, iodine deficiency results in a general slow down of physical and mental processes reducing productivity.

In Africa and ESAR in particular, protein energy malnutrition is the foremost nutritional deficiency. Protein Energy Malnutrition (PEM) is a complex nutritional disorder of multi-dimensional causality, often classified according to severity in terms of stunting and wastage rates.

There is an extensive body of literature on the effects of PEM on cognition in early childhood. Pollitt (1984) reviewed the effects of PEM on school learning and reported

that in comparison to well-nourished controls, children with a history of malnutrition scored significantly lower in intelligence test scores and achievement scores.

In adulthood, the accumulated effects of malnutrition can be a reduction in worker productivity and increased absenteeism in the workplace both of which may reduce the individual national lifetime earning potential (World Bank, 1993). Malnutrition has intergenerational effects. Infants born to women who were themselves malnourished during early childhood are smaller than infants born to better nourished women. In the same token, infants born with low birth weights are at a greater risk of illness and death as compared with normal weight infants.

Recent studies by UNICEF on nutrition and gender programming in ESAR have postulated that the protein-energy status of boys and girls do not differ significantly in the region. However, for micronutrients, aneamia and iron deficiency diseases have been found to have wider gender gaps with women more affected than men (Kavishe, 1996). This is an indication that women must be specifically targeted in programming.

Studies in the past two decades have conclusively shown that education of the mother and especially of the girl child provides a master key to the improvement of nutrition. That education of girl's results in improved child survival, household food security, child and maternal care and better health and environmental sanitation is now indisputable.

One cross-cutting issue influencing family health and well-being is the correlation between education of women and health status. In almost all developing countries, women are disadvantaged as a result of poorer educational opportunities. According to the report of the International Conference of Population and Development (1994), more than a third of the world's adults, most of them women have no access to printed knowledge, to new skills or technologies that would improve their qualities of lives. This poverty of education creates a vicious circle of myth and misinformation that perpetuate health damaging behaviours and harmful practices.

Education of the mother provides wider opportunities to all forms of resources, builds up confidence for decision-making, including dismantling of long held negative traditional beliefs, values and practices (UNICEF, 1993).

The evidence linking incidence of higher levels of maternal education with improved child survival is extremely strong (Brock and Cammish, 1991). This means that the higher the level of female education, the better the health and nutrition of families. Much of malnutrition we see and experience today is the result of intergenerational effect of disease-poverty-malnutrition and this perhaps is Africa's greatest development dilemma. In the long run it is perceived that it is education of girls, which is perhaps the single most important factor that will turn this vicious circle into a virtuous one.

2.2.2 Child Mortality and Malnutrition in sub-Saharan Africa

One of the most important factors keeping Africa underdeveloped is malnutrition and this works by depriving Africans of normal health, where health is a state of well-being as a whole (WHO, 1987). Studies conducted worldwide show quite convincingly that a malnourished person has a much slower resistance to disease than a well-nourished one and therefore a malnourished child will tend to succumb to simple diseases including colds.

The leading cause of death, disease, retarded growth and development in children has been the synergism between nutritional disease and common childhood infections (Scrimshaw et al., 1984). It is now known for instance that common infections precipitate malnutrition, which in turn reduces resistance, and this facilitates further infections, which leads to nutritional deficits.

Studies worldwide have indicated that malnutrition and infections most notably diarrhoeal disease have a synergistic effect. Each contributes to the precipitation and severity of the other. Malnourished children tend to have less resistance to infection than

well-nourished children. They fall ill more often and their illnesses tend to be more prolonged and severe.

It has further been documented that the nutritional deficiencies endured in early childhood have a debilitating mental and physical consequences that are carried into adulthood (Scrimshaw et al., 1984). The existence of such conditions in any population clearly has a negative impact on the growth and production of a nation.

While issues of nutrition are biting the continent, it is now becoming clear that Africa's health problems are not caused so much by disease as by poverty and that diseases are not a cause of Africa's slow development but merely a symptom of it, this was noted by Hiroshi Nakajama (1995).

The World Health Organization (1995) estimates that one-fifth of the world's population lives in extreme poverty. Millions go without adequate food, water and shelter. These are the breeding grounds for diseases. Poverty severely restricts access to health, education, information and other essential services. It is further estimated that one-half of the world lacks regular services to treatment of common diseases and the most essential drugs. Majority of these diseases and situations are to be found in the developing world (WHO, 1995). Poverty is therefore the major obstacle to health development.

Within individual countries, maternal and child health seek out poverty as an important causal factor. For instance, Kenya's relatively prosperous Central Province reflected infant mortality of 67:1000 live births while nearby Nyanza Province where incomes are lower had a rate of 174:1000 live births (UNICEF 1984; UNICEF 1995).

The link between poverty and infant mortality is best shown in South Africa where for every white infant who dies, 10 black babies die. Hence poverty, malnutrition, infection, and high birth rates have been established to play an important part in this nutrition-related carnage (Timberlake, 1994). See Unicef's Conceptual Framework, in appendix 7.

Today, Africa is experiencing insurmountable health problems not because Africa is inherently disease-ridden but because few Africans can afford to buy health. The killers in Africa are conditions, which are not really diseases but trivial inconveniences, which can be eradicated by simple hygiene, or affordable injections such as diphtheria, poliomyelitis, and tetanus.

Timberlake (1994) makes an insightful observation that wealth is health and that the rate at which children die indicates both the nation's health and wealth status. Infant mortality correlates very closely with national per capita income. For instance, of the 36 poorest countries in the world, 29 are found in sub-Saharan Africa and the percentage of Africans living in absolute poverty rose from 82 percent in 1974 to 91 percent in 1982 (UNICEF, 1985).

To date, it has been documented that Africa has by far the highest rate of child deaths in the world. On average 150: 1000 African children die before their first birthday. Recent estimates by UNICEF (1997) indicate that every year, 4 million child deaths occur in Africa out of which 3 million could be averted if the mother and child were provided with adequate nutrition. Forty to sixty percent of these deaths are associated with the negative synergistic effects of diseases and protein-energy malnutrition including micronutrient deficiencies.

Maternal Mortality Rate (MMR) is equally an issue of concern in sub-Saharan Africa. WHO /UNICEF (1996) have noted MMR for Eastern and Southern Africa region to be 550/100,000 live births with a range of 80-1100 in Somalia, Mozambique, and Eritrea depicting some of the highest rates in the world. Some of the causes of Maternal Mortality Rate notably infection, teenage pregnancies, poor delivery care, a high workload and malnutrition are preventable (UNICEF, 1995; UNICEF, 1997).

The current health care systems in Africa are equally a contribution to poor health. The distribution of health care services in the region is skewed in favour of urban areas, which are 2.8 times more likely to have health services as compared to rural areas (Agata and

Iyorlumun, 1997; Kavishe, 1997; Koinange, 1996). Most of Africa's children and women therefore die in the rural areas which have no high technologies to prevent or cure these deaths yet three-quarters of all health spending of Africa's governments is devoted to providing high technological care to a minority of privileged urban dwellers.

In view of the above discussion, it is now recognized that adequate health cannot be guaranteed by health services alone. Lower child mortality rates and freedom from disease will depend on broad economic reforms, improved food production and distribution, safe drinking water and sanitation supplies, better housing, education and anti-poverty measures (Timberlake, 1994).

Apparently much of Africa is moving away from rather than toward these goals, while a few of the worlds least developed countries have managed low-cost health revolutions. China, Sri-Lanka, and the state of Kerala in India have all attained "Northern" life expectations without northern level of health investment. This achievement has been explained in part to the high public priority given to food, health and literacy (Evans et al., 1981).

As we enter the 21st century therefore, what is now required is that children should grow optimally and be freed from any form of malnutrition. Setting targets and goals will probably provide a powerful vision towards this destination. Investing in nutrition by turning the vicious circle of malnutrition into a virtuous circle of health and development is deemed a major contribution to Africa's overall sustainable human and economic development. Africa's starving image must change and the major challenge now is to bridge the gap between policies and implementations, and translating rhetoric's into actions.

2.2.3 Poverty and the Nutrition Gap in Primary Health Care

During the last century, the locus of the world poverty and hunger has become concentrated in the countries of the third world, particularly their rural areas.

Numerically, the most conspicuous of the rural poor are the smallholder farmers, the landless, the pastoralists and rural women (IFAD 1992). Sadly, the influx of HIV/AIDS and other calamities such as drought and famine is adding further to this quantum of human distress.

The situation of poor women deserves special attention. Rural women are doubly disadvantaged, both as poor and as women. Households headed by women which now account for 20 percent of all rural households in the third world are amongst the "poorest of the poor"(IFAD, 1992). The poverty of women has far-reaching consequences on the nutritional status of their families in these regions.

Poverty has further been found to predispose on health and nutritional status of poor households particularly that of the under five year old children. Available data shows that close to 220 million people, half of who are found in sub-Saharan Africa lives in abject poverty, unable to meet their basic needs (UNICEF, 1995).

In addition, evidence on malnutrition shows that it is a manifestation of a larger syndrome, poverty, with multiple causes in which low income, food system deficiencies, socio-cultural practices and health environments are all linked (Braun et al., 1993). The importance of income as the most important determinant of health status is a critical issue. Musgrove (1991) noted that low incomes appear to be the chief causes of malnutrition.

Some recent estimates of nutrient intake elasticity with respect to income seem to support the World Bank emphasis on the interrelationship between changes in income in poor populations and a number of calories consumed. Such estimates suggest that nutrients and income are "tightly wedded". If this is the case then the World Bank emphasis on the postulation that income growth plays a critical role in alleviating undernourishment in the developing world is highly justifiable (Behrman & Kenen, 1988).

That the negative impact of economic growth has been severely felt by low-income households is indisputable. It has been observed that a large portion of the poor's budget

is now devoted to essential non-food items such as school fees, which limits their ability to meet basic health and nutritional needs. During periods of economic crisis, it is possible that incomes of the poor do decline remarkably and such decline is translated into reduced caloric intakes and quality of lives respectively.

2.2.4 The Poverty and Nutrition Factor In Kenya

To date, Kenya has a serious poverty problem and it is documented that one person in six Kenyans is too poor to purchase the amount of food they need (World Bank, 1991). The poor people are now too desperate to change their conditions, and they do not subscribe to the strategy of handouts from the government or other benefactors.

In a poverty assessment survey, the following remarks were echoed: "we do not believe in getting two kilos of maize. What we need is assistance to grow more maize ourselves". This statement was referring to the small amounts of grain given to individuals as famine relief measures. In other words, the poor now wish to be empowered to produce what they need rather than depending on what they are freely given. One message that has come out clearly from the poor in this poverty survey is that: "Let us do what we can do to support ourselves; help us do this well" (CBS & MPND, 1997).

One of the major goals of the Kenya Government is to improve the quality of life of its population and the eighth National Development Plan 1997-2001 stipulates that a healthy population is a basic requirement for successful industrialization. It further recognizes that good health is a basic pre-requisite for socio- economic development.

At independence in 1963, Kenya's population stood at 6.2 million people but almost three decades later, the population growth now stands at 30.3 million. This growth rate however has not matched the food supply and availability situation, with the result that energy intake is now insufficient thus exposing one-third of the Kenyan population to the risk of deficient nutrition (WHO 1996; CBS & MPND, 1999).

That majority of the Kenyan population now live below the poverty line due to the economic recession is widely documented. It is estimated that 40 percent of the urban population is absolutely poor while 85 percent of the pastoral households fall below the poverty line (UNICEF, 1992). According to the Welfare Monitoring Evaluation Survey of 1992, the level of absolute poverty in the rural areas of Kenya was 46.4 percent while in the urban areas the rate was 29.3 percent.

Compared to many countries in the region, Kenya is resource poor and women and children are inevitably the most vulnerable members of the poor community. Such poverty factors make access to health care services unaffordable and are further impinging on the effective implementation of the Primary Health Care strategy.

One study on Inequality and Poverty in Rural Economy in Kenya observed that Nyanza, Western and Eastern provinces contained 75-80 percent of all poor Kenyan households and there was a fifteen-year difference in life expectancy between Central and Western provinces. While this study was conducted a decade ago, today, there are indications that poverty is much more abject that it was two decades back and special attention must now be paid more than ever before towards poverty alleviation strategies.

A description of the poverty situation in Kenya shows that:

(i) It is largely a rural problem and must be tackled with rural remedies.

(ii) Many households have enough food in "normal" times but are food insecure because they are easily tipped over into undernutrition by any shocks.

(iii) The commonest such shocks include, illness, food price increases, drought and so forth. In all these situations the poorest households have the most slender margins (World Bank, 1991).

Given that poverty is becoming chronic, it is now apparent that in Kenya, there is an urgent need to vigorously pursue poverty alleviation through empowerment of the rural poor. The aim of such programs will undoubtedly create an environment in which the

rural poor are able to develop their own resources and capabilities in re-shaping their lives.

Available countrywide data equally indicate that malnutrition and its associated complications now account for 30 percent of all child deaths in Kenya (Kenya country health profile 1994). Similarly, the five national nutrition surveys during the periods, 1977; 1979; 1987; and 1994 all have not revealed any significant improvement in the nutritional status of the under five year olds.

Indeed in some regions, the nutritional status of the under five year olds has deteriorated rather than improved. According to the fifth nutrition survey, 34 percent of Kenyan children are moderately to severely stunted in the following districts: Kilifi, Kwale, Kitui, Makueni, Kisii, Homa Bay, Migori, Narok, Samburu, West Pokot, Bungoma and Kakamega.

Available information on low birth weight status of babies in Kenya shows that 130:1000 newborn babies weigh 2500 gm or less. Out of these, 90 percent die within the first twenty-eight days of their lives (WHO, 1996).

It has been documented that although 90 percent of mothers breastfeed their babies for at least six months, the duration of breastfeeding has markedly declined from 18.3 months in 1983 to 17.9 months in 1987. Exclusive breastfeeding was shown to be as low as 17 percent in one survey (GOK/ UNICEF, 1993).

While breastfeeding has been found to be a most powerful nutrition intervention in childhood considering that it is an intervention that simultaneously addresses the three underlying determinants of nutrition, namely; household food security, care and health, it is the key to protect health and nutrition in the early months (UNICEF, 1997).

However, there is now growing evidence through research that the transmission rate of HIV/AIDS through breast milk is higher than previously thought. Such new findings will

no doubt have implications for strategies associated with the promotion of breastfeeding for child survival and development (Morgan, 1997).

Concerning the micronutrient status in Kenya, the 1994 nutrition survey have shown that vitamin A, iodine, and iron deficiency diseases are prevalent among Kenyan children (GOK, 1994). To this end, remedial plans have been proposed to promote micronutrient supplementation for identified high-risk groups.

An analysis of information on nutritional status for determining programs to eliminate nutritional deficiencies are stated in Sessional Paper No. 4 of 1984 and Sessional Paper No. 2 (GOK, 1994). The 1994 Sessional Paper stresses the importance of attaining food security at the household level by reducing problems related to production, distribution and consumption. The National Plan of Action for Nutrition (1994) further underscores the need for assessing, analysing, and monitoring nutrition in the country.

This line of thinking is in line with the renowned WHO/ UNICEF Iringa Joint Support Program initiated in 1983 which provides a sterling example of the application of the Triple A approach in which the fundamental processes of Assessment, Analysis, and Action have had significant impact on improving the nutritional status of children at moderate costs.

It is now widely recognized that nutritional status of children is an important proxy for assessing changes in the health status and food availability patterns. It is equally a useful tool for early warning signs of ill-health of a population (UNICEF/GOK, 1996). Current statistics on nutritional indicators of well-being denotes that inadequate nutrition negatively affects child mortality, morbidity and physical growth (GOK, 1990).

Data drawn from the nutritional situation in Kenya have revealed that the problem of undernutrition is increasing both in terms of rates and absolute numbers and that there are two major causes namely, poverty and disease (UNICEF, 1988). Estimates based on food poverty benchmarks showed that the poorest ten districts in Kenya with household net

incomes below national averages were: Siaya, South Nyanza, Kisumu, Kakamega, West Pokot, Kilifi, Baringo, and Kitui.

More recently, the impact of poverty on Kenyan households has cut deeper into the families' food baskets over the past two decades thereby diminishing resources at household levels and by and large affecting quality of lives of households (Oniang'o, 1992). Malnutrition therefore remains a debilitating problem in Kenya and stunting and wastage rates have continued to be high over the past 10 years due, in part, to poverty at the household level (UNICEF, 1989).

That majority of Kenyan population now live below the poverty line due to economic recession is an acknowledged fact. World Bank reaffirms that one person in six Kenyans in the rural areas is too poor to buy the amount of food they need. It is further documented that Kenyan poverty is region specific.

The issue of poverty-malnutrition linkage is stated forcefully by the World Bank, thus: "There is now a wide measure of agreement on several broad propositions...(that) malnutrition is largely a reflection of poverty. People do not have enough income for food" (World Bank, 1991).

Given the slow income growth that is likely for the poorest people in the foreseeable future, large numbers of people will remain malnourished for decades to come...The most efficient long-term policies are those that raise the incomes of the poor (World Bank, 1981). However, in the absence of alternative income changes, policies towards agricultural transformation are pre-requisite to socio-economic development.

According to World Bank data, inadequate nutrition is presently a widespread problem not only in Kenya but also in Africa as a whole and agreement seems to broad that millions of individuals in these countries are undernourished. One widely held view is that until economic development process generates appreciable improvement in income per capita, the situation will remain largely unchanged.

The Kenya Participatory Poverty Assessment (World Bank, 1995) notes that while there has been some improvement in such social indicators as child mortality, the 1990s have brought stagnation. It is now estimated that the proportion of Kenya's rural population that lives below poverty line is the same as that 10 years ago, and that 30 percent of urban population now live in poverty.

In the light of the foregoing, it is now realized by the government of Kenya that districts, which have high prevalence rates of stunting for under five year olds in national surveys, should be targeted for interventions (GOK/UNICEF, 1993). In addition concerted efforts and strong partnerships need to be forged by governments, private sectors, NGO's, if objectives outlined by the national plan for action for nutrition are to be realized towards effective and innovative nutrition interventions.

The child, a Chilean poet once wrote, cannot wait. This means that of all the social challenges, children's pressing needs must be addressed. Boutros-Boutros Ghali notes that of all the subjects of development, none has the acceptance or power to mobilize, as does the cause of children. Our children are our future and investing in children through their health and nutrition is the most viable project a nation can embark on.

2.2.5 Morbidity and Mortality Profiles in Kenya

Although the government of Kenya in its National Development Plans of 1988-1993; 1994-1997; 1997-2001 enumerates some of its accomplishments in the health sector, indicators of maternal and child health provide reasons for concern. Infant mortality rate in Kenya is estimated at 85:1000 live births while under five mortality rate is 105:1000 live births (UNICEF, 1997). These estimates also show varied regional differences (Ewbank et al., 1986).

According to a government report, children in Kenya die of multiple causes... the combined process of poor diets and multiple recurrent infections which cumulatively

retard growth, lead to wasting and progressively wear down the resistance of the child (GOK/ UNICEF, 1984).

The government's statement on the health situation in the country further observes that communicable disease and undernutrition and the interaction of the two (CRSP, 1987) dominate the overall pattern of child morbidity. More recently it has been established that preventable vector borne diseases are the most important causes of morbidity and mortality nationwide (GOK, 1997).

The most important diseases that continue to threaten the lives of children and adults in Kenya include malaria and respiratory tract infections which account for almost 50 percent of all reported cases in government facilities while intestinal diseases increase this figure to 60 percent of all reported cases (GOK, 1997; HIS, 1993).

Diarrhoea which is the 4th leading cause of the under five-year-old child deaths now accounts for 4 percent of all outpatient cases in Kenya (GOK/UNICEF, 1994-1998). Diarrhoea kills by triggering off dehydration and electrolyte imbalance. Repeated attacks of diarrhoea have far reaching consequences.

Presently, the single most important health challenge that Kenya is grappling with, is the HIV/AIDS pandemic. HIV/AIDS is now making a health difference to demographic variables including mortality, life expectancy and infant survival. The government of Kenya estimates indicates that an average of five hundred Kenyans are infected daily. Life expectancy in Kenya is now 49 years for females and 48 years for males (World Population Data Sheet, 2000).

Aids pandemic is becoming more than a health problem as it encompasses economic, social, and cultural dimensions. The pandemic now raises direct productive costs of business enterprises through additional health expenditures, additional retraining expenditures as ill workers are replaced, increased absenteeism due to morbidity and lower productivity due to the onset of illness, and uncertainty with respect to manpower planning (GOK, 1997). The nation loses expensively trained manpower while cultural,

legal and socio-economic consequences of the disease are all considerations, which the nation has to confront.

Studies in Kenya, Malawi, Tanzania, Zaire, and Zimbabwe suggest that the lifetime cost of treating persons with AIDS is between $200 - $900 for each patient while the average annual public expenditure on health care in sub-Saharan Africa ranges between $1 to $30 per person (Morgan, 1997)

HIV/AIDS which has hit Kenya hard has severely impacted on nutrition through several ways: erosion of household production capacity, creation of orphans, overstretching of household caring capacities, overburdening of health systems, and overall increase in child and adult mortality (Kavishe, 1997).

2.2.6 The Development of Primary Health Care

The 1970s saw the health situations in most countries of the developing world not only getting poorer but in most cases worsening rather than improving. At the World Health Assembly in 1977, it was recognized that the misery of ill-health could not be left to continue as it impinged on economic, social and cultural development, and to this end it was against this background of deteriorating health status in most countries that the concept of Primary Health Care was conceived.

Since 1978 when resolution World Health Assembly (WHA) 30.43 was declared as a global target, namely "that all citizens of the world should by the year 2000 attain a level of health that will permit them to lead a socially and economically productive life". A close observation at Kenya's health situation now shows that the last decade has been a decade of disappointments in the health scene. Food insecurity problems coupled with the current rates of inflation and the influx of the dreaded HIV/AIDS have all added to the strains on the health care systems in the country. One therefore wonders, how can health demands and expectations voiced at the Alma Ata conference be fulfilled in the face of inflation and rising costs of living. How can specific health problems be alleviated in the

face of declining government revenue during this period of economic stress? An answer to all these issues, it was then thought, lay with a cheap solution, which was found to be in the form of Primary Health Care.

2.2.7 The Primary Health Care Strategy

Since the Alma Ata Conference, a number of countries initiated strategies for establishing Primary Health Care based on their varied political, social, economic and cultural orientations. While China has modelled its PHC using the "bare foot doctors" approach, Tanzania, Zambia and Kenya have resolved to medical auxiliaries and are utilizing the community health worker initiatives (Ebrahim & Ranken, 1992).

Although Primary Health Care has become a widely used concept, contradictions and confusions exist in its meanings. However, in its original and narrowest sense, PHC implies front line or first contact care where health workers meet with the patients. Basically, it is the level where common health complaints are attended to and preventive measures undertaken (Fry & Hasler, 1986).

Given the above definition, the Primary Health Care concept therefore underscores the following principles:

i) Health services must be accessible and should not neglect rural and isolated populations or even the urban poor.

ii) Active participation by communities in decision-making processes.

iii) Emphasis on preventive and promotive rather than curative services.

iv) Health must be seen as part of the total care. Nutrition, safe water supplies, education are all essential requirements for well-being.

As the review of the PHC strategy is undertaken among WHO member states and in Kenya, it is important to underscore two major questions pertinent to this study, namely:

nearly three decades after Alma Ata, where are we in our successes and failures in the implementation of Primary Health Care? What have been some of the obstacles and impediments to PHC's implementation? As the 21st century unfolds, is the Health for All advocated for at Alma-Ata anywhere near realization?

After years of PHC implementation, it is now evident that the success of PHC lies in issues surrounding equity, community involvement, community empowerment and political will.

2.2.8 Evolution of Primary Health Care in Kenya

Kenya formally adopted Primary Health Care as a health strategy in 1982. When the concept was first introduced, the following ten elements were identified as issues of health concern by the Ministry of Health:

i) Nutrition

ii) Water & Sanitation

iii) Control of endemic diseases

iv) Health Education

v) Maternal Child Health & Family Planning

vi) The Kenya Expanded Program on Immunization

vii) Treatment of common conditions

viii) Supply of Essential Drugs

ix) Mental health

x) Dental health

By the1980s several non-governmental organizations were implementing Primary Health Care projects in different parts of the country. The outstanding organizations included UNICEF who had programs running in Kisumu District in Kochieng village, Katolo and God Nyithindo. The Aga Khan Foundation on the other hand was notable for the Kisumu Primary Health Care project, which was based in Kajulu and Lower Nyakach Division. AMREF established PHC projects in Saradidi, Kibwezi, Chogoria and South Kabras, respectively.

Other organizations involved in PHC activities were: The Catholic Mission in Migori Division, The Kenya Red Cross Society in Oyugis, Norwegian Save the Children in Kendu Division. All these latter organizations were involved in programs on Child Survival and Development (CSD) within the context of PHC (UNICEF, 1992).

All these projects heavily relied on the voluntary efforts of communities generally referred to as community health workers (CHW's). Meanwhile a debate ensued concerning how these programs should run, whether these volunteers should be paid, what the training curriculum should contain, what drugs should be administered and so forth. To date some of these issues remain impediments to the effective implementation of Primary Health Care.

By 1991, UNICEF was already working on modalities of strengthening PHC at national, district and community levels. In order to realize these broad ideals, the Bamako Initiative approach was undertaken.

The initiative which was conceived at the meeting of WHO African health ministers in Bamako, Mali in 1987, aimed at strengthening and accelerating community based actions for improving the survival and quality of life of women and children, in particular, through developing a system of community financing based principally on the supply and sale of basic essential drugs and supplies (Maneno & Mwanzia, 1996).

The Bamako Initiative was not a totally new concept in Kenya. Traditionally, there existed a strong "harambee" (self-help) spirit, which has formed the basis of the

initiative. In addition there has been a wealth of experiences among NGO in community financing of health care (UNICEF, 1991).

The goal of the initiative is to encourage maximum community participation and involvement in PHC through the provision of basic essential drugs and supplies to develop a system of user-financing and revolving fund in support of health care and to ensure self-reliance and sustainability for health care (UNICEF Annual Report, 1996)

To date, the Ministry of Health and UNICEF are fully involved in the implementation of the initiative. Many village pharmacies were operational in the initial years of the Bamako Initiative in Kisumu District. Some of them have since run into managerial problems and are no longer functional. The Kochieng Village Pharmacy sponsored by UNICEF was for a long time one of the PHC models in the district, while Kandaria offered a similar significant model for the Aga Khan Foundation before it wound up its activities in the district in 1996.

2.2.9 Equity in Primary Health Care

As far as the World Health Organization is concerned, equity is the essence of Health For All. It is more than just decreasing inequalities in a group or even a population. It means giving people the opportunity they need to fully realize their health potential (Rathwell, 1982). Equity conjures up notions of fairness, and when applied to health may relate to a number of critical components of the health care system including health status and access to health care (Evans & Diderichsen, 1997).

Although much has been documented on equity, there has been relatively little consideration of what it means on the health space. For instance, inequities in health are frequently defined by drawing on a standard or basis for comparison such as socio-economic status, gender, age group, and so forth.

While the choice of these variables reflect societies health disparities, the challenge however is to understand the causes of health inequities e.g. are the above health differentials the result of some socially defined characteristics such as gender and occupation or are they consequences of broader social forces such as macro economic factors, structural adjustment programs or even globalisation? The ability to define, measure and intervene in the social realm represents an enormous and huge but important challenge (Harvard Centre for Population Studies, 1997). It is in the foregoing that if states are committed to achieving the principles of Health for All, then significant improvements must be manifested in narrowing health differentials between populations and within countries.

Kenya is one of the countries in sub-Saharan Africa where poverty has exploded in the last decade and manifestations of economic adjustments have been clearly reflected in reduced budgetary allocations in the social sectors (GOK/UNICEF, 1994). These adjustment measures have seen inefficient health services, and the progressive crisis in health now manifests itself in decrease in health expenditures, managerial problems, low supply of equipment and supplies, and inaccessibility of health services by masses of the population. These economic adjustment measures have by and large produced negative impacts on health status and quality of lives respectively.

Obviously, to ensure health for all is not possible in the midst of the above-mentioned socio- economic stresses that Kenya is grappling with, however, every effort should be made to provide health care services to the needy populations and not restrict health provisions to the already privileged groups of populations.

2.2.10 Health Care Delivery Systems in Kenya

Kenya embarked on the decentralization process in the 1970s and early 1980s, and it has since experimented with various forms of decentralization. One outstanding effort in this

direction was the district focus for rural development, which was initiated by the 1974/78 Development Plan and implemented in 1983.

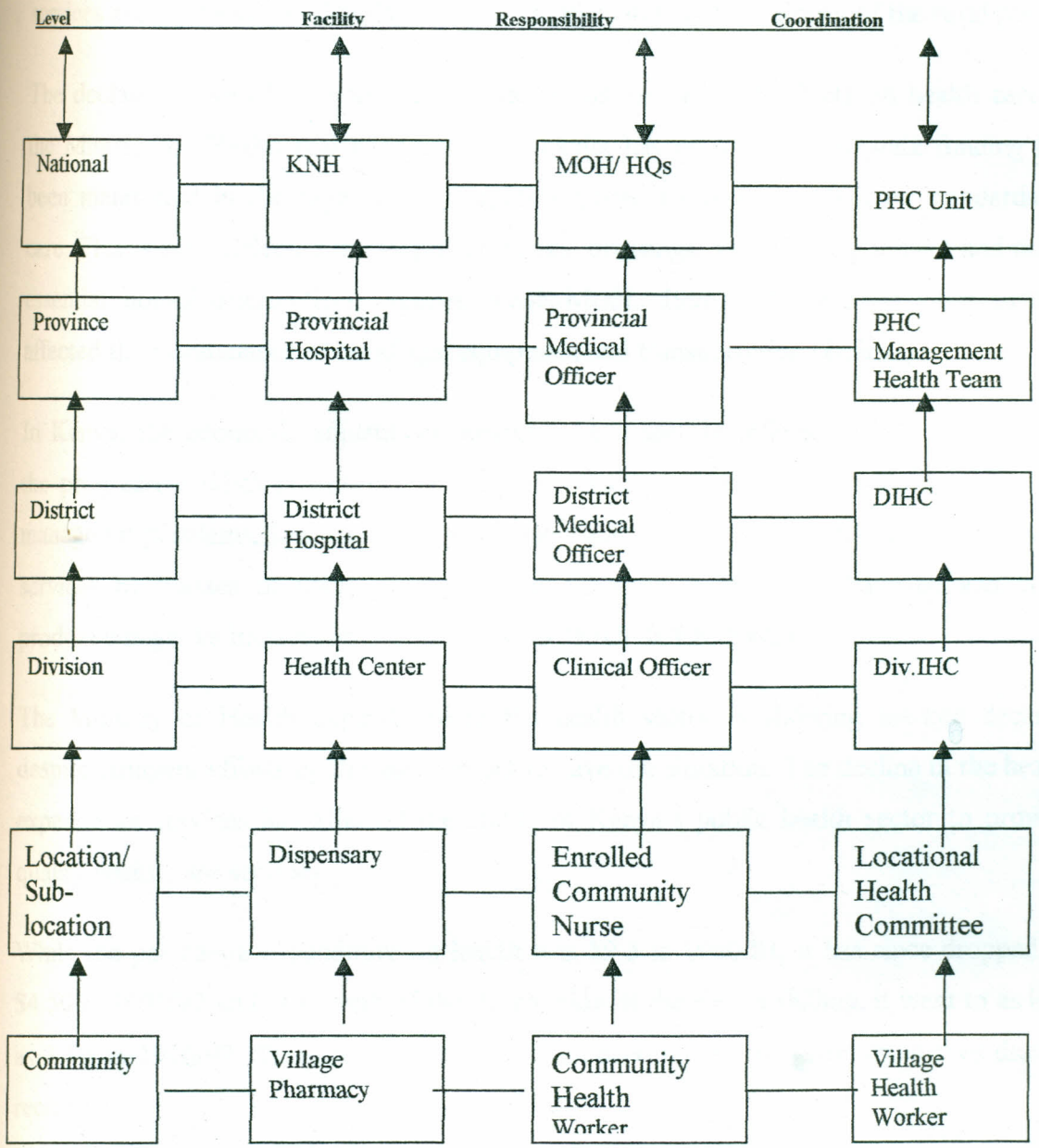
In this new development, the government shifted some of its planning and implementation responsibilities from the headquarters to the districts. This new shift was meant to expand the base for rural development while at the same time improve project implementation at these local levels.

Prior to the district focus policy, the health sector's activities were centralized and implemented centrally by the Ministry of Health headquarters. However, the implementation of the district focus for rural development provided one of the earliest attempts towards decentralization in the health sector (Owino, 1997). In 1992, the District Health Management Teams were formed to represent community interests in health planning and co-ordinate as well as monitor the implementation of projects at the district level.

This move, it was anticipated would no doubt ensure equitable distribution of resources, increase cost effectiveness, and improve greater private and community participation in health and cost sharing revenue. Note however must be made here that the Kenyan public health sector has not implemented the decentralization process in its broad sense. To date only a few programs within the sector have been/are being decentralized. Amongst some of these programs are AIDS surveillance, The National Hospital Insurance Fund (NHIF), and the cost-sharing program (Owino, 1997).

Generally, Kenya's experience with decentralization has been discouraging. A number of problems have undermined the effectiveness of the policy. For instance, the headquarters has been reluctant to delegate responsibilities due to lack of confidence in local officers, fear of power sharing, and weakness in the capacities of the headquarters to support and assist decentralization units (Ministry of Health, 1996). Presently, Primary Health Care in Kenya is being implemented through a six-tier system as is illustrated by the figure below:

Figure 2: Structure of the Health Care System in Kenya



Community Financing of PHC in Kisumu District

2.2.11 Critical issues in the Health Sector

Currently, Kenya is experiencing the recorded population growth rate of 2.6 percent and it is quite clear that these rates of population growth coupled with the worsening

economic crisis have jeopardized the health sector with the effect that most health care services are on the verge of collapse or are unaffordable to the majority of the rural poor.

The decline in overall economic performance has had adverse effects on health care as the Ministry of Health real allocations per capita has declined. Inadequate funding has been manifested in shortages of key inputs required to maintain adequate standards of care. This is now reflected in manpower, drugs, dressings, vaccines, equipment and other essential non-pharmaceutical supplies (GOK/MOH, 1996). The economy has further affected the maintenance of buildings, equipment and transportation (Koinange, 1996).

In Kenya, the economic adjustment measures have seen insufficient health services and the progressive crisis in health now manifests itself in decrease in health expenditures, managerial problems, low supply of equipment and supplies and inaccessibility of health services by masses of the population. The economic adjustments have by and large produced negative impacts on health status (GOK/UNICEF, 1993).

The Ministry of Health expenditure in the health sector is showing marked declines despite stringent efforts by the government to save the situation. The decline in the health expenditure services has affected the ability of Kenya's public health sector to provide quality health care services.

While the per capita expenditure on health was $9.5 in 1980/81, it has since dropped to $4.50 in 1991/92 and as a result of the devaluation of the Kenya shilling, it went to as low as 3.50 in 1996/97. This drop is yet to be evidenced unless the economy makes drastic recovery.

Although the cost sharing strategy has been advocated as a means of generating revenue for the improvement of government facilities, indiscriminate application of cost sharing has had very adverse effects on the vulnerable groups in the community. Implications of cost sharing on the well being of the poor members of the Kenyan society still remain an empirical question (Ochoro & Omoro, 1989).

On equity considerations the cost-sharing program has not fully addressed the problems of the vulnerable. The policy has not promoted access to modern health care as the targeting approach remains ineffective (Mwabu et al., 1996). Even with decentralization implementation problems and institutional weaknesses mar the policy. There has also been no corresponding improvement in the quality of health care with the implementation of the cost-sharing program, principally due to insufficient health care inputs.

The revenues derived from cost sharing through user fees and National Hospital Insurance Fund (NHIF) reimbursements are maintained in a Facility Improvement Fund (FIF) at the district level. Presently, NHIF reimbursements are the largest simple source of revenue accounting for 35 percent of all FIF revenue. The potential FIF revenue is lost through wavers and exemptions, the largest impact being reflected on outpatient collections.

Overall the health sector is now faced with a situation where available resources cannot match the demand for services. This has caused shortages and under-utilization of existing manpower to medical equipment. The situation has been aggravated by the fact that 70 percent of funds rooted under MOH recurrent vote now goes into financing staff salaries and allowances leaving a mere 30 percent for operational expenses including purchase of drugs and dressings (MOH, 1996).

Given the above scenario, it is now impossible to maintain high standards of care. As a result of clear policy guidelines in the health sector, there are manifestations of urban bias with certain rural communities being underserved. Health care systems are leaning more on curative than preventive measures. The emphasis on preventive and promotive health services has not received the corresponding financial support in Ministry of Health's recurrent budget allocations while public health officers employed to implement preventive and promotive health interventions are too few to make any significant impact.

The issue of drug supplies is now a critical issue of national importance. Prices of drugs are unaffordable and beyond reach of most Kenyans. Despite major improvements made through decentralization of the distribution through a departmental board of the Ministry of Health, these drugs do not reach their intended destinations.

While there is equally a national drug policy whose goal is to develop pharmaceutical services to meet the requirements of all Kenyans in prevention and diagnosis using efficacious, high quality, safe and cost effective pharmaceutical products, these goals are far from being realized.

Presently the Kenyan health sector is faced with two critical issues in terms of resource allocation i.e. distribution of resources between curative and preventive services and allocation of resources between urban and rural areas (Koinange, 1996). Curative care accounted for 67 percent of the total recurrent expenditure in 1996-97 while the rural and preventive care accounted for a projected 21 percent. Kenyatta National Hospital accounted for 16.3 percent of the total recurrent expenditure while all rural health centres in the country accounted for 21 percent (Koinange, 1996, GOK/ UNICEF 1993).

The case of Kenya further portrays inequity considerations in the distribution of health resources, which are disproportionately allocated to urban as compared to rural areas. Census data reveal that 87 percent of the Kenyan population resides in the rural areas yet 80 percent of all health resources are concentrated in Kenya's major towns (CBS, 1994).

This clearly shows that health expenditure in Kenya clearly favour urban populations and given the fact that rural people are in dire need of health services than the already provided for urban communities, concerted efforts should be targeted towards rural health care systems.

Whereas the Kenya PHC advocates "just and equitable" distribution of health resources, the gap between supply and demand of health services continues to widen to the extent that there is today a problem of quality health care in the country (K'Okul, 1991). Should inequity in the distribution of health care in the country persist, then it is difficult to

comprehend how targets for meeting basic health needs can be achieved within this decade or the next.

In this regard several constraints are now manifested in the health sector and these renders difficulties in access, utilization and quality of care to households. In view of the aforementioned factors, the stipulated overall goal of the health sector until 2010 of promoting and improving health status of Kenyans by making health services more effective, accessible and affordable may not be feasible unless drastic reform measures are urgently put in place.

2.3 Summary:

This chapter has offered a discussion of related local and international literature. In Particular, the review has offered current debates and thinking in the discipline. In addition, diverse dynamics concerning the state of the art of nutrition in Kenya has been disclosed through conceptual framework, which is the bedrock of this study These thoughts are important in developing deeper insights into the current study. Besides they have laid a foundation for the current research.

The chapter that follows therefore will present the procedures followed to collect data as well as the data analysis methods.

CHAPTER THREE

3. METHODOLOGY

3.1 Research Paradigms

The current study made use of the two epistemological approaches, the qualitative and the quantitative research approaches. A growing number of researchers have adopted the position, which claim that no method per se has the monopoly on inference. They argue that the qualitative and the quantitative approaches should not be considered antagonistic but rather complimentary.

In health research there is now a growing consensus that applying both sets of methods can increase the reliability of data and leads to a complete understanding of the phenomena under study (Chambers, 1992). In this regard, this current study adopted a *totalistic* or *holistic* approach to understand the raised issues in a comprehensive manner. This approach was netted in Participatory Rural Appraisal Methodology (Chambers, 1980) and / or what some scholars refer to as Participatory-Action-Oriented Research Approach (K'Okul, 1991). Both Approaches advocate participatory involvement of researchers and community members in problem solving and solutions under discursive process and understanding.

Participatory methodology is today gaining wider acceptance as conventional research approach worldwide. It is a unique method, which shifts the initiative from the outsiders to the rural people. It also gives the opportunity for the outsiders to immerse themselves into the lives of the local community, learn and facilitate the process of information gathering.

One of the characteristics of participatory research approach is the grassroots community involvement. The community gets a chance to identify and discuss their problems, explore potential solutions, gather information, and use this information to solve own problems. This *bottom-up-approach* can and does lead to sustainable development.

In Kenya, participatory approaches are not new concepts. They have apparently been used by local communities to solve problems such as land disputes, marital problems, peace settlements and so forth. Various organizations such as UNICEF, Care International, Aga Khan Foundation, AMREF etc, have equally used participatory approaches in different areas of rural development such as in health and nutrition education campaigns, water supply and sanitation, child survival and development, family planning and AIDS awareness campaigns.

Participatory research has been found to be a useful approach to research at every stage of the programming circle, i.e. design, monitoring and evaluation stages. It is a process which is relevant to problem solving. Participatory approaches allow for the inclusion of viewpoints and opinions of those people for whom the programs are intended, the beneficiaries, policy makers and the service providers. It promotes dialogue and to date it has been illustrated as one of the research paradigms whose power and usefulness are well recognized. Given the above justifications, participatory research methodologies were adopted for the purposes of meeting objectives of this study.

3.1.1 Combining Qualitative and the Quantitative

Today, there is a growing consensus in health research that applying both sets of methods can increase the reliability of data and therefore lead to a more complete understanding of the phenomenon under study. Triangulation or the combination of methodologies for the study of the same phenomenon was therefore employed in this survey.

By so doing, this study captured a more complete, holistic, and contextual portrayal of the subject under study for which single methods could have been blind. By triangulating, the weaknesses and limitations of each individual method were counterbalanced.

The study however realized the contrasts between the two approaches, namely, while the aim of quantitative research is to analyse people's situations and behaviours from an

outsider's objective perspective, that of qualitative research on the other hand is to understand those situations from the insider's subjective perspective.

Similarly, how samples are selected, data collection and analysis used also determines the differences between the two approaches in the sense that in a survey research data is collected from a representative sample of the population and the sample is often large. In contrast, in qualitative research data is purposively collected and is usually quite small to be considered representative of any larger population. This study therefore realizes these limitations hence the integration of the two approaches to this study design.

3.2 SAMPLE SELECTION AND SAMPLING PROCEDURE

3.2.1 Sampling Frame

The researcher identified PHC projects in the Kisumu District and special attention was paid to KPHC project sites by the Aga Khan Foundation.

3.2.2 Project Community

The KPHC sites in Kisumu district that were covered by the study included Winam, Nyando/Kadibo, Upper Nyakach, Lower Nyakach & Gem Rae.

Winam is considered a medium potential area because it enjoys convectional afternoon rains from the Lake Victoria. As a result of its close proximity to Kisumu Town, the region is overcrowded and experiences landlessness. Kadibo and Rabuor lie on the Kano plains and are therefore susceptible to flooding.

Nyando, especially Katolo lies on the rain shadow and on the bed of the Rift Valley highlands, towards Kano plains. The region experiences food deficits and is underdeveloped with poor road networks and health facilities. It is a poverty-stricken area. It also lies on the rain shadow and rarely receives conventional rains from Lake Victoria or the highland rains.

Gem Rae is situated on a high potential area within the Lake Victoria basin and is favoured with rich alluvial soils created by rivers Awach, Nyalbiego, Nyando and Sondu. This has created the Miruka Swamp popularly used by the local communities for horticultural agriculture and rice cultivation.

Sigoti or Kandaria is located at the foot of Nyabondo Plateau. This is a rocky area, though the region benefits from the influence of the Nyabondo plateau relief rains. Communities here rely mainly on food imports from the neighbouring Kisii and South Nyanza districts. Table 2 below gives a clear picture of the project community and donor attention:

Table 2 Showing the Scope of the Study Community by Donor Participation

	Division/ Location	**Donor**
1.	**Lower Nyakach** Rabuor	Aga Khan Foundation, Care (K), Lake Basin Development Authority
2.	**Central Nyakach** -Kandaria/ Sigoti	Aga Khan Foundation
3.	**Nyando** -Wawidhi B (Katolo), Kadibo	UNICEF
4	**Winam** -Kajulu	Aga Khan Foundation

3.2.3 Sampling

The sample was drawn from the Kisumu Primary Health Care Project. With the assistance of the Kisumu Primary Health Care Project manager, community health workers and the local administration, it was possible for the researcher to identify the project sites.

3.2.3.1 Multi-stage Sampling

Due to the large and diverse nature of the study population, multi-stage method was employed for the study. Sampling was done through three different stages or phases. This type of sampling was found to be appropriate for this study since people had to be interviewed in different villages and the villages were to be chosen from different geographical locations. In this particular study, 286 households comprising mothers and their 286 under five-year-old children participated in the study. Besides, Women groups, mothers attending antenatal care, project officers and government officials, and school children were also involved in the study. In all 750 participants took part (see breakdown on tables 3 and 4).

Given that the study community comprised different divisions, locations, sub locations and villages, the following three-stage sampling criteria were adopted:

1. The investigator purposively sampled all the five divisions in which the AKF (K) had initiated PHC Programs for impact assessment.

2. The researcher through the assistance of the local chiefs identified all the locations in each division. Once this identification was done, the researcher through the same criteria purposively identified 4 villages. Next, she selected two villages by simple random sampling i.e. chose the required number of sampling units using a *lottery method.* She assigned each of the 4 selected villages in the division a number. All the papers were put in a box and shaken to ensure

randomisation. 2 papers were picked out of the box. The selected papers constituted the two sampled villages.

3. From each of the two villages, the researcher selected 30 households using systematic sampling procedure. To do this, investigator selected every 3rd household until all the households needed were obtained. This task was repeated for all the locations in the study sample.

All households enlisted in the study had under five-year-old children. In those clusters, which did not yield the required specifications of under five-year-old children, subsequent selection of other households was done systematically until the required number was achieved.

Out of the 300 households targeted as the study population, fourteen children aged between 0-5 months were rejected by the EPI-INFO statistical package during data entry and subsequent analysis. These children were detected to be falling below the 6 months cut-off point for nutritional analysis, and since the package is programmed to accept children who are in the age category between 6 to 60 months, the statistical package did not accept the under six months. The computed data for the study therefore comprised of 286 respondents and not 300 as would have been expected. Below therefore is a breakdown of the scope of the sampled population in each of the locations visited in the KPHC programme area.

Table 3 Showing the Sampled Population in the Study Area

	Location	Households		Children Under 5 years		Total
		M	F	M	F	
1.	Kajulu	0	58	27	31	116
2.	Wawidhi/Katolo	0	57	26	31	114
3	Kochieng/Rabuor	0	57	23	34	114
4.	Kandaria/Sigoti	0	57	26	31	114
5.	Gem Rae	0	57	25	32	114
Total		0	286	127	159	572

Data were further sampled by other population groups which were incorporated into the study i.e. women groups (96); school children (40); AKF/GOK Project officers (3); community health workers (9) and mothers attending ante-natal care (30). The Table below is therefore an illustration of the population distribution of the rest of the respondents in the study communities.

*Note that all the households in the study community were female dominated. This was deliberate in view of the fact that culturally, women spend more time in childrearing activities as compared to the males.

Table 4 Showing population Distribution of Women Groups, School Pupils, Project Officers, Community Health Workers and Mothers attending Antenatal Care

S.No	Location	Women Group	School-children (Bwaja primary School)	Project Officers/ CHW's	Mothers attending antenatal care	Total
1	Kajulu/ Nyamware	20	40	3	0	63
2.	Wawidhi/ Katolo	15	0	2	0	17
3.	Kochieng/ Rabuor	25	0	3	15	43
4.	Kandaria/ Sigoti	24	0	4	15	43
5.	Gem Rae	12	0	0	0	12
	Total	96	40	12	30	178

In total data from the study community comprised 750 respondents.

3.3 Pilot Testing

Before collecting data required for the study, the researcher carried out a pilot study in the Soweto slums next to the Kahawa Barracks in Nairobi. This location was found suitable due to the fact that AMREF and the Nairobi city council have a PHC project in the area. The pilot study was necessary to assess the suitability of the questionnaire for the study before actual administration in the field.

The pilot study aimed at establishing whether;

1) The questions were clearly phrased and the wordings understood by the respondents.

2) The questionnaire was arranged in a logical and easy to follow sequence.

3) There was need for clarifying some items

4) The questions were relevant

The researcher administered 30 questionnaires to 30 households in the Soweto slum of Kahawa west in Nairobi.

The research instruments were designed and developed with the assistance of the supervisors, fellow colleagues and experts in nutrition and their views were incorporated into the design of the instruments. Results of the piloting revealed that all questions were responded to without any difficulties.

Given that there were no modifications on clarity, logical sequence of questions or relevance of the items, the researcher in collaboration with other expert opinions adopted the research instrument in readiness for fieldwork.

3.4 DATA COLLECTION PROCEDURES

Qualitative and quantitative approaches to data collection were adopted and various data collection techniques utilized. These included; interviewing, focus group discussions, observations and questionnaires.

3.4.1 Interviews

This was the data collection technique involving oral questioning of selected persons who were deemed to have information concerning the study. An in-depth interview was held with the Manager of Kisumu Primary Health Care Project, two officials from the ministry of Health and an official from the Food and Nutrition Unit (FPU) within the Ministry of Planning & National Development (MPND).

3.4.2 Questionnaire

A questionnaire was designed according to the objectives of the study and it consisted of several items representing all the variables that were considered relevant in the study. The questionnaire consisted of different parts, namely Part A dealing with background information and Part B consisting of broad range of issues such as feeding practices, mortality and morbidity prevalence, nutrition and food security, nutrition education and health care services.

The questionnaire also consisted of closed and open-ended questions, including the yes or no type of questions. The questionnaire had a total of 42 items that touched on all aspects of nutrition and health that were thought to be essential to the study. For details about the items refer to appendix 6. The completed questionnaire was administered to 286 mothers in the study community.

3.4.3 Anthropometric Measurements:

During the administration of the questionnaire, mothers also assisted with information on child's date of birth, gender, height and weight measurements. The anthropometric measurements of 286 under five-year-old children were recorded using the international reference population as defined by the United States National Centre for Health Statistics and the Centre for Disease Control (CDC).

3.4.4 Focus Group Discussions

The purpose of focus group discussion was to obtain in-depth information on concepts, perceptions and ideas of the group on aspects of health and nutrition. Participants were drawn from homogenous settings and a total of eight women groups comprising 96 women participated during group discussions. Group discussions were held with 30 women attending antenatal clinics on nutrition education offered. Program officers and

curriculum experts were also interviewed concerning their perceptions towards nutrition education curriculum. In addition, discussions were held with 40 standard five and six school pupils from Bwaja Primary School on their perception regarding the School Health Project. Finally, discussions were held with community health workers concerning their views on varied aspects of health and nutrition affecting communities of their operation.

3.4.5 Observation

This was a technique involving systematic selection, watching and recording behaviour and characteristics of people, objects and phenomena. It was done through non-participant observation i.e. the observer watched the situation and took note of observed phenomena.

Observation in this survey served the following purposes:

- Offered additional, more accurate information on certain aspects of the study than the interviews and questionnaires.
- It equally acted as a check on information collected as well as supplementing verbal statements made by respondents. Observations equally assisted in validating and strengthening quality of data gathered. Some of the observed aspects of health included; diversity and quality of food eaten, environmental hygiene, water type, water quality, health status of children, and infrastructural development in health care facilities.

3.4.6 Content Analysis

Analysis of health information systems data, census data, unpublished reports, government policy documents and publications in health libraries, all formed part of this study and were relied upon as additional documentary evidence to the study. Specifically,

data that assisted in the determination of 'Trends Analysis' in nutritional status were derived from secondary sources of data.

3.5 Conducting the Focus Group Discussion Session

Prior to data collection, participants were invited 1 day in advance and the purpose of the focus group discussion explained to them. During the discussions, the researcher acted as the facilitator for the Focus Group Discussions while one of the research assistants was the recorder. The role of the facilitator was to stimulate and support discussions.

A community health worker introduced the research team while the participants were asked to introduce themselves. The purpose of the discussion and kind of information needed including how this information would be used was explained to the participants.

The facilitator then formulated questions and encouraged as many participants as possible to express their views. The facilitator would ask for clarifications whenever the idea expressed did not come out clearly. She also diplomatically reoriented the discussion whenever it went off the track.

In each location, at least two different FGD's were conducted on women groups. The discussions lasted for one hour, depending on the willingness of the group to participate. After each group discussion, the facilitator and the recorder would meet to review and compare the notes taken during the meeting. They also evaluated how the discussions went and what changes might be made in facilitating next groups.

An impression report of the discussions was prepared by the research assistants reflecting what was discussed and using participant's own words or voices. Key statements, ideas, and attitudes were listed as expressed in each discussion.

After preparing transcripts of the discussion, statements were coded, and later categorized. Selection was done of the most useful citations that emerged during the discussions to illustrate the main ideas.

3.6 Ethical Considerations

Caution was exercised during the research procedure not to violate the respondents' rights by posing sensitive questions, observing behaviour of informants without their being aware, or by gaining access to records that might contain personal data. In order to avoid all this, the researcher obtained informed consent before the study or interview began.

3.7 Selections and Training of Research Assistants

Prior to fieldwork, the following aspects of data collection were used to ensure quality and train research assistants:

1. The research assistants consisted of community health workers from the local communities. These community health workers were found useful as they were knowledgeable on local conditions including, the health and nutrition issues in the community.

2. The researcher prepared guidelines for the research team and these included guidelines on what to do if respondents were not available or refused to cooperate. A clear explanation of the purposes and procedures of the study was designed to introduce each interview. The research assistants were trained on how to ask each question and record the answers.

3. Research assistants were trained in all the items appearing in the research instruments. They were also trained on how to record answers precisely, accurately and report data verbatim.

4. Research instruments were pre-tested with the whole research team.

5. The researcher supervised research assistants during the entire field exercise, besides being involved in data collection process.

6. The researcher devised certain methods to assure quality such as; requiring interviewers to check whether questionnaires were completed before finalizing each interview. The supervisor checked daily whether questionnaires were completed and whether recorded information made sense; The researcher reviewed data during analysis stage to check whether data was complete and consistent.

3.8 QUANTITATIVE AND QUALITATIVE DATA PROCESSING AND ANALYSIS

As already mentioned elsewhere in the study, data was analysed both qualitatively and quantitatively according to the objectives of the study. Quantitative data comprised of the anthropometric data and additional information contained in the questionnaire.
Qualitative data was on the other hand was generated from focus group discussions.
Information from qualitative and quantitative data was triangulated to offer with the meaningful discussions of the study

3.8.1 Quantitative Data Processing

Before embarking on data analysis, it was important to perform quality control checks in such a manner that data were checked accuracy, completion and consistency. Questionnaires were fully checked for missing data. Data was cleaned simultaneously with data collection.

3.8.2 Data Analysis

Data were analysed both qualitatively and quantitatively according to the objectives of the study.

3.8.3 Quantitative Analysis

Procedures and outcomes of quantitative data analysis are not so different from those of qualitative data analysis. In both cases, the researcher described the sample; coded the data (data processing); displayed summaries of data to enhance interpretation, and drew conclusions.

The major purpose of quantitative data analysis was to determine which variables best described the problem, factors influencing the problem, and how the data answered the research questions outlined in the objectives.

As in qualitative analysis, data were checked for quality control before processing. Quantitative data collected were then entered into the computer using SPSS program. Frequency distribution of variables used to see the basic distribution of the sample while cross tabulations characterized by chi-square were used as appropriate tools to determine simple associations and differences among variables.

Data on child nutritional status were analysed through use of nutritional indices as determined by Height-for-Age, Weight-for-Height and Height-for-Age. Measures of disparity i.e. (Z-scores from the reference population) were calculated using the EPI-INFO statistical package to determine the extent of malnutrition among children in the study community.

Given the above-described approaches to data analysis, both qualitative and quantitative data were thus combined for an in-depth analysis of the sampled data and generalizations as well as conclusions leading to recommendations drawn.

3.8.4 Qualitative Analysis

Immediately after each Focus Group Discussion, raw notes were transformed into well-organized set of notes. Caution was taken to ensure that the version of notes reflected as

closely as possible what was discussed, although it also included researcher's own observations and comments.

The following steps were used in qualitative data processing and analysis:

- Coding and classification of various responses.
- Identifying key responses for various themes.
- Listing and tallying key responses by specific themes.
- Identifying patterns emerging from key responses.
- Studying the interrelationships between identified patterns
- Making inferences from the patterns and their interrelationships and reaching conclusions.

3.9 Summary:

In this chapter, methodology that was adopted to collect data has been discussed. Sample selection and sampling procedures has equally been explained. In chapter four that follows, data was analysed and interpreted. A combined qualitative and quantitative data was triangulated to arrive at meaningful interpretations.

CHAPTER FOUR

4. ANALYSIS, INTERPRATATION AND RESULTS

4.1 Introduction

The main purpose of this study was to assess the effectiveness of nutrition programs in Primary Health Care in Kisumu District with a view to evaluating the child nutritional status in the region, the food security situation and the nutrition education programs respectively. Data presented in this chapter attempted to answer research questions and objectives as outlined in chapter one.

The following series of presentations will therefore offer insights into the findings of this study. Quantitative results have been graphically presented through bar, pie, line graphs and tables. Qualitative data on the other hand have taken form of discussions and were enriched by use of captured voices, as outlined in boxes.

4.2 General Characteristics of the Study Population

The following section below presented information on demographic characteristics of the study population such as sex, age, education, etc. It also examined the socio-economic profile of the households in the sample. Taken together, these variables provided the context for the interpretation of the nutrition performance in Primary Health Care.

4.2.1 Gender Differentials

Desegregating data by gender is an important approach to research outlook and varied studies now require separate data for males and females to determine imbalances that affect socio-economic relationships. Given the importance of gender dynamics to

development, both men and women were involved in the study. Distribution of household population by gender is shown in Table 5 below.

Table 5: Showing Proportion of Children by Gender

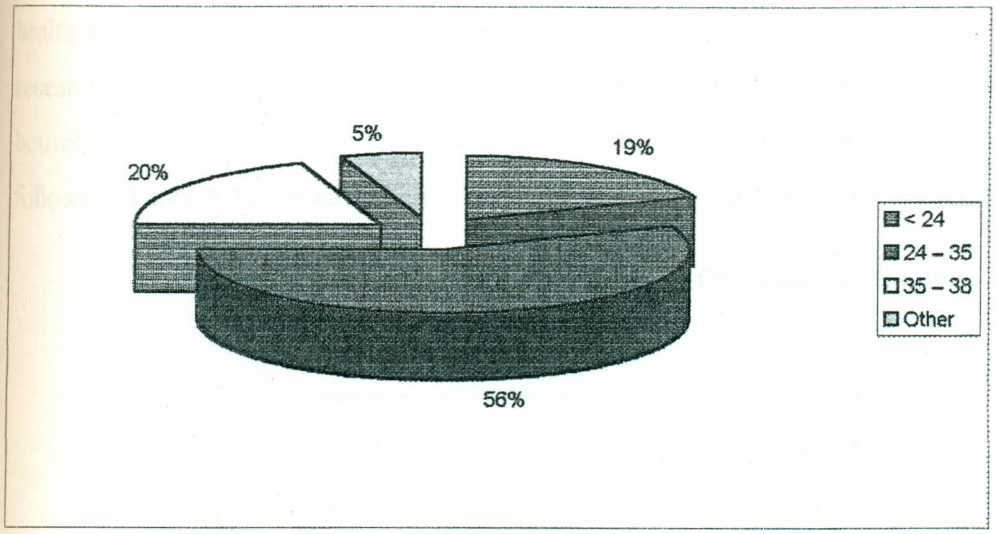
Sex	Frequency	Percent
Male	127	44.4
Female	159	55.6
Total	286	100.0

Data analysis by gender shows that 127 (44.4%) were male children as compared to 159 (55.6%) who were females. Emerging from the Table 5 above, there were slightly more female children in number than male children.

4.2.2 Maternal Age

Data on age is in itself an important indicator for other types of demographic data and social scientists have vested particular interest on age structures of a population since socio-economic dynamics are considerably affected by age (KDHS, 1998). The usefulness of age therefore lies in the fact that it can be related to other demographic factors. The following Figure 3 below shows maternal age distribution in the study community.

Figure 3: Percent of Respondents By Maternal Age



Out of all respondents involved in the study, 56% of women were in the age cohort 24-35 years. This was followed by 20% of mothers in the age cohort 35-48 years. Nineteen percent of the mothers however were below 24 years of age, while 5% constituted "other" age brackets.

According to this data it seems that a bigger percentage of mothers were in their reproductive years, i.e. 24-48 years. Apparently, marriage in most Kenyan communities marks the beginning of a woman's life when childbearing becomes acceptable. Women therefore who marry early have a stronger likelihood of getting more children as compared to those who marry late. This finding confirms data by KDHS 1994 and 1998 in which it has been reported that early age at marriage implies higher fertility levels and this has wide implications for health and nutrition for the under five year old children.

4.2.3 Occupation

Participation of populations in various sectors of the economy is pre-requisite to sound health and nutrition, as well as improved quality of lives. It was with this in mind that the researcher found it useful to investigate the different occupational status of the households so as to provide an indication for the nutritional status of the under fives. The following Table 6 below shows the distribution of respondents by occupational status.

Table 6: Percentage of Respondents by Occupational Status

Occupation	Frequency	Percentage
Farmer	171	60.0
Business	71	24.8
Casual	21	7.5
Teacher	2	0.9
Other	19	6.7
Total	286	99.9

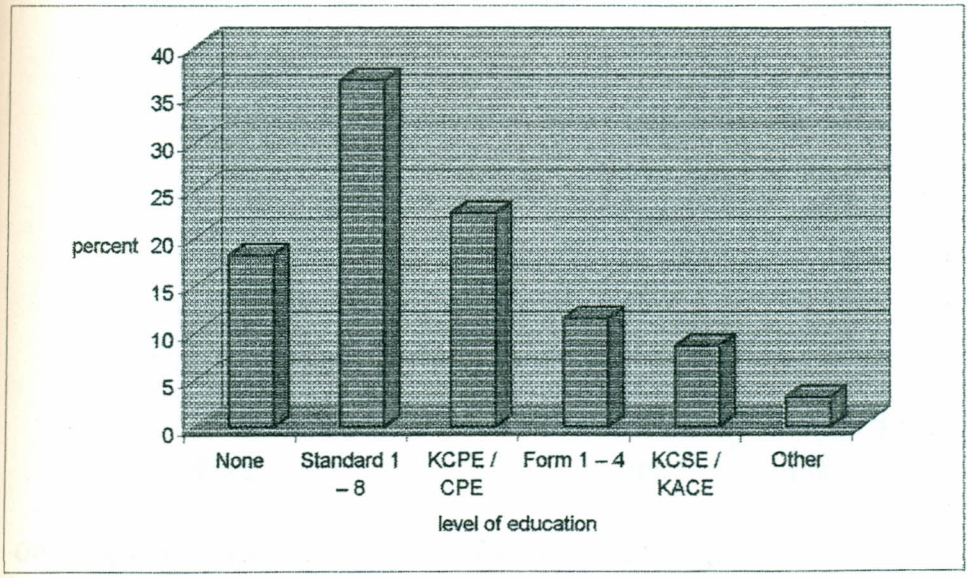
According to responses from Table 6 above, farming was the major preoccupation of the respondents (60.0%), followed by business (24.8%) and casual employment (7.5%). Only an insignificant number of respondents were teachers (0.9%). This pattern is expected given that farming is the main economic activity in rural communities. Proportionally therefore, more respondents were found in agricultural work force.

4.2.4 Maternal Education

Educational attainment is an important aspect of socio-economic development and studies worldwide have documented the importance of female education to the extent that

when women are educated wide benefits are accrued (Brock and Cammish, 1991). Figure 4 below shows the level of maternal education in the study community. It shows that 18.1% of the interviewed mothers had no formal education, 35% of the respondents had primary levels of education (standard 1-8); 22% had KCPE/CPE; 11.2% had attained secondary education (Form 1-4); 9% of the respondents had KCSE/KACE and 3.9% had attained undefined levels of education.

Figure 4: Percentage of Respondents level of Maternal Education



It appears from Figure 4 above that more mothers had attained basic levels of education as compared to tertiary levels. This finding confirms empirical studies that girls are over-enrolled in primary schools yet majority drop out of schools by the end of basic education circle. Some of the reasons that have been advanced in empirical studies as leading causes of the high drop out rates by the end of primary education include; early marriage, teenage pregnancy (UNICEF, 1997; FAWE, 2000).

4.2.5 Marital Status

Marital status is a proximate determinant of fertility and it is now widely documented by empirical evidence that marital status does impact on health and nutritional status of the households (Magadi, 1996). Information on marital status is presented in Table 7 below.

Table 7: Number of Respondents by Marital Status

Type of Marriage	Frequency	%
Monogamous	83	29.0
Polygamous	120	42.0
Widowed	30	10.5
Other	53	18.5
Total	**286**	**100**

Other* constitutes those cases that were non-committal or separated

Data available from this study revealed that 42% of the women interviewed were involved in polygamous unions while 29% were engaged in monogamous unions. There were however substantial proportions of widowed women comprising 10.5% in the study community.

By implication the fairly high percentage amongst widows in the study community could probably be attributed to the escalating incidences of the HIV pandemic population. Identification of vulnerable population groups, which has been discussed later on in the chapter, attests to this. The observation has also been established by HIV/AIDS research studies e.g. National AIDS Consortium report of 2000.

It seems from the table presented above that polygamy is widely practiced in the study community. However, based on the Kenya Demographic Health Survey (1998), polygyny is declining in Kenya and nationwide statistics reveal that the proportion of polygynous union has fallen from 30 percent in 1977/78 as per the Kenya Fertility Survey findings to 16 percent in the 1998's KDHS Report.

4.2.6 Family Size

Assessment of fertility dynamics is an important determinant in establishing not only the population growth rate at country levels but also the health and nutritional status at household levels. Yet it is now becoming clear that accessing data on family size is usually difficult since it is traditionally believed that the number of children should not be publicly discussed. It is an area that needs to be approached cautiously. Table 8 below shows distribution of households by family size

Table 8 Showing % Distribution of households By Family Size

No. of children per Household	Frequency	%
1	29	10.2
2	32	11.1
3	38	13.2
4	39	13.6
5	85	29.6
6	33	11.5
7	16	5.7
8	12	4.1
9	2	1.0
Total	**286**	**100**

The results of this study as depicted by the Table 8 established that majority of respondents had five children per family and this was indicated by 29.6% of the respondents. This compares very favourably with the current country fertility rates, which have been documented by latest census data to be 4.7 children per family (KDHS Draft Report 1998).

4.2.7 Water and Sanitation Status

Access to safe drinking water and sanitary means of waste disposal are good determinants of health and nutritional status. In recognition of this fact, this study wanted to establish the link between water, health and nutrition. Table 9 below depicts the situation surrounding the water status in the study community.

Table 9: Responses on Sources of Water Utilization

Current water source	Frequency	%
Lake	109	38.1
River	95	32.9
Piped water	11	4.0
Boreholes	15	5.4
Unprotected well	16	5.6
Roof catchment	1	0.3
Unprotected spring	17	5.9
Other	22	7.8
Total	**286**	**100**

Survey data presented in Table 9 above shows that 38.1% of the interviewed population claimed that they draw water from nearby lake, while 32.9% stated that they draw water from the rivers. Responses emerging from interviewed households further revealed that 5.6% draw their water from unprotected wells and springs while 5.4% draw water from boreholes. Other sources of water included purchasing from taps and vendors who have tapped from the lake (7.8 %), roof catchment (0.3%), and unprotected springs (5.9%). Analysis of the water situation depicted above shows that rivers and lakes are the main sources of water in these rural communities.

It appears from the Table 9 above that these communities did not have access to safe water to meet their minimal standards for water quality and quantity. Studies by UNICEF (1994) have repeatedly documented that safe water and sanitation have a direct impact health status. This might offer insights as to why diarrhoea is prevalent in the study community.

4.2.8 Infant Feeding Practices

Child feeding patterns have tremendous impact on child health and nutritional status. Poor nutritional status in early childhood predisposes a young child to higher risks of infection and disease, including death. This study therefore focused on infant feeding practices with a view to determining how existing feeding practices impact on child nutritional status. Table 10 below offers an illustration of the breastfeeding status in the study community especially for children under 12 months of age.

Table 10 Showing the Breastfeeding Status By Age

Age in months	Exclusive Breastfeeding		No Breastfeeding		Plain water Only		Complementary Feeding		%	
	N	%	n	%	n	%	n	%	n	%
0-3 months	61	21.3	-	0.0	32	11.2	193	67.5	286	100
4-6 months	8	2.9	7	2.3	4	1.3	267	93.5	286	100
7-9 months	1	0.4	17	5.9	1	0.3	267	93.4	286	100
10-12 months	1	0.1	17	6.1	-	0.0	268	93.8	286	100

Data emerging from this table show that exclusive breastfeeding was undertaken effectively in the first three months yet according to the World Health Organization, this period should be extended to 6 months of life (ACC/SCN, 2001). The survey revealed that 21.3% of the children under 3 months of age had been exclusively breastfed. These figures are in line with the KDHS (1998) data, which indicate that breastfeeding practices in Kenya fall short of the recommended levels. Besides breastmilk, additional liquids given included plain water (11.2%). Other liquids given were juices, maize-meal porridge, and sugary water.

This survey established that complimentary foods were introduced as early as 0-3 month old and that by 4-6 months, 93.5% were already being fed on supplements besides breast-milk. By twelve months, virtually all children in the study community were weaned, and porridge was found to be the commonest weaning food given to these children.

While breastfeeding has been found to have tremendous impacts on child health and nutritional status, recent empirical evidence (ACC/SCN, 1999; ACC/SCN, 2001) suggest that the issue of breastfeeding promotion must now be viewed very cautiously since

recent studies indicate the presence of HIV virus in breast milk. Mothers are now advised to make informed choices on whether or not to breastfeed.

4.2.9 Food Availability Status

Table 11 below offers highlights on the harvesting status in the study community. According to this data, very poor harvest was observed by 47.9% of those interviewed. 24.7% of the respondents described the harvest as poor and 23.4% noted that the harvest was average. Only 2.7% noted they had a very good harvest.

Table 11 describing the harvesting Status

Harvesting Status	Frequency (n=286)	%
Very good	8	2.7
Good	4	1.3
Average	67	23.4
Poor	71	24.7
Very Poor	136	47.9
Total	286	100.0

It would appear from data emerging from this survey that the study community encounters food shortages, and that the food deficit situation is now becoming chronic. As would be expected, the bumper harvests are no longer experienced, as was previously the case. It is possible therefore that the overall food availability may assist in the understanding of the nutritional status in the region.

4.2.10 Food Poverty

Food security is a necessary factor in ensuring adequate nutrition. It is now widely documented that children who take too little food are at risk of growth retardation. The major cause of food insecurity has been documented to be poverty. Table 12 below offers information on the food security status in the study community.

Table 12: Food Security

Household Food Security	Frequency (n=286)	Percentage
Poor	115	40.2
Non poor	169	59.1
Total	286	100

This study found that 40.2% of the households in the study community were food insecure while 59.1% were not food insecure. By implication households in the study community cannot access adequate food to impact on their nutritional requirements despite the fact that the explicit goal of the government has been that regions should be self sufficient in the staple food. It therefore appears that food self-sufficiency is increasingly becoming difficult to attain in the study community.

4.2.11 Disease Incidence

Available evidence on disease prevalence concludes that child health and nutrition is dominated by infectious diseases and malnutrition. Most childhood illnesses apparently interact with nutrition to reduce appetite, and food intake during the course of illness. This study was an attempt to reveal some of the commonest infectious diseases in

childhood that interacts with child's nutritional status. Data that follow on Table 13 below will shed some light on disease prevalence and the associated nutritional status respectively.

Table 13: Disease Prevalence Two Weeks Prior to the Survey

Sick Last 2 Weeks	Frequency (n=286)	Percentage
Yes	132	46.2
No	150	52.4
Other*	4	1.4
Total	286	100.0

***This category includes non- responses**

Table 13 above shows the percentage of children who were reported to have been sick two weeks preceding the survey. Data presented in this table illustrate that 42.2% of children who were involved in the study had been sick two weeks prior to the survey while 52.4% were not sick. It is therefore possible that undernutrition is likely to weaken a child's resistance to disease.

4.2.12 Type of Sickness Two Weeks Prior to Survey

Information on child morbidity status according to the 5th Nutrition Survey shows that associated causes of child morbidity are malaria, acute respiratory tract infection, diarrhoea and vaccine preventable diseases. Table 14 below shows the commonest childhood diseases in the study community. According to data presented, the commonest diseases that affected children in the study community were; malaria (45%), diarrhoea

(23%), coughs and colds (15%), skin rash (5%), eye infection (4%) and wounds and injury (1%).

Table 14: Type of Sickness Two Weeks Prior to Survey

Type of sickness	Frequency	%
Diarrhoea	66	23
Malaria	129	45
Cough/cold	43	15
Measles	20	7
Skin rash	14	5
Eye infection	11	4
Wound/ injury	3	1
Total	286	100

It appears from the on-going survey that the under five-year-old children in the study community are susceptible to diseases of varied nature and this is likely to impact on their health and nutritional status. Deeper analysis is needed into the causal and underlying factors necessitating the incidence of these infectious diseases.

4.3 Chi Square Calculations:

In order to effectively determine the relationship between the nutritional status and other variables in the study community, the Chi square method was used. Its now widely accepted by scholars that the Chi-square test represents a useful method of comparing observed data with expected frequencies. The computational formula for the chi-square is: Chi-square = $\sum \frac{(fe - fo)}{}$

Where; ***fo*** = observed frequency and ***fe*** = expected frequency.

Once the chi-square is calculated, the next question is to determine whether the computed value is too large or too small to be accepted or rejected as an indication of the relationship. Note that 0.05 has been used as the cut off point, implying that a relationship exists if the value is smaller than 0.05 hence any relationship no matter how small is a true relationship. If the calculated chi square is less than 0.05, we accept data/hypothesis. If greater than 0.05, we reject the hypothesis. The next series of presentations will therefore make use of the chi-square calculations in determining relationships between the stated variables.

4.4 Levels of child malnutrition in the study community

Anthropometrical measurements in this study were combined to develop certain nutritional indicators namely, Height-for-Age; Weight-for-Height; and Weight-for-Age. Data on child nutritional status were therefore determined through each of these nutritional indices. It is important to note that each of these categories of nutritional indices provided different information concerning the assessment of child's nutritional status. Height-for-Age is for instance a measure of retarded growth and a child who is

-2SD from the median of NCHS reference population with regard to Height-for-Age is considered moderately stunted, a condition depicting inadequate nutrient intake or cumulative effects of chronic malnutrition. While a child who is –3SD is severely stunted

Similarly, Weight-for-Height indices express the weight of a child in relation to his/her height. It gives a reasonably accurate estimate of body wasting and is the preferred index of nutritional status particularly in emergencies. As in stunting, -2SD Z Score shows moderate wasting while –3SD Z Score denotes severe wasting. Note that body weight is so sensitive to rapid changes in food supply while height normally remains relatively constant, only changes in old age as is reflected in spinal curvatures i.e. Kyphosis.

Wasting therefore is a consequence of acute food shortages or prolonged illness and low Weight-for-Height is a strong predictor for mortality. Severe wasting is associated with high mortality risk.

Weight-for-Age or underweight on the other hand is a measure of both stunting and wasting. This nutritional index is used for monitoring and measuring growth of children especially at child health clinics and is a good indicator for measuring overall nutritional status.

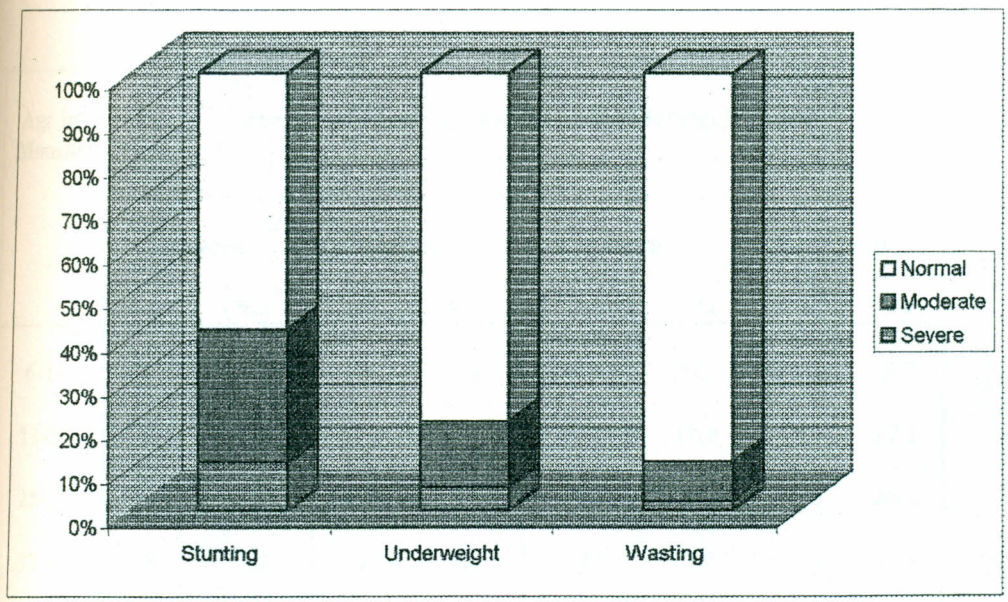
Given these nutritional indices therefore, anthropometrical measurements of <5 year olds in the study community were taken. A total of two hundred and eighty six under-five-year olds were eligible for anthropometrical measurement. The discussion that follows below is a presentation of these children's nutritional status using the already described nutritional indices.

Children considered in the survey were those aged between 6-60 months. Anthropometrical measurements were computed into age, weight and height indices for stunting, wasting and underweight. Overall, prevalence of malnutrition was defined by indicators Height-for-Age (HAZ); Weight-for-Age (WAZ); and Weight-for-Height (WHZ).

Prevalence of different forms of malnutrition based on Waterlow's classification (1986) using the minus 2 standard deviation (-2SD) as the Z-score cut-off point for stunting, wasting and underweight indicated that 31.1% of the children involved in the study were stunted at below -2 standard deviation (<-2SD). Wasting was established to be 9.1%

below -2 standard deviation (<-2SD) while 15.2% of the children were underweight at below -2 standard deviation (<-2SD) as shown in the Figure 5 below;

Figure 5: Percentage Distribution of Children Aged 6-60 months by Severity of malnutrition



As can be observed from Figure 5, nearly one-third of the children involved in the study were moderately stunted (31.1%) while 15.2% were moderately underweight at –2SD. By implication, high levels of stunting are associated with poor socio-economic conditions and increased risk of frequent illness or infrequent feeding practices. The above statistics are therefore in line with the worldwide variations on prevalence for stunting, which have been calculated to range between 5% to 65% in the less developed countries (de Onis et al., 1993).

4.4.1 Child Age and Stunting

The Association between the child's age and nutritional status was examined and the age range were classified into five categories namely; 6-12 months, 13-24 months, 25-36 months, 37-48 months and 49-60 months respectively.

Table 15: Relationship between Child's Age and Prevalence of Stunting

Age in Months	Severity of Stunting by Prevalence levels: N = 286							
	Severe		Moderate		Normal		Total	
	n	(%)	n	%	n	%	n	%
6-12	1	0.3	4	1.4	20	7.0	25	8.7
13-24	6	2.1	11	3.8	32	11.8	49	17.1
25-36	11	3.8	10	3.5	54	18.8	75	26.2
37-48	8	2.8	16	5.6	43	15.0	67	23.4
49-60	8	2.8	15	5.2	49	17.0	70	24.5
Total	33	11.8	56	19.5	198	69.0	286	100

Data from this survey revealed that severe stunting was evidenced in the following order: 25-36 month old children were severely stunted (3.8%), followed by 37-48 month olds (2.8%); 49-60 month olds (2.8%); 13-24 month olds (2.1%) and 6-12 month olds. In view of the above data, 25-36 month olds ranked highest in severe levels of malnutrition while 6-12 month olds were least affected with severe cases of malnutrition. This is expected

in view of the fact that mothers tend to spend more time with younger children, including breastfeeding them during infancy but as they advance in age, there is a tendency to leave them under the care of other siblings or even a caregiver. Lack of caring capacities is therefore a possible causal factor in inadequate nutritional status in older children.

4.4.2 Child's Age and Underweight

Various studies have established age as an important demographic variable affecting the under five year old nutritional status. The Table 16 below presents the relationship between the child's nutritional status and age.

Table 16: Relationship between Child's Age and Prevalence of Underweight

Age in months	Severity of Underweight by Prevalence levels: N= 286							
	Severe		Moderate		Normal		Total	
	n	%	n	%	n	%	n	%
6-12	1	0.3	1	0.3	23	8.1	25	8.7
13-24	6	2.1	5	1.7	38	13.3	49	17.1
25-36	4	1.4	6	2.1	65	22.7	75	26.2
37-48	4	1.4	7	2.4	56	19.6	67	23.4
49-60	-	-	9	3.1	61	21.3	70	24.5
Total	15	5.5	28	9.8	243	85.0	286	100

The results presented in Table 16 revealed that overall 5.5% of the respondents were severely underweight while 9.8% were moderately underweight. Data desegregated by age groups further showed that, 13-24 months olds were severely underweight (2.1%) followed by 25-36 month olds (1.4%) and 37-48 months (1.4%) respectively. However

the age category, namely, 6-12 month olds, seemed to have performed fairly well on all nutritional indicators of severe and moderate malnutrition.

While there are many factors that determine nutritional status, empirical evidence shows that age in earlier years is an important determinant for nutritional vulnerability (5th Nutritional Survey, 1997). An understanding of the age variable is therefore critical in the analysis of the age groups at risk of nutritional deficiencies.

4.4.3 Child's Age and Wasting

Table 17 below presents an assessment on the severity of malnutrition among the under five year olds by weight loss or thinness.

Table 17: Relationship between Child's Age and Prevalence of Wasting

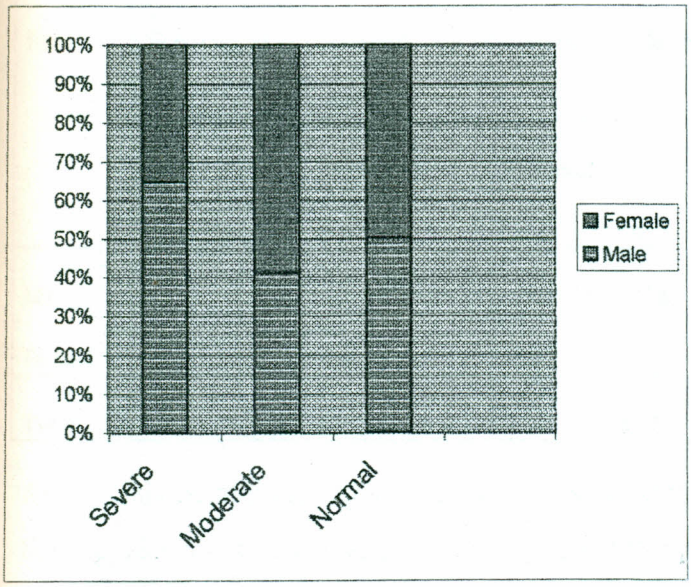
Age in Months	Severity of Wasting by Prevalence levels: N= 286							
	Severe		Moderate		Normal		Total	
	n	%	n	%	n	%	n	%
6-12	-	-	1	0.3	24	8.4	25	8.7
13-24	-	-	8	16.3	41	14.3	49	17.1
25-36	1	0.3	4	5.3	70	24.5	75	26.2
37-48	3	1.1	3	4.5	61	21.3	67	23.4
49-60	2	0.7	4	5.7	64	22.4	70	24.5
Total	6	2.1	20	7.0	260	90.9	286	100.0

Results of analysis of wasting by age presented in Table 17 revealed that the age group 36-48 dominated in levels of severe wasting (2.1%) followed by 49-60 month olds (0.7%) and 25-36 month olds (0.3%). There were however no cases of severe wasting in the younger children aged 6-12 months and 13-24 month olds. This trend is expected in view of the fact that mothers tend to exclusively breastfeed in the earlier years of life and this may shed light on why younger children are unlikely to be susceptible to nutritional wasting. Exclusive breastfeeding has been associated with improved nutritional status. In this regard, a test of significance using the chi-square revealed that the differences noted in nutritional wasting by age was significant by age groups. ($p = 0.0516$).

4.5 Gender Differentials in Nutritional Status

The interaction between the sex of the child and his/her nutritional status was examined. Some cultures have confirmed significant relationships in food allocation patterns between boy-child and girl-child and the effects on nutritional status. Figure 6 below shows the distribution of children by sex and the extent to which they deviate from the reference population in terms of low height-for-age.

Fig 6: Prevalence of Stunting Levels By Child's Sex



It is clear from data represented in Figure 6 above that there are slight differences in nutritional status between boys (4.7%) and girls (5.7%). Girls in the study community are likely to be slightly stunted than boys and this finding confirms data by KDHS (1998), which states that in some communities boys are better fed than girls because they are the preferred gender. Data desegregated by gender therefore shows that an insignificant percentage of female children were stunted as compared to male children.

4.5.1 Child's sex and underweight

Sex distribution of a population is vital for household inquiries since principally one of the considerations for household roles is on the basis of such indicators as sex and age. It is in this context that the current study was interested in establishing the linkage in population distribution by gender and malnutrition.

The study therefore examined whether there were marked differences between child's gender and the different indicators of nutritional status. Table 18 below offers a highlight of the findings.

Table 18: Prevalence of Underweight By Child's Sex

Sex	Severity of Underweight by prevalence levels: N = 286							
	Severe		Moderate		Normal		Total	
	n	%	n	%	n	%	n	%
Male	6	4.7	13	10.2	108	37.8	127	44.4
Female	9	5.7	15	9.4	135	47.2	159	55.6
Total	15	5.2	28	9.8	243	85.0	286	100.0

An analysis of the nutritional status of underweight desegregated by gender showed that the prevalence of underweight was slightly different between males (4.7%) and female

children (5.7%). A test of significance established that the difference noted in underweight between male and female children was not significant ($p = 0.001$), indicating that there was no relationship between the nutritional status of boys and that of girls in the study community. In these communities, all children are treated alike when it comes to feeding practices. No child has advantage over the other during mealtimes, and this might explain gender responsive outcomes in feeding patterns.

4.5.2 Child's Sex and Wasting

Given that wasting is an acute form of malnutrition, the link between child's sex and wasting was examined as is shown in the Table 19 below; Data presented in this table revealed that 0.6% of the male children were severely wasted as compared to 1.4% of the female children. Although local studies have been silent on nutritional status by gender, data desegregated by gender in this current survey revealed that a small percentage of female children were malnourished as compared to their male counterparts. This observation needs further investigation to establish the underlying reasons.

Table 19: Prevalence of Wasting Levels By Child's Sex

Sex	Severity of Wasting By Prevalence Levels: N = 286							
	Severe		Moderate		Normal		Total	
	n	%	n	%	n	%	n	%
Male	2	0.6	9	3.1	116	40.5	127	44.4
Female	4	1.4	11	3.9	144	50.5	159	44.4
Total	6	2.0	20	7.0	260	91.0	286	100

A test of significance using chi-square has revealed that the differences noted in levels of wasting by gender were not significant ($p = 0.001$).

4.6 Child nutritional status By Maternal Education:

The association between maternal education and child nutritional status was examined based on levels of education attained by respondents. Education levels were classified under three broad categories namely, no education, primary and secondary education respectively. The following Table 20 below presents the nutritional status of the under five year olds by mother's education.

Table 20: Relationship between Maternal Education and Prevalence of Stunting

Education Level	Severity of Stunting by prevalence levels : N= 286							
	Severe		Moderate		Normal		Total	
	n	%	n	%	n	%	n	%
None	14	4.5	24	8.4	85	29.7	122	43.0
Standard 1-8	10	3.5	6	2.1	33	11.5	49	17.0
KCPE/CPE	4	1.4	13	4.5	44	15.4	61	21.0
Form 1-4	3	1.0	4	1.4	24	8.4	31	11.0
KCSE	2	0.7	3	1.0	18	6.3	23	8.0
Total	32	11.8	50	17.0	204	72.0	286	100

Results of analysis by maternal education in Table 20 revealed that mothers who had no education had more cases of severely stunted children (4.5%). This was followed by mothers who had attained primary (standard 1-8) levels of education (3.5%), KCPE/CPE

(1.4%). Form 1-4 (1.0%) and KCSE (0.7%). Data presented in this table revealed that nutritional status of children is declining and worsening with decreased levels of education.

An interesting phenomenon observed in this data is that, mothers who had attained secondary education had (0.7%) of stunted children. What is implied here is that higher levels of education may not necessarily translate into good nutritional status of children.

In view of the foregoing, it is possible that educated mothers who are engaged in employment and other income generation initiatives may not spend adequate time with their under five year olds and hence, children under total care of house-help/s may manifest poor nutritional status. It is anticipated that time, care and stimulation devoted to under five-year-olds by the mother is likely to affect child's nutritional status. A test of significance using chi-square revealed that the differences noted in nutritional status by levels of educational were fairly significant ($p = 0.0598$).

4.6.1 Maternal Education and underweight

A Child's nutritional status is impacted upon by such factors as whether or not the mother has been exposed to some form of formal education. By and large, mother's education has been closely linked to health and nutritional status of children (Brock and Cammish, 1991), and the findings of this study therefore support many studies that continue to document that maternal education as one of the most important determinants of child health and nutrition.

The following Table 21 below is an attempt to establish the link between maternal education and prevalence of underweight among the under five year olds.

Table 21: **Relationship between Maternal Education and Prevalence of Underweight**

Mother's Education Level	Severity of underweight by prevalence levels: N=286							
	Severe		Moderate		Normal		Total	
	n	%	n	%	n	%	n	%
None	6	2.1	9	3.1	107	37.4	122	43.0
Standard 1-8	5	1.8	6	2.0	38	13.3	49	17.0
KCPE/CPE	3	1.0	8	2.7	50	17.4	61	21.0
Form 1-4	1	0.3	2	0.7	28	9.8	31	11.0
KSCE	-	-	1	0.3	22	7.0	23	8.0
Total	15	5.2	26	9.2	245	86.6	286	100

Data depicted in Table 21 shows that mothers who had no education had higher cases of severely underweight children (2.0%), followed by mothers who had attained primary levels of education (1.7%), KCPE/CPE (1.0%) and Form 1-4 (0.3%). The cases of moderately underweight children also followed similar pattern. Given that underweight is a measure of food shortages and prolonged starvation, it is possible that in a community that is food insecure, levels of maternal education may not necessarily influence the nutritional status. Overall, 5.2% of all children involved in the study were severely underweight regardless of maternal level of education, and this observation was fairly significant (p=0.0596). Data presented in this study also revealed that mothers with higher education levels had some cases of underweight children.

4.6.2 Maternal education and wasting

The findings in Table 22 below assisted in confirming the established fact that education is an important indicator determining nutritional well-being and health status. Overall,

9.0% of all the children involved in the study were wasted. Mothers without education had leading cases of severely malnourished children (1.4%), followed by Standard 1-8 (0.3%) and KCPE/CPE (0.3%) and respectively. The proportion of moderately wasted under five- year old children was higher amongst KCPE/CPE mothers (2.4%).

As has already been explained elsewhere, it is anticipated that the level of education may not necessarily influence nutritional status of children in environments that are fragile, food insecure, poverty ridden, and where mothers are out all day long in search of food and the children are left under caregivers.

Table 22: Relationship between Maternal Education and Prevalence of Wasting

Education Level	Severity of wasting by prevalence levels: N=286							
	Severe		Moderate		Normal		Total	
	n	%	n	%	n	%	n	%
None	4	1.4	4	1.4	41	83.6	49	17
Standard 1-8	1	0.3	6	2.1	115	92.9	122	43
KCPE/CPE	1	0.3	7	2.4	53	86.9	61	21
Form 1-4	-	-	1	0.3	30	96.8	31	11
KACE	-	-	1	0.3	21	95.7	23	8
Total	6	2.0	20	7.0	260	91.0	286	100.0

A test of significance has revealed that the difference noted in maternal education by wasting was not significant by different levels of education ($p = 0.0614$).

4.7 Mother's age and nutritional status

Mother's age is a crucial demographic indicator as it reflects age at first marriage and is a major determinant of large family size. It has been established for instance that Kenyan women start childbearing very early and early childbearing has diverse negative demographic, socio-economic and socio-cultural consequences. Table 23 below presents data on the link between maternal age and stunting.

Table 23: Relationship between Mother's Age and Prevalence of Stunting

Age	Severity of stunting by prevalence rates: N=286							
	Severe		Moderate		Normal		Total	
	n	%	n	%	n	%	n	%
<24	13	4.5	30	10.5	58	20.3	101	35.3
24-35	12	4.2	14	4.9	69	24.1	95	33.2
36+	8	2.8	17	6.0	65	22.7	90	31.5
Total	33	11.5	61	21.3	192	67.1	286	100

Data emerging from Table 23 above indicates that younger mothers i.e. below 24 years of age had more cases of malnourished children (4.5%) followed closely by 24-35 years i.e. (4.2%) while mothers of 36 years and above had lesser cases (2.8%) of severely stunted children. This situation can be attributed to the fact that older mothers are more experienced in child rearing practices as compared to younger mothers. A test of significance using chi-square has revealed that the differences noted malnutrition by age was not significant between age groups ($p = 0.0610$).

4.7.1 Mothers Age and Underweight

The results presented in Table 24 below revealed that mothers who were below 24 years of age had more cases of children who were severe and moderately stunted i.e. 4.5% and 3.8% respectively. Those aged 36 years and above followed closely the younger mothers in manifestation of malnourished children i.e. (1.7%; 3.1%;) while mothers aged between 24-36 had lesser cases of malnourished children (1%; 2.8%), respectively.

Table 24: Relationship between Mother's Age and Prevalence of Underweight

Age	Severity of underweight by prevalence rates: N=286							
	Severe		Moderate		Normal		Total	
	n	%	n	%	n	%	n	%
<24	13	4.5	11	3.8	77	27.0	101	35.3
24-35	3	1.0	8	2.8	84	29.4	95	33.2
36+	5	1.7	9	3.1	76	26.6	90	31.5
Total	21	7.2	28	9.8	237	82.8	286	100.0

Nutritional status of the under five year old children was observed to be consistently better for mothers who were older as opposed to younger mothers. The proportion of severely underweight children was detected amongst mothers under twenty four-year-olds. The implication here is that older mothers are possibly more experienced in child rearing practices unlike younger mothers.

With the economic hardships of the day, younger mothers are likely to spend longer hours outside their homes in search of foodstuffs and this has a potential in resulting in weaker child caring capacities thus exposing the children to inadequate nutrition, frequent bouts of infection and malnutrition respectively.

Older mothers could as a result of experience, have acquired certain coping strategies towards food security and child rearing practices. A test of significance using chi-square revealed that the differences noted in underweight by age was fairly significant p=0.0597.

4.7.2 Mothers age versus Wasting

Unlike other nutritional indicators described above, severe wasting in child's nutritional status was established to be higher among older mothers aged 36+ (1.7%) as compared to mothers aged 24-35 years (0.7%) and those over <24 years old. This finding deviates from nutritional indices of stunting and underweight. The only justifiable explanation that could be advanced here is that, it is possible that mothers below 24 years of age spend more time in breastfeeding their children especially if have no alternatives to supplementary feeding, hence the low likelihood for wasting. More research is however needed to investigate the age variable versus wasting. Table 25 given below will offer a breakdown of child's nutritional status by maternal age.

Table 25: Relationship between Mother's Age and prevalence of wasting

Age	Severity of wasting by prevalence rates : N=286							
	Severe		Moderate		Normal		Total	
	N	%	n	%	n	%	n	%
< 24	-	-	15	5.2	86	30	101	35.3
24-35	2	0.7	4	1.7	88	30.8	95	33.2
36 +	5	1.7	5	1.7	80	28.3	90	31.5
Total	7	2.2	24	7.4	255	90.4	286	100.0

It has been established by test of significance using the chi-square calculations that there is a high relationship between wasting and maternal age (p = 0.0891).

4.8 Child morbidity status:

4.8.1 Association between nutritional status and incidence of infectious diseases among children in Kisumu District

A two-way cross tabulation analysis, i.e. a chi-square test was carried out to determine the association between nutritional status based on levels of stunting, wasting and underweight and incidence of disease in the study community for the under five year old children.

The recall period adopted by mothers to determine the illness of their children age's 6- 60 months for this survey was two weeks and the association between nutritional status of children and their morbidity status was determined based on the three indices of nutritional status. Table 26 below gives the proportion of children having diarrhoea, malaria, cough and colds, and measles by the different categories of nutritional status.

The leading causes of morbidity in this study were established to be malaria, diarrhoea skin rash and measles. Overall, malaria (5.2%) followed by diarrhoea (3.8%), skin rash (1.4%) and coughs and colds (0.7%) were established to be the leading causes of nutritional stunting. One possible explanation for the incidences of malaria and diarrhoea is that the region encounters water problems much of the year. It therefore follows that when water is in scarcity, diarrhoeal prevalence rises, and the reverse is true of malaria during floods. This being a malaria endemic zone, it no doubt subjects the under-fives to frequent bouts of morbidity (see table 26 below).

Table 26: **Relationship between type of Sickness and prevalence of Stunting**

Sickness Type	Severity of stunting by prevalence rates: N=286							
	Severe		Moderate		Normal		Total	
	n	%	n	%	n	%	n	%
Diarrhoea	11	3.8	9	3.1	43	15.0	63	22.0
Malaria	15	5.2	26	9.1	105	36.7	146	50.7
Cough/cold	-	-	7	2.4	32	11.2	39	13.6
Measles	2	0.7	6	2.1	9	3.1	17	6.1
Skin rash	4	1.4	2	0.7	7	2.4	13	4.5
Eye infection	-	-	-	-	2	0.7	2	0.8
Wound/injury	2	0.7	-	-	-	-	2	0.8
Other	4	1.4	-	-	-	-	4	1.5
Total	38	13.3	50	17.5	198	69.2	286	100

From the table above, it is clear that diseases that are related to stunting are diarrhoea, malaria, skin rash and measles. As already mentioned elsewhere in the study, a child suffering from either of these diseases is susceptible to malnutrition. Following this observation, the differences between types of infections suffered and the child's nutritional status was significant p= 0.0503. This confirms data from nutrition surveys suggesting that child illness does interact with nutrition to reduce appetite, and food intake during the course of illness. Conversely, undernutrition tends to weaken a child's resistance to disease and these interactions are especially evidenced in diarrhoeal diseases.

4.8.2 Type of illness by underweight

Although 81.8% of children in the study community have been categorized as normal, a relatively good percentage was found to be susceptible to a series of infectious diseases of varied nature. For instance, data illustrated in the Table 27 below shows that diarrhoea was one of the causes of severe underweight (3.1%) while malaria ranked second to diarrhoea (1.4%), followed by skin rash (1.4%) and cough and colds (0.7%). Overall, 6.6% of all children were severely malnourished while 11.5% were moderately malnourished. The results are presented in Table 27 below.

Table 27: Assessment of type of Sickness By prevalence of Underweight

Sickness Type	Severity of underweight by prevalence Rates: N =286							
	Severe		Moderate		Normal		Total	
	n	%	n	%	n	%	n	%
Diarrhoea	9	3.1	4	1.4	50	17.5	63	22.0
Malaria	4	1.4	15	5.2	133	44.1	152	50.8
Cough/cold	2	0.7	4	1.4	35	12.2	39	13.6
Measles	-	-	6	2.1	11	3.8	17	5.9
Skin Rash	4	1.4	4	1.4	9	3.1	13	4.5
Eye infection	-	-	-	-	2	0.7	2	0.7
Wound/injury	-	-	-	-	-	-	-	-
Other	-	-	-	-	-	-	-	-
Total	19	6.6	33	11.5	234	81.8	286	100.0

A test of significance using chi-square revealed that the differences between underweight and morbidity status were found to be fairly significant (p= 0.0557) according to the chi

square test. This relationship is possible given that a hungry child is at a higher risk of infectious diseases than a well-nourished child. Further, a malnourished child is more vulnerable to disease as a result of distorted nutrient intake. The findings are therefore justifiable.

4.8.3 Morbidity Status Versus Wasting

Table 28 below shows that 0.7% of children who had malaria were severely wasted. While 3.8% were moderately wasted. Diarrhoea ranked second in levels of wasting (0.7%) followed by coughs and colds (0.7%) and measles (0.7%).

Table 28: Assessment of Type of Sickness By prevalence of Wasting

Sickness Type	Severity of wasting by prevalence rates: N=286							
	Severe		Moderate		Normal		Total	
	n	%	n	%	n	%	n	%
Diarrhoea	-	-	2	0.7	61	21.3	63	22.0
Malaria/Fever	2	0.7	11	3.8	133	46.5	146	51.0
Cough/cold	-	-	2	0.7	37	12.9	39	13.6
Measles	-	-	2	0.7	15	5.2	17	5.9
Skin rash	-	-	2	0.7	13	4.5	15	4.5
Eye Infection	-	-	-	-	-	-	-	-
Wound/injury	-	-	-	-	2	0.7	2	0.7
Other	-	-	2	0.7	2	0.7	4	1.4
Total	2	0.7	21	7.5	263	91.8	286	100

Given that wasting is an indication of acute food shortage, it is possible that some children suffered from more than one infectious disease thus culminating in this high rate of nutritional wasting. The relationship between nutritional wasting and morbidity status has been computed to be significant ($p = 0.2616$) when subjected to the chi-square test.

4.9 Food Poverty

4.9.1 Food Poverty versus nutritional status

Data emerging from the Table 29 below shows that 6.3% of the children who were drawn from the food insecure households were severely stunted while 11.9% were moderately stunted. Data from non-poor households revealed that 4.9% of the children were severely wasted while 7.7% were moderately wasted.

Table 29: Assessment of Food Insecurity By prevalence of Stunting

Food Insecurity	Severity of stunting by prevalence rates: N=286							
	Severe		Moderate		Normal		Total	
	n	%	n	%	n	%	n	%
Poor	18	6.3	34	11.9	118	41.2	170	59.5
Non Poor	14	4.9	22	7.7	80	28.0	116	40.5
Total	32	11.2	56	19.6	198	69.2	286	100

It is possible that children from food insecure households are likely to be malnourished as compared to those drawn from the food secure households. In view of the above, it is also expected that food availability is a predictor of nutritional well being.

4.9.2 Food Poverty versus Underweight

Results of analysis by food poverty reveal that 2.8% of the severely malnourished children were from the food poor households. By contrast 2.4% were from non-poor households. Table 30 below is a manifestation of the food poverty and underweight link.

Table 30: Assessment of Food Insecurity By prevalence of Underweight

Food Insecurity	Severity of underweight by prevalence rates: N = 286							
	Severe		Moderate		Normal		Total	
	n	%	n	%	n	%	n	%
Poor	8	2.8	19	6.7	143	50	170	59.5
Non Poor	7	2.4	9	3.1	100	35	116	40.5
Total	15	5.2	27	9.8	244	85.0	286	100.0

Arising from the presentation in Table 30 above, it is expected that since children are amongst the most vulnerable population groups, lack of adequate food to meet their nutritional requirements is likely to affect their nutritional performance. A hungry child is therefore at an increased risk of underweight.

4.9.3 Food Poverty and Wasting Indicators

Proportion of children from the food insecure households who were wasted accounted for 1.0%. Overall, 2.0% of all children who participated in the study were severely wasted. Although the 2% figure may appear insignificant statistically, this percentage may

warrant attention especially when translated into nutritional indices of malnutrition. This information is presented in the Table 31 below;

Table 31: Assessment of Food Insecurity By prevalence of Wasting

Food Insecurity	Severity of wasting by prevalence rates: N=286							
	Severe		Moderate		Normal		Total	
	n	%	n	%	n	%	n	%
Poor	3	1.0	11	3.8	156	54.2	170	59.5
Non Poor	3	1.0	9	3.1	104	36.4	116	40.5
Total	6	2.0	20	7.0	260	91	286	100

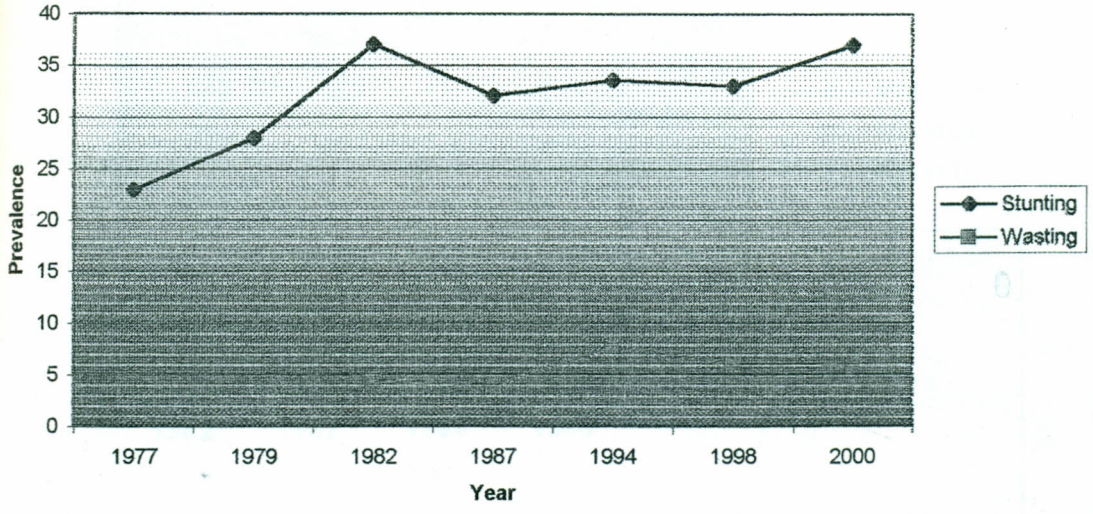
It is expected from data presented in this table that households that have inadequate access to food are likely to experience higher cases of malnourished children as opposed to households that are food secure. Data in Table 31 above shows that 1% of children from poor families were severely wasted while 3.8% were moderately wasted. A test of significance using chi-square revealed that the differences noted in food security and nutritional status was significant ($p = 0.0582$).

4.10 Trends Analysis of Nutritional Status in Kenya:

The Kenyan nutrition landscape depicts a situation in which the nutritional status of the under five year old children has been on decline since the first nutrition survey in 1977 although the period between 1982 and 1987 showed some marked improvements possibly due to the then intensified interventions in areas of disease management, nutrition education and to some extent construction of water points.

Over the years, malnutrition has become persistent nationwide and mainly amongst the rural and poor urban households and those in arid and semi arid lands. A close observation at the indicators of nutritional status shows that stunting, wasting and underweight are on the increase. Prevalence of stunting have shown variations from 23% <-2SD in 1977 to 37 % in 2000 (RNS 1977; MICS 2000). Wasting rates on the other hand have fluctuated from 4.5% <-2SD to 6% during the same period. (See Figure 7 below on a trends analysis from 1977 to 2000).

Figure 7: Trends Analysis for Nutritional Status Between 1977-2000 Among < 5 Year Old Children In Kenya:



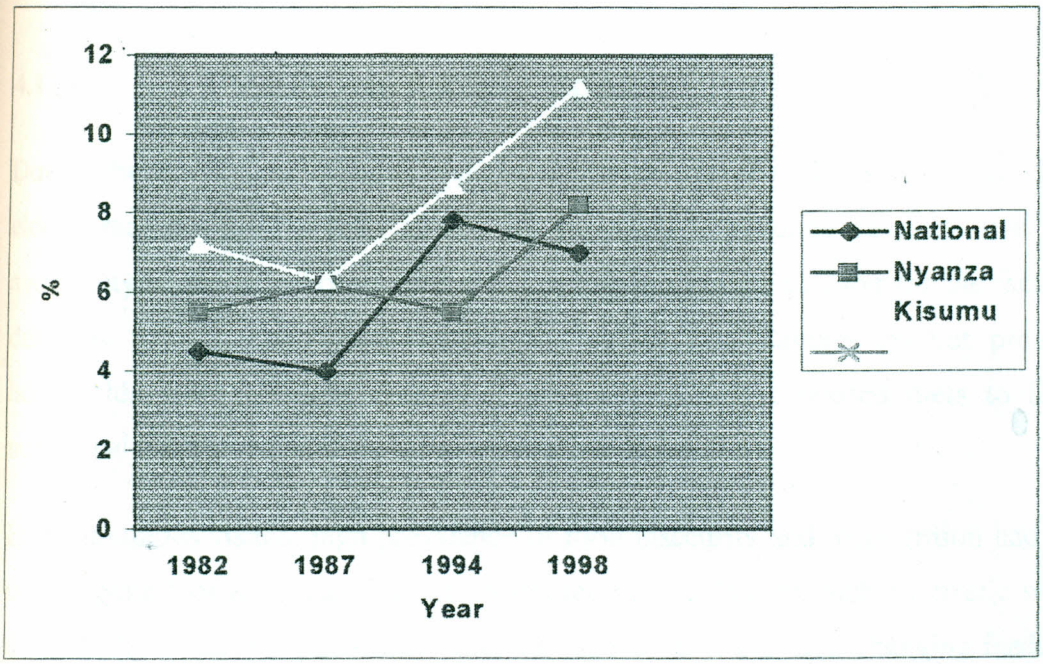
Source: National Nutrition Surveys (1982; 1987; 1994; 1998 and 2000) GOK.

The findings of this study have revealed that trends in nutritional status have been deteriorating not only at the community levels but also at the regional and national levels. In Nyanza, for instance, the current stunting rates have been revealed by this study to be 31.1% and compare very favourably with national rates, which have been calculated at 33.6%. The prevalence of wasting is equally acute in the district and currently stands at 9.1%. The nutritional situation in the district warrants a cause of concern.

4.10.1 Trends Analysis and Incidence of Wasting by Regional Distribution

Data for wasting have been worrying and is increasing at both regional and national levels between 1982 and 1998. Some of the reasons that could be advanced towards the increased prevalence of nutritional status include the rising poverty levels.

Figure 8: Trends Analysis in Wasting Levels of the < 5-Year-olds in Kenya



Source: Nutrition Surveys, GOK (1982; 1987; 1994; 1998)

In Kisumu District poverty profiles have been heightened by the HIV/AIDS pandemic and this situation is reversing and undermining all the gains that could be achievable by the efforts of the varied donor communities in the region.

4.11 RESULTS OF QUALITATIVE DATA

The next series of discussions that follow will pay special attention to qualitative analysis. Data in this section were based on what respondents reported during focus

group discussion sessions. The strength and value of this interpretation were guided by use of highly participatory approach, which was adopted in the survey to complement the quantitative data already discussed above.

Discussions in this section were enriched by use of captured community voices and have been presented in "boxes" in this survey to illustrate what respondents thought, felt and believed about various aspects of health and nutrition. Below therefore is a series of discussions highlighting community's qualitative responses.

4.11.1 The Food and Nutrition Situation

Due to the acute food shortage experienced by households, discussions held with village elders, mothers and women groups in the study community revealed that the food availability situation in households was low and inadequate to cater for the family's food demands. It was established through this survey that families do not provide their households with the right quantities and qualities of the needed diets to impact on nutritional status.

In communities visited, high prevalence of food insecurity and malnutrition had persisted over a period of time and this was attributed to risk factors such as erratic weather as depicted by changing seasonality patterns, high food prices, and changing feeding habits now favouring exotic foods rather than traditional food crops. Other factors cited were; rising poverty trends characterized by low purchasing power and lack of appropriate technologies to enhance the food production and processing. The food and nutrition was found to be critical in the study community and the following sentiments below were a manifestation of the situation.

BOX 1:

The Food Security Status

Presently, there are no intervention programs aimed at improving the food security situation in this region, yet the area has long been noted to be environmentally fragile. I don't think that there is any time of the year when we don't suffer food deficits in this region. This is due to the fact that the region experiences massive floods resulting from the perennial rains and acute drought conditions during the dry seasons.

The most unfortunate thing however is that, despite the obvious fact that much of this region lies in the vicinity of the second largest fresh water lake in the world, the impact of this lake has not been felt, in fact, it is sad to note that children still go to bed hungry as a result of the lack of food.

Given these circumstances, it is extremely hard to survive under these stressful conditions. We thank God that we are still alive. We have learnt to survive so as to see the next day. Coping with difficulties of getting food is a way of life here.

An elder Rabuor (1998).

Emerging from the above description, it is clear that households in the region are unable to secure, access and produce adequate food required for meeting the nutritional requirements. It is needless to say that while causes of food insecurity are complex, food stress abounds in households in the study community. Data emerging from this narration are in line with the national surveys, which have documented a decline in per capita food availability as a nationwide problem.

The group discussions revealed that it is not unusual for families to sleep on hungry stomachs. Families do not have enough to eat, and as a result, the poor members of the community drastically reduce the amount of food purchased and food intake during the lean times of prolonged droughts and flood periods. Consequently, families in the study community now suffer from what Oniang'o (1994) refers to as food poverty.

4.11.2 The Food insecurity Challenges:

BOX 2: The Food & Nutrition situation

"During meal times due to food scarcity, there is scramble for food amongst children. This situation is pathetic in larger families where both parents have to be out all day in search of food. At times, children have no option but to go to bed hungry". *(A parent, Nyamita Women Group, 1998).*

"Our children are starved. We suffer food insecurity much of the year either due to flooding or to famine". We have land, yet we do not fully exploit it to feed our families adequately. While the lake is available, we have no economic strength to put it into effective use. Presently this resource means very little to us" *(An elder, Central Nyakach, 1998).*

"Hunger and starvation is so rampant that it has resulted in girls dropping out of school to go and get married". Early marriages amongst adolescent girls are now a common practice. Girls who cannot cope with the hardships of hunger and starvation leave their families to go and marry in the hope that their lives will be different.
Boys of school age going on the other hand have dropped out of school and are now engaged in petty business such as the popular bicycle trade commonly referred to as "Ngware or boda-boda". *(A community health worker, Rabuor, 1998)*

"Mortality is rampant and very many girls in their reproductive years are now widowed. While causes of this high mortality rate is complex including the HIV/ AIDS pandemic, but we cannot rule out starvation and lack of adequate food to feed the sick as a predictor of this rising mortality rate". *(Community Leader, Wawidhi, 1998).*

In addition, low levels of food production have been identified as one of the causes of food insecurity in the region. Although maize, millet, cassava, and rice are the staple food crops grown, women in the project community voiced concerns that much of food production is inadequate. They lamented that they perform most of their agricultural activities manually using the traditional hoe and this is insufficient to generate enough food at the household level.

Manual ploughing is limiting our food production. We can only plant on a small portion of land due to lack of farm implements.

What is emerging from the above discussion is that farming practices that would result in improved food production are far from satisfactory and respondents have expressed concerns that they lack appropriate incentives and support systems very much needed for household level food production and storage including, women friendly labour-saving technologies that would improve food production capacities.

BOX 3

Constraints to Food Security

"We have tried to organize women and youth groups, approached societies with loaning schemes, attended seminars on agriculture, we have been provided with seedlings and experimental farming so as to enable us improve food production, but unfortunately, all these efforts have resulted in inadequate food production. This has been prompted by the fragile nature of this land".

"We have attended courses offered by the Ministry of Health, Ministry of Agriculture, Care International, and the Aga Khan Foundation. But how to apply the knowledge learnt in the midst of our weak economic base is our greatest predicament".
(Respondent, Women Groups, 1998).

Arising from the above remarks, it can be deduced that the vulnerability of environment resulting from natural calamities and erratic weather patterns makes it absolutely difficult for these communities to fully exploit this fragile ecology. In view of the foregoing, it is clear that the food deficit situation ought to be reduced to manageable proportions.

Further observations confirmed that chronic food shortages are experienced much of the year and the harvested crop is inadequate to cater for the families food basket. Similarly, the family's weak resource base may have worked alongside other
factors to dictate the food deficit situation.

That rainfall plays a predominant role in food production is indisputable. Discussants indicated that the rainfall pattern is the major determinant of food stress in the study community. It was also observed that the months mostly affected are December to May

when food stocks are exhausted. This is apparently also the time when the largest share of the school fees is to be paid and children require school uniforms, stationery, and books among other items. All these requirements no doubt have significant implications on the food availability status for these families.

4.11.3 Child Feeding Practices

One of the intriguing feeding habits that were revealed to the researcher during this survey was the practice of forced feeding. Traditionally, forced feeding was an acceptable practice but it is slowly dying. However, the practice is still being carried out in some communities that were visited. The researcher encountered a few such instances of forced feeding in the community. The concept popularly known as *"kago nyathi"* involved the following process: the mother tightly grips and places the child in between her thighs where she/he is tightly held so that the child cannot move. The chin of the child is then gripped between the palm of the left hand. In the meantime the left palm is filled with porridge as the right hand is used to block the nose so that no porridge can gain access into the nasal canal. By squeezing the mouth open every now and again with the right fingers, the child is gradually fed with a bowlful of porridge until he/she is completely full. During this exercise the child yells uncontrollably, gasping for air and almost chocking but nonetheless forcefully gulps the porridge.

On watching this scene, one would find it extremely uncomfortable but on completion of this exercise, the mother will gently rub the back of the child till it baps/belches as a sign of relief. The child is then put to sleep and in most cases the child falls into deep sleep almost instantly after this encounter. When asked why they subject the child through such an uncomfortable experience the respondents made the following remarks in box 4 below:

Box 4

Highlights on the use of Force-Feeding:

Generally, children do not like eating yet they must eat to grow. Forced feeding is the best option. We are skilled in it and it does not harm. In any case I am more comfortable wherever I am when I know that the child was well fed rather than if I left the child hungry, unfed and starved. At the end of the day, what matters therefore, is that the child is well-fed.

Female respondent, Wawidhi, 1998.

Note that force-feeding is traditionally considered an art, but if performed by an amateur, it can be fatal. Respondents noted that there are reports when children have choked to death during this practice.

By implication, what came out from this experience is that mothers desire to have well-fed children, and this is why mothers will resolve to any practice whatsoever to ensure that children are well-nourished. It was observed that feeding patterns in these communities reflect inadequate dietary practices. For instance, a discussion on breastfeeding patterns revealed that children are breastfed for very short duration of time. Mothers terminate breastfeeding early in life as they have to go out looking for means of earning an income to sustain their families livelihoods.

The dietary intake was observed as inadequate to fulfil the nutritional requirements needed for growth and development of the under five-year-olds. The food intake was reported as being characterized by little or no consumption of vegetables and fruits thus denoting a low intake of vitamins and minerals. It was observed that there is an overeliance on staple diets in these communities e.g. the tendency to take food combinations such as sweet potatoes with porridge, or porridge with boiled maize, or cassava with porridge was found to be common practice.

Besides, ugali was commonly eaten with omena (the small silver lake fish) almost on a daily basis with no vegetables as an accompaniment. The popular dish in these

communities was noted to be millet meal, which is believed is better than maize meal because it keeps one better fed, stronger and satisfied for many hours.

4.11.4 The Food Insecure

Data on food insecurity were determined by the socio-economic characteristics of the study population. Group discussions revealed the following categories of people as food insecure:

- Widows and orphans, who since the death of the breadwinner have now resolved to abject poverty. Amongst this category of the population are the female-headed households.
- The elderly who are physically weak, vulnerable and can no longer generate enough strength to till the land.
- Households that are resource poor. The current poverty Assessment Report of 1998 records Kisumu District as one of the regions in the country recording one of the highest rates of poverty.
- At the centre of all this population are the children who are caught in the midst of the food poverty crisis.
- The terminally ill, and most especially those who are now grounded as a result of the AIDS pandemic. The HIV scourge has orphaned many children leaving them destitute and unable to meet their health and nutritional needs. Special programs are now required to support not only the terminally ill but also the orphaned children under Children in Need of Special Protection as advocated by such organizations as UNICEF.

Clearly, action at the household level to pay special attention to these vulnerable groups of people who are chronically food insecure and suffer intermittent food insecurity is

lacking. The Sessional Paper No. 1 of 1986 shows the government's commitment to the issue of food insecurity but it appears that these rhetoric's are yet to be translated into implementable actions. At the moment these commitments are merely blue prints.

4.11.5 Income Generation Initiatives

Data emerging from group discussions revealed that communities are poor and in particular those that live in Rabuor which is located in the environs of Kisumu Town have sold their lands to the rich developers around Kisumu town and as such are now reduced to a state of landlessness. Some of the respondents are now squatters in their own lands, it was observed. By implication, these communities have negligible land to farm.

Consequently, in order to survive, these community members are involved in all manner of income generation initiatives, amongst some of which are: artisanry, casual labour, hawking and petty trade of cooked foods especially by the road sides and main market centres, paraffin, matchboxes, selling fish especially 'mbuta' (Nile Perch) and 'omena' (sardines) and illicit brewing. These are but a few activities traded in. Women participate in these trades in exchange for money to purchase food for their families. Remittances from relatives and friends are an additional source of income, although this was reported as unreliable.

Amongst the youth in this region is the involvement in the bicycle trade as a means of curbing the food deficit situation. *"Ngware"* is now a thriving business and is very popular in sections of the district. The trade is managed particularly by youth from poor homes, some of whom have been orphaned through the AIDS pandemic. A reasonably good number of these youth have pulled out of school to earn an income and survive the hardships of the day through this bicycle trade and to fend for their siblings.

It is however worth mentioning here that the communities pointed out that they do not rely on one mode of income generation activity for livelihood, rather community

members have mastered a diversity of activities for livelihood. For instance, it is not unusual to find a woman taking up casual work besides selling wares in the market.

While all these petty sources of income continue unabated, it is important to note that respondents lamented that these activities are not significantly impacting on their quality of life. It is basically a survival for living strategy. Indeed, families are basically on edge of survival.

4.11.6 Coping Strategies

Data on how the food insecure households cope during food stress have been established by this study. It was realized by this survey that during times of stress, there is food reduction in terms of portions served to the family members. This implies that meals are reduced in terms of amounts and quantities served.

During hard times, women fall-back-on staple food crops such as cassava, which is not served during "normal" times, and they become the commonest substitutes consumed in place of ugali as the main staple diet. Other substitutes include sweet potatoes and bitter leaves. These findings concur with those of Oniang'o (1992) when she notes that women resort to wild fruits and vegetables which are much more nutritious than the exotic ones as survival foods especially during pre-harvest seasons. Oniang'o further illustrates that 'famine' crops such as cassava and indigenous cereals as millet and sorghum become supplementary substitutes.

The study revealed an interesting phenomenon that has been adopted by these communities as a coping and survival strategy. The slogan/concept of " *logo dichiel*", meaning washing your hands once a day was used by many discussants to describe the practice of meal reduction or having one meal per day.

In times of food stress, discussants equally revealed that the poor and vulnerable households cope by seeking support from the wider community in form of borrowing,

begging or relying on food remittances from relatives, friends and well-wishers. Others adopt a practice known as *"hawanya"* meaning they that will drop into neighbour's homes during meal times and culturally amongst the Luo communities, it is unacceptable to eat while another person watches. Courtesy therefore calls that whoever is present during mealtime must be invited to eat with the rest of the family members no matter how little the food may be.

Consumption of wild vegetables was equally advocated as a widely practiced strategy especially during dry seasons. Such vegetables such as ***"akeyo"*** otherwise botanically known as *(Gynandropsis gynandra);* ***"mito"*** *(crotalaria brevidens var);* ***"osuga"****(solanum nigrum);* ***"atipa"*** *(asystasia mysorensis);* and ***"ododo"****(amarunthus hybridus),* were cited as vegetables consumed during lean periods. It was indicated that the food situation is precarious and that these communities suffer nutritional hardships much of the year.

Although the days of food abundance are long gone, there lies a myriad of many species of indigenous food plants that could supply the necessary dietary requirements. Yet, in the wilderness of these communities are found fruit plants, indigenous vegetables, roots and tubers which are under utilized and are becoming the "forgotten" species despite their potential contribution as nutritious diets.

Petty trading is yet another important coping strategy adopted by these communities. Women were observed to be very hard working and are preoccupied in all sorts of income generating initiatives for survival. Some of the items traded included; chickens, handicrafts, rope making, basketry, carpentry, pottery, mat making, selling firewood, charcoal, etc. Petty trading is mainly conducted by women and is characterized by low volumes and small profit margins.

While most of these activities are carried on by women, men on the other hand engage in the popularly known *"goyo otongo"*, meaning earning some money by offering casual

farm labour to relatives and neighbours. This option was particularly rampant in the study community.

Discussants also revealed that assets are sold during times of food shortage to provide cash to purchase food, pay medical bills and even cover funeral expenses. Such assets include sale of goats and cattle, and even land. Another important strategy that was cited was the issue of social support network as an important traditional coping strategy. This is where the kin and well-wishers would intervene to meet the food needs of a particular family. In the past, the community support mechanisms worked out very well but today this culture is slowly eroding due to the economic hardships of the day.

In Rabuor, which is rice growing zone, an interesting phenomenon relating to petty trading was revealed. Majority of these respondents noted that they are engaged in what was described as the *"nyawawa"*. This involved racing for rice residues from the rice plantations. Men and women would wait patiently for the harvesting team in the rice fields to complete harvesting and as soon as the team left the rice fields, then the scramble for rice residues ensued. The following sentiments voiced below depict the gravity of the situation.

BOX 5:
Description of coping strategies

In order to come back home with some rice, we have to leave home at 6.00a.m and will be out till 6.00p.m. Should you go late, you may not find anything to take home. Women tie their children on their backs and participate in this rat race activity to overcome hunger and starvation for their families. If only we could be economically empowered, we are ready to form a cooperative society for milling rice and we strongly believe that this could transform the impoverished state in which we find ourselves.

There are days when we just go to bed hungry. We also beg from neighbour's or simply starve.

When food gets scarce, we pull our children out of school so as to save on school related expenses. We also involve our sons in manual labour to richer neighbour's or friends. Girls on the other hand take up odd jobs as housegirl's to earn a living.

We drop into other neighbour's homes during meal times, and culturally, they will not deny us something to eat.

Children go into the wilderness to collect wild fruits and vegetables. Sometimes they hunt for wild animals and bring game meat for that days meal. Some of the wild animals hunted are squirrels, rabbits, birds, ...*Respondent: Women Group members, 1998.*

Data depicted above highlight some of the coping strategies under food stress situations. Group discussions reported that some parents would marry off their daughters early to receive dowry so as to weave them out of the poverty menace.

In a separate women's group in Rabour, a type of petty trade practiced by women is the *"goyo achumbo"*. This is a type of trade where women act as middlemen at a commission. Failure to sell the commissioned goods means that there will be no commission at the end of the day, and no commission simply means no food for that day. *It is for these reasons that our children are underfed,* reported mothers during group discussions. It is equally important to note here that while women have made great efforts in these communities to engage in income generating initiatives, the rates of return and

profit margins are too low to warrant any changes in livelihood and nutritional well-being of these families.

In the meantime, as these women are struggling to make ends meet, malnutrition and food insecurity remains a cardinal problem affecting households in these communities.

4.11.7 Increased Illness and Health Related Burdens

The HIV scourge has brought alongside it new and volatile challenges and the AIDS pandemic is now taking a social, economic and emotional toll on the study communities. According to views emerging from this study, discussants noted that: *Adults suffering from HIV/AIDS are now getting more attention while children are neglected. At the same time, parents are dying to leave orphaned children to be looked after by already resource poor relatives and in most cases it is the grandparents who are left in charge,* it was reported.

Data emerging from this study revealed that the spread of HIV /AIDS is having a devastating effect on the socio-economic life of the studied communities. Increased number of orphans, and widows coupled with caring for the terminally ill, is having a devastating effect on the nutritional status of the most vulnerable members of families particularly the under five-year-old children.

HIV/AIDS is exacerbating poverty in those households who lose the primary income earner to AIDS cope by selling assets to pay the costs of care and funerals and to meet daily needs. Poor families are least able to cope with medical expenses, feeding the sick and are likely to remain impoverished due to an AIDS death.

HIV/AIDS is also worsening poverty by leaving children orphaned. These orphans are doubly disadvantaged as they are more likely to be malnourished, are less likely to attend school and to receive health care. While AIDS orphans will be adopted or otherwise

integrated in to families, many are going to grow outside the normal social network and they will be at risk of contracting HIV/AIDS themselves. These childhood handicaps will condemn an orphan to a lifetime of poverty.

4.11.8 Water and Sanitation Status

In an interview with the Kisumu Primary Health Care project manager and community members on the water situation, the following sentiments were revealed concerning the water status: *There is lack of insufficient water in most of the project communities.*

A community member further expressed the following sentiments regarding the water status: *It is ironical that we lack safe and clean water, yet we have plenty of it in the surrounding Lake Victoria. We are requesting for piped water to resolve the chronic water menace.*

The foregoing analysis shows that the communities rely heavily on river and lake water. This water is not safe if we go by the definition of safe water to mean treated surface water. These communities are therefore exposed to hazardous water contamination. This picture has been illustrated by the discussants when they observe that: *During rainy seasons we suffer from malaria due to the existence of stagnant water. When it is dry we have to walk long distances to river Nyando that is nearly four hours return journey. Because we have to economize on the limited water available, typhoid, amoebic dysentery and even cholera are common diseases during this period of the year.*

From the foregoing, it can be concluded that access to safe water is a problem in the study community and this scenario is further presented in Box 6 below. The following information is an illustration depicting the burden of fetching water in rural areas.

BOX 6
The burden of women in fetching water in rural areas

The burden of children and women as key collectors of water is an issue of concern. The time spent to fetch water and queuing at water points in rural areas hinders women from concentrating on other household chores to improve child care and the nutritional status of their children.

It also means that little time is left for women to engage unproductive and economically viable activities that could enhance health and nutritional status of households. The situation is worsened during drought periods when water is scarce and water sources have dried up.

On the average rural women burns an extra 170 calories per hour while walking to the water point and 210 calories per hour while returning with a pot full of 20 litres of water.

Adaptation from the Situational Analysis of Children and Women in Kenya 1998, UNICEF

In addition to the status of water in the community, discussants reported cases of unsafe sanitation and these have been associated with cases of morbidity in that during rainy seasons unprotected water sources such as boreholes and rivers gets flooded and contaminated and cases of typhoid and related water diseases are on the increase.

Use of latrines was also associated with taboos by some members of the community. As a result, some people still use the bush or fields for faecal disposal. This no doubt has grave consequences on health status particularly during rainy seasons. Pit latrines, it was also reported collapse during heavy rains and floods and the contents find access into the nearby rivers which are then fetched and utilized for drinking and cooking purposes. The result is untold consequences on health status.

It is now well documented that lack of clean and safe water is one of the major causes of some infectious diseases such as diarrhoea, amoebic dysentery, typhoid, cholera, skin and eye infections such as scabies and trachoma, schistosomiasis and guinea worm. While the

provision of safe and adequate water has been recognized as a basic right to survival by Convention on the Rights of the Child, appropriate measures through the provision of safe and clean drinking water need to be seriously undertaken in the study community so that these communities can enjoy reasonable access to safe water initiatives.

4.12 Nutrition Education Programs

4.12.1 Introduction

The role of nutrition education as a means of communicating nutrition relevant information cannot be underestimated and therefore one of the major objectives of this study was to examine the effectiveness of nutrition education programs with a view to determining how it has impacted on changed nutrition and health behaviour patterns in the study community.

In so doing, different views on various aspects of nutrition education were solicited from nutritionists working with various NGO's such as the Aga Khan Foundation, and UNICEF. Officers in charge of nutrition in the ministries of Health, Agriculture, Culture and Social Services were equally consulted on nutrition education activities they undertake. Mothers attending ante natal care at health facilities at Pap Onditi and Rabuor Health centres were involved in the so were community members regarding their perceptions towards the nutrition education activities that they have been exposed to.

4.12.2 Responses on Nature, Scope and Effectiveness of Nutrition Education Programs

The focus group discussions with the above-mentioned respondents revealed the following findings regarding the status of nutrition education in the study communities:

Discussions held with mothers attending health care centres indicated that one of the reasons why nutrition education programs have failed to make significant impact is due

to the fact that the content and "messages" are not relevant to the prevailing needs affecting households.

Further it was stated that nutrition education messages seem to give undue emphasis on the importance of a balanced diet and what each food group should contains.

Mothers interviewed believed that the approach to learning with emphasis on "do's and don'ts" is ineffective under given circumstances. For instance at the health facilities, messages commonly advocated included;

- You should feed your children on high protein foods;
- You must eat a balanced die always;
- Avoid high-density carbohydrate foods etc.

Mother's interviewed equally echoed sentiments that they are not in a position to afford the foods recommended for their children and that they cannot put into practice what they have learnt. A case in point cited is the nutritious porridge mixture, which is rarely prepared at home, it was reported (Box 7).

Box 7

Challenges of Nutrition Education

"What we are taught about Ujimix is good, but it is not practical in this community. Where are all the ingredients for the preparation of this porridge mixture? We are not in a position to feed the rest of the family adequately, therefore asking us to make ujimix is not possible. The ideas we are taught are useful but impractical due to lack of finances.

Mothers at antenatal care, pap onditi 1998

The communities visited lamented that they are too poor to implement what they have learnt and therefore for this knowledge to be practical it was suggested that food must first be available. The principal idea of *"food first"* was strongly advocated. In the absence of food, *we are whistling in the wind,* it was revealed.

While a good number of mothers advocated for the importance of nutrition education, there were instances where some mothers believed they knew all about what a child should eat and therefore they did not seem to see the need for nutrition education. What they lacked was enough food, they reiterated. Some of the comments captured in this regard included the following: "a*s long as the children are satisfied after eating, it does not matter how nutritious the food is.*

A group of elderly women almost in their eighties on the other hand when interviewed on their perception towards the relevance of nutrition education used a Luo proverb, *"rieko ok tow"*, to justify the potential value of knowledge. What this statement implies is that knowledge is transformative and lifelong. The elderly women further cited an example of water to demonstrate the relevance of nutrition education i.e. *"we never knew that water could be a cause sickness. Now we are aware and this was made possible through nutrition education. As a consequence we now boil water before drinking".*

Almost all respondents involved in the study agreed that the prevailing nutrition education programs are faced with serious flaws and limitations. It was revealed by community members for instance that not all causes of malnutrition are necessarily reversible by nutrition education. Some causes of malnutrition, it was echoed, could derive their solutions from the economic related interventions. Participants felt that an example such as unsafe water consumption is a common cause of diarrhoea in the community and therefore unless the water problem is resolved, children will continue to live in poor health status and that. In this regard, nutrition education alone will not result in improved nutritional status unless the water problem is resolved. This point confirms that causes of malnutrition in society are complex and need multidimensional approaches other than nutrition education alone.

In view of the above highlights, it can be summed up that while nutrition education has been documented to be key to influencing changes in health behaviour patterns, it is yet to make an impact in this study community. The current approach of offering the education only at the health care centres and specifically to mothers seeking ante-natal and pre-natal clinic services implies that not the entire community is targeted with nutrition education programs. This is obviously a limitation of the health care and nutrition delivery services.

4.12.3 Challenges of Communicating Nutrition Education

What came out through the group discussions with the respondents is that there is at the moment no nutrition education curricular in use for disseminating nutrition information not only in the study community but in the country as well. This observation was clearly evidenced from the health facilities when the health workers interviewed noted lack of such a curricular and as a consequence an urgent need for one.

In all the health institutions, the non-governmental organizations, and the relevant government ministries visited, none had developed a nutrition education curriculum for use in imparting the nutrition education content. There was no universal teaching document that could be utilized as a form of curriculum in nutrition education.

When the nutrition department in the Ministry of Health was consulted on what they used as a curriculum document in their nutrition education programs, they were evasive on the subject. One thing that came out clearly in this survey was that there was no nutrition education curriculum in the country, and at the time of the survey, there were no plans whatsoever of developing one.

There was therefore no reference material and/or curriculum document for nutrition education programs nationwide. The closest probably that there was to a curriculum material was the teaching aids/charts on food groups that have over the years been used as teaching resources.

Consequently, what nurses used in health care centres as teaching materials were charts depicting the three food groups, and all that they taught centred on these food groups as if nutrition education involves nothing but balanced diets. The implication and observation made in all the health care centres was that approach to nutrition education were basically confined to the concept of balanced diet and no other concepts at all. This type of approach to nutrition education is limiting given the varied challenges currently confronting the nutrition landscape. In this light, the investigator identified some guidelines for nutrition education curricular that could be utilized by communities in this

Poverty was identified by the respondents as a major obstacle to the effective implementation of the nutrition education and was noted as a factor that is currently threatening every aspect of sustainable nutrition education and intervention programs not only in the study community but also countrywide.

Majority of the interviewees in the study were unemployed women involved in petty trading which does not generate much income. The economic hardships made it extremely hard for these women to apply the knowledge and skills learnt through nutrition education

Also emerging as a hindrance to the successful implementation of nutrition education was the aspect of time factor. It was observed that mothers had no time to avail themselves for the nutrition education classes offered at health care centres. One would imagine that the unemployed mothers would create time for nutrition sessions. On the contrary, it was established that these women were too busy trying to look for means of survival rather than spend time being educated on nutritional matters.

It is needless to say that nutrition education campaign and their significant impacts depend largely on regular clinic attendance. Attendance to clinics was found to be irregular and this too, has a potential of minimizing the success of the nutrition education campaigns.

This study went ahead to document that the effectiveness of nutrition education depended largely on interpersonal relationships between mothers who brought their children to clinics and the health care providers (Box 8)

BOX 8

Interpersonal relationships with the health care providers

There are times when there is lack of communication between the health service providers and us. We feel we are not given enough time to discuss what we feel, think and believe, including our constraints. Rarely do the nurses lend a listening ear, show concern or interest in us and our children. The language used is sometimes abusive. This discourages us from visiting the health centers with our children. Once we are insulted we simply keep off.

(Voices of mothers attending antenatal care in Pap Onditi health care center, 1998).

When interviewed, mothers expressed serious communication concerns. They lamented that there were instances when nurses rudely mistreated and blamed them for having ill-nourished children. Some patients reported being treated like animals, being scolded or just being ignored. Some mothers reported that there are instances when they have been screamed at when nurses find out that their children have not gained weight. This approach does not augur well for the delivery of the nutrition education sessions. In an atmosphere that is hostile, such as the one depicted above, no learning will take place no matter how well the program is structured and delivered.

There is nonetheless the recognition in education that positive interaction between any two parties can and does lead to learner confidence. In the provision of nutrition education therefore, it is suggested that improving interpersonal relationships between mothers and health care providers is imperative in the delivery of effective nutrition education programs.

The issue of inadequate personnel continues to be a major obstacle and hindrance influencing the delivery of nutrition content. There are few trained nutritionists in the country and in almost all the health care centres visited by the investigator, it was the nurses who were charged with the task of educating mothers on issues of good nutrition. Unfortunately, these nurses had limited technical expertise and knowledge on nutritional matters. To assume that they can offer teaching without adequate preparation and training in this field is not only unfair to the cause of the health behaviour change but also an injustice to the ethics of the profession.

4.13 Community-Based Nutrition Education Curriculum

In view of the fact that there was no existing nutrition education curriculum in the country at the time of this survey, views on guidelines for the development of such a curriculum was solicited from varied respondents including nutritionists, community members, nutrition program designers and curriculum experts. Views emerging from these respondents on what should constitute an effective nutrition education program were solicited and incorporated into this study for purposes of developing a nutrition education curriculum.

The following questions were cited as useful by curriculum experts as useful for the design of a nutrition education curricular:

i. What are the goals and objectives of the nutrition education program?

ii. What are the present nutritional needs of the community?

iii. Who are the nutritionally vulnerable groups needing attention?

iv. How can the nutritional needs of the vulnerable groups be addressed?

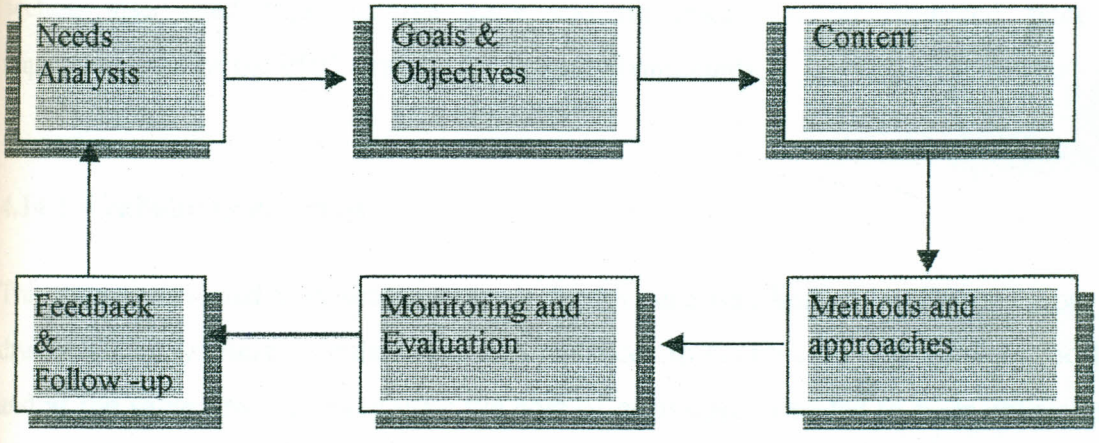
v. What appropriate methods and resources are needed for accomplishing the objectives?

vi. How will the goals and objectives be monitored and evaluated?

vii. How will resources (funding and technical) be mobilized?

Out of the above questions, the following framework below in Figure 9 has been developed to document procedures necessary for the design of the community based nutrition education curriculum. Note that the overall aim of the community based nutrition education curriculum is to ensure the promotion of healthy dietary practices and to contribute to the overall well being of populations. Through such a curriculum, communities will need to develop an understanding on why they eat what they eat so as to promote good nutrition behaviour patterns. Note that the curriculum is flexible and can be adapted to different contexts in the country.

Figure 9 Showing Procedures for the Design of the Community-Based Nutrition Education Curricular



Source: Developed by the Researcher

It came out clearly during the interviews with the involved parties that before any nutrition education curricular could be designed, guidelines presented in Figure 9 above should be used as a starting point. These guidelines acted as a basis for assisting the

researcher towards the development of the nutrition education curriculum that is documented elsewhere in this study.

It is these guidelines that assisted the researcher towards the development of a proposed nutrition education curriculum, which are appearing, in the recommendations of this study. This proposed nutrition education curriculum is adaptable, flexible, region and culture specific See Table 36.

4.14 Primary Health Care

The discussion presented in this section will focus on the qualitative and quantitative analysis and interpretation of data leading to an in-depth understanding on the Primary Health Care strategy. The PHC concept was characterized by such factors as drug availability, accessibility to health care facilities, quality of care, innovative strategies in Primary Health Care and political commitment to the concept of PHC respectively. This section also shed light on the gaps and limitations so far observed since the implementation of the PHC strategy in the study community.

4.14.1 Availability of Drugs

This survey revealed that access to basic health care was limited by distance, cost and drug availability. Respondents noted that distances to health care centres were too long and at the same time lamented over the cost of healthcare. This led to poor utilization of health care services and in some instances resulted in use of alternative approaches to health care. Below is an illustration of the situation;

Table 32 Showing Responses on Drug Availability

Drug Availability	**N**	**%**
Very Good	14	5
Good	29	10
Fair	60	21
Poor	87	31
Very Poor	96	33
Total	286	100

Data presented in table 32 above gives highlights on the drug availability situation in the study community. What came out from this table is that the drug status was unsatisfactory. The tabulated data illustrate that 15 percent of the respondents observed that drugs were available while 31 percent noted that the drug availability situation was poor while 33% indicated the situation as being very poor.

It is clear from the table that the issue of drugs in the communities visited was critical. Yet according to the goals of PHC, it was stipulated that by the year 2000, the local health centres should have at-least 20 essential drugs. This goal is almost proven futile according to the findings of this study.

Group discussions further revealed that village pharmacies were in existence in almost all the areas visited but not without constraints. Community Health Workers voiced concern that: *The commonest problem we experience is that most of the available drugs cannot treat many local diseases.*

It is evident from the survey that there was a chronic lack of drugs at the health facilities and this scenario was depicted by respondents as very frustrating especially when it is considered that patients have to cover wide distances to health care facilities only to find that there were no drugs. The concept of Bamako initiative very much advocated by the PHC has been in jeopardy according to observations emanating from the findings of the study.

4.14.2 Accessibility to Health Facility

It is evident from the survey that people had to trek for reasonably long distances especially in the interior to the nearby towns or market centres for medical services. The discussants lamented that the health care centres were inaccessible and that distance was impacting negatively on health status of households (Table 33).

Table 33 Showing Responses on Accessibility to Health Care Services

Accessibility	N	%
Very accessible	20	7.0
Accessible	57	20
Fair	72	25.1
Inaccessible	111	38.8
Extremely inaccessible	26	9.1
Total	286	100

In this Table, distance was a risk factor impacting tremendously on the health status of households in the studied communities. Data emerging here showed that families were still covering wide distances to health care centres. Once again, note must be made here that according to the PHC goals, by the year 2000, it was clearly spelt out at Alma Ata that all health care centres should be within an hours travel, yet this was not the case as per the findings of this study.

The illustration shown in Table 33 above is an indication that health care centres were inaccessible, and 48% of the interviewed population reported distances as inaccessible while only 27% noted that they could access the health care centres. The same idea of inaccessibility was expressed in-group discussions. Below is an expression of community responses on the issue of distance;

BOX 9
Accessibility to Health Care Services

There is no nearby health centre. We have to walk to Pap Onditi, which is ten kilometers away.
(Respondents; Kamburu, Koguma & Kodongo women groups, 1998)

Whenever my grandchild falls sick, she ends up recovering at home by God's mercy. At my old age I cannot walk long distances to the health care centre.
(Respondent, Nguono women group, 1998)

We have no nearby health care centre. Community health workers are our source of health care, yet they too, do not have all the essential drugs capable of curing complicated diseases.
(Respondent, Othith women group, 1998)

Communication is a very big problem especially during rainy seasons when roads become flooded and impassable. When one gets sick during this time, bicycles and wheelbarrows become the only means of transport. We also carry the sick on our backs, or stretchers made from sacks and tree branches. All these measures are not only slow but also equally inconveniencing and frustrating.

(Respondent, Maranatha women group, 1998)

Even in instances where health facilities existed, discussants equally lamented that they had limited or no access to them due to the cost factor. It was further reported that patients were made to pay a fee at a local health service and receive prescription for drugs, which were unavailable. The discussants further expressed concerns that health facilities were poor in terms of quality. Table 34 below gives a breakdown on the Quality of services rendered.

4.14.3 Quality of Health Care

The current survey investigated respondent's views on the quality of care provided. An observation from table 35 shows that 39.9 % rated the quality as poor while 29.7% rated quality as extremely poor (see Table 34).

Table 34 Showing Responses on the Quality of Services

Quality of Services	**N**	**%**
Very Good	7	2.7
Good	17	5.8
Fair	64	22.5
Poor	114	39.7
Very Poor	84	29.3
Total	286	100.0

Only 22.5% indicated that the quality of services was fair. It is apparent that the quality of health care needs to be improved if the users are to derive maximum satisfaction from these services. The following sentiments below are indicative of the gravity of the situation; *We have to provide exercise books on which prescriptions are written and more often than not there are no drugs at the health facilities,* commented community members.

Respondents in the study complained about the costs of medicare and in particular stated that the fee paid is unaffordable. Communities reported that they are required to pay Kshs.10 as registration fees so as to enable them receive prescribed drugs, yet when they go to get drugs, these are never available, and therefore, they are compelled to purchase drugs from private clinics.

This is an additional cost which respondents lamented they cannot cope with. The waivers at hospitals which ought to be operational for desperate cases, are never granted, it was revealed. Communities also commented that they have to provide paper on which prescriptions are written. One respondent had the following remark to make: If *we don't have money to purchase exercise books for our children in schools, why do the authorities think we have money to buy books for prescriptions?*

Given the health environment surrounded by issues of cost, distance, non-availability of drugs and quality of care, respondents reported that they only go to government health care centres when they are desperate and as a last resort. It was also documented by this study that as a result of the above mentioned constraints, communities had resorted to traditional herbs, traditional healers and use of local village quacks, whom they argued had so far proved to be better substitutes to the conventional medicine provided in the local health care centres.

In the midst of all these grim situations, the noble purpose of PHC appears to be self-defeating and the discussants suggested the following as critical needs to the health care system in the community (Box 10).

Box 10

Constraints to Health Care

The problems affecting us in this community can be summed up as follows:

- We need construction of more health centers or mobile clinics within accessible reach.
- We have problems with provision of safe water. Typhoid, diarrhea and amoebic dysentery are some of the commonest diseases in this community.
- The existing health care centers are lacking in essential drugs.
- Trained medical personnel and birth attendants are inadequate.
- The road network in the area is extremely poor. During the rainy seasons they become particularly inaccessible.

Responses from women groups, 1998.

It is clear from the on-going study that a multiplicity of factors exists to undermine the utilization of the health services. The current study therefore documented the following as some of the barriers to health care utilization, i.e. quality of health care as manifested by lack of essential drugs and supplies, accessibility as determined by distance, and cost of health care as portrayed by the user fees. All these constraints together resulted in lower utilization of the health care services in these communities.

4.14.4 School Health Program

One of the most important innovative strategies that were initiated in the project area is the school health program although it has not picked up as intensively as it ought to be. Observations showed that in those schools where the project was initiated, there were already signs of progress. *"Since its initiation, a lot of positive results are underway"*, commented the coordinator, school health program, Kajulu.

According to an interview held with the coordinator of the school health program in Kajulu, many school children were involved in income generating initiatives. When they are not in school, they are busy rearing rabbits, keeping kitchen gardens out of which they grow various vegetables such as cabbages, onions, and tomatoes. Some are keeping fruit orchards e.g. avocados, pawpaws, passion fruit, all of which are later sold in Kisumu Town.

Kajulu which houses some of the school health projects is seemingly endowed with favourable weather patterns and many food crops and fruits perform reasonably well as compared to the Kano-Nyakach region. The school health project has an advantage in this PHC community.

During discussions with school pupils, it came out clearly that some pupils now keep goats and even have intentions of purchasing cattle in future in order to enlarge their income generation potential. All this will benefit family's health and well being it was anticipated. Some of the following statements below were cited as the benefits accruing from the school health program (Box 11)

BOX 11

Voices of Pupils and Parents on the Potential Value of the School Health Project

I can now buy books, school uniform, pay my own fees, and occasionally buy food for the family. My family can no longer sleep hungry because of the existence of my kitchen garden
(A standard six pupil, Bwaja Primary School, 1998)

The money I obtain from the sales of my income generation activities enables me to improve the dietary requirements at home. Since I keep chicken, I can now eat eggs whenever I feel like"
(a standard five pupil, Bwaja Primary School, 1998)

I never knew the importance of boiling drinking water. My son is always reminding me of the value of boiled water.
(a parent, Kolando Women Group, 1998)

In Bwaja Primary School where the school health project is underway, pupils utilize games time in the afternoons and early in the mornings to participate in the school health activities. Most of the pupils who participated in discussions indicated that the health concepts and ideas learnt in schools are transferred to respective homes where they try to influence health behaviour patterns of parents, peers and siblings. This knowledge transfer was established to be very effective and triangulation with parents revealed that some of their health behaviour changes are coming from their own children.

It has been established so far that the school health program is one of the current strategies that can assist towards sustainable development of Primary Health Care efforts, the limitation however is that it has not been seriously undertaken by present PHC programs.

Danida has embarked on a school health project in Madiany location of Uyoma District with very promising results. It is therefore contended by this study that the idea should be taken up more vigilantly by current and future PHC programs and for sustainable effects.

4.14.5 Gaps in Primary Health Care Programs

It was observed by the findings emerging from the current survey that the Primary Health Care programs offered in the study community were selective rather than comprehensive in nature. Primary Health Care programs identified in the KPHC Project community included: drug supply through the concept of village pharmacies/ Bamako initiatives, Water supply initiatives, immunization, maternal child health and family planning respectively. The remainder of the PHC elements such as health education, nutrition support through food supply and food promotion strategies was noted to be weak or non-existent.

Regarding the effectiveness of the available PHC Programs, discussants indicated that existing programs had to some extent assisted in the reduction of disease morbidity patterns. For instance, the drug supply at the village level assisted in the alleviation of

minor diseases and ailments, although the issue of drug supply needs to be strengthened in order to promote health status of the vulnerable groups in the community. Presently, the available drugs were too basic to cater for all types of health problems evidenced in the community. Some of the available drugs cited included, paracetamol and aspirin. The only type of antibiotic that was available was amoxil, it was reported.

It is apparent from data emerging from this study that efforts towards the implementation of PHC have not yielded favourable results in the KPHC Project area. Despite the fact that the PHC approach was introduced in the region more than ten years ago, the organizational structures at the community levels have not been strong enough to enhance the progressive development of PHC programs, it was revealed.

While the roles of the community health workers and traditional birth attendants are very crucial to the successful development of PHC programs, interviews held with these categories of people depicted that they were not motivated to undertake their tasks effectively. The following illustration gives an indication of the situation; *while we are expected to work voluntarily from village to village, we are not remunerated. Who under the current economic hardships can perform voluntary duties.* This was lamented by a community health worker, Katinda Women Group.

Under the prevailing circumstances therefore, it is doubtful whether PHC will be sustainable unless very drastic innovative measures are put in place.

4.14.6 Political Commitment to the Primary Health Care Initiative

This study established that the effective implementation of any PHC program requires political commitment and back-up. It is the responsibility of the governments to assist in improving the health and nutritional status of its people. But, the results of this study revealed lack of political commitment to PHC. The following are some of the sentiments that were expressed regarding the issue of political commitment PHC:

BOX 12

Political Back-up to the Primary Health Care Initiative

We have no political support in our struggle towards the implementation of PHC" (*Othith Women Group, 1998*).

The local administration e.g. councilors and area member of parliament are not accessible, and therefore not committed towards assisting our community on developmental matters such as health" *(Kamburu Women Group; Odondi Women Group, 1998)*

Politicians are unreliable in community development efforts. We only see them during campaigns when they are looking for votes. We have no local administrative support either.
(Kachieng 'A' Women Group, 1998)

It is can be deduced from the ongoing that political support in PHC programs is lacking in these study communities, yet such support can lead to remarkable health improvements. It therefore appears that if PHC is to succeed as a vehicle for improving health status of these communities, then, partnerships must be forged between communities and respective arms of the government as well as the donor communities and non-governmental organizations.

Sustained political support is therefore an outstanding feature in the improvement of health and welfare within the broader context of Primary Health Care, and long-term commitments in terms of human and financial resources are central to this success.

The issue of political commitment to Primary Health care is that it recognizes the need for the government to accept empowerment of communities. Empowerment is often associated with control and decentralization of responsibility, hence fear of any community empowerment does lie in the question whether community empowerment will be viewed as an effective agent for change or as a threat to governments authority.

But whatever the case, PHC is redistributive in nature and its success requires control over resources as well as firm political commitment. It is a platform for social change and it identifies popular participation as an essential path for community's health development. The responsibilities of governments in improving the health of its people are therefore imperative under Primary Health Care.

It has further been noted through content analysis that health improvements in the developing nations such as in the Kerala State in India was achieved through political commitment in the planning process as land reforms, wages, access to adequate nutrition, adequate distribution of health care. All of this resulted in a powerful synergism for improving the quality of life. The Kerala example indicates that political commitment can make significant impact on the success and sustainability of Primary Health Care programs even in countries like Kenya.

Political arena therefore sets a conducive stage for Primary Health Care and that in any PHC program there are political decisions that must be made. Good political planning is therefore crucial to the implementation and success of PHC.

Finally, it is not an easy task to assure the effective implementation of PHC. Primary Health care poses myriad challenges in guaranteeing health care systems that are equitable, accessible, and affordable by all. This survey revealed that present challenges to PHC are political, economic and operational. There is therefore an urgent need for effective partnership between communities, governments and external supporters with the communities playing the leadership role if gains in PHC are to be realized.

CHAPTER FIVE

5. DISCUSSIONS, CONCLUSIONS AND RECOMMENDATIONS

5.1 The Food and Nutrition Situation in the Study Community

A lot has been said about malnutrition in this country but not enough to prevent it in the target communities. The dramatic deterioration of the nutritional well-being in the Kisumu Primary Health Care region is of serious concern and demonstrates the vulnerability of the situation. Data emerging from this study reveals that children in these communities have been unable to enjoy their optimum rights to adequate nutrition as advocated by the Convention of the Rights of the Child (CRC, 1989).

That hunger and malnutrition continue to bite in the Kisumu Primary Health Care region cannot be overemphasized. Households in the study community are now faced with food crisis thus causing them to consume nutritionally inadequate diets as detected in low frequency of feeding, low nutrient density of complimentary foods and generally, overall problems relating to the health caring practices as already reported in chapter 4.

Households in Kisumu District are further at risk of food insecurity, ill-health, hunger and malnutrition. As a matter of fact, household food security is now a major issue in terms of adequacy, accessibility and stability of supply in these communities.

The trends in nutritional well-being of children in these communities further show deterioration with malnutrition as a major cause. Obviously, malnutrition denies a child her/his right to live a healthy life and optimum growth. Child's rights to nutritious diets have so far not been accomplished and a deeper insight into this research shows that child-feeding practices especially weaning practices are far from satisfactory, and hence deficient to impact upon significant health and nutritional changes.

With the worsening food insecurity coupled with the HIV pandemic, malnutrition in the study community is now dwarfing the future of under five-year-old children and the food

stress further appears to threaten and constrain the socio-economic development of those who are already nutritionally stressed.

While the magnitude of the food security status is not easy to determine, data extracted by this study seem to point to the fact that the main forms of malnutrition in these communities are protein-energy-malnutrition and micronutrient deficiencies.

Findings of this study have confirmed that Nyanza is today one of the most food insecure regions in the country and the food insecurity issue is worrying despite the fact that Nyanza has been receiving significant donor attention and happens to be endowed with the second largest fresh water lake in the world.

Ironically, this same water resource which has been wasted and underutilized in Kenya, has apparently transformed the desert land of Egypt through massive and intensive irrigation schemes. Egypt, which exhibits dry and fragile desert ecology now, meets all its food requirements through the sources of Lake Victoria, which is apparently going to waste in Kenya. It is therefore possible that if the lake is properly exploited, then the food sufficiency goal so much yearned for could be achieved.

Given this scenario, one wonders why Kenya should be so blinded to the potential value of this powerful lake resource? Why should children in Nyanza go to bed hungry due to lack of food amidst this powerful lake resource? What is the survival potential of children in Nyanza as we enter the 21st millennium? How can children and families in Nyanza grow into wealthy and well-nourished populations? How can the shameful scourge of malnutrition and hunger be confronted during this millennium in the study community?

These and many other troubling questions need urgent attention, some of which have been addressed by this current study. In the process of examining the causes of malnutrition by this current survey, it is now clear that it is the failure to alleviate poverty that is the prime cause of why undernutrition exists and persists. Poverty has been established as a factor underpinning the state of food security in Nyanza and the causes of poverty and food security were established to be extremely intertwining and mutually

reinforcing, such that one cannot attempt to understand the dynamics of one phenomenon at the expense of the other.

But while poverty continues to bite, there does not seem to be any tangible solution towards addressing the malnutrition situation. President Daniel Arap Moi constituted Poverty Alleviation Program and one of the critical issues of concern being addressed is the poverty reduction factor. It is therefore hoped that poverty reduction strategies being designed will influence the food and nutrition status of affected communities like Nyanza.

While these poverty reduction strategies are underway, experiences world over in societies where poverty was endemic show that hunger was eliminated through agricultural transformation coupled with the promotion of staple food crops. Such examples have been exemplary in the newly industrialized countries of the South East Asia (NIC) otherwise known as the Asian Tigers.

In Kenya however, it will suffice to state that the talk on agricultural transformation is not new. The idea has been well articulated in various government documents and reports such as the Sessional Paper No.1 of 1994 and the Sessional Paper No.2 of 1997. But it is important to note that despite all these efforts, the food security goal remains elusive and bleak and may not be resolved in the foreseeable future unless there is a turn-around in the translation of policies into action.

While access to food has been recognized as a basic right by the international Conference on Nutrition (ICN, 1992), Kenyan-wide statistics continue to reflect declines in food production since the 1980s. The gap between food demand and food production is widening and trends in food security status show that the situation will continue to deteriorate unless serious measures are taken. Unfortunately, no drastic measures seem to be in place at the moment.

While the food crisis in the Kisumu Primary Health Care region continues unabated, maize which is the staple food crop grown in the region is highly dependent on regular

rainfall and any unpredictable changes in the rainfall pattern are likely to result in food deficits. The project community apparently encounters very unpredictable weather patterns. When it is not experiencing droughts, then it is floods. Unfortunately, while drought resistant crops such as millet, cassava, sorghum, sweet potatoes and indigenous food plants perform better in drought conditions, these categories of food crops are slowly gaining unpopularity in the diets of many communities in Nyanza and are becoming the "forgotten species". Promotion of indigenous food crops and plants is wanting as has been revealed by the findings of the study.

As a consequence, food is a commodity that should be accessible to all household members at all times to ensure their development and protection from hunger and disease, yet nutrition programs in this country remain under-funded even in the national budgets. Nutrition as a sector of development remains marginalized in the sense that while the government of Kenya is committed to ensuring that all citizens attain the right to nutrition, it is rather ironical that the budget allocated for nutrition has been very dismal and scanty. As a matter of fact, nutrition as a sector has been shelved in a corner within the Ministry of Finance and Planning where it is least financed.

For instance, budgetary trends for nutrition have been noted to be declining over the years. For instance, the 1991/92 budget allocation for nutrition was Kshs.1, 008,760 (0.65%) out of the total ministry budget of Kshs.154, 642,265. In 1993/94, it was Kshs.193, 976 (0.09%) out of Kshs.203, 489,890. In 1995/96, nutrition was allocated Kshs.286, 613 (0.07%) out of a total budget of Kshs.381, 837,290 and in 1996/97, the budget for nutrition stood at Kshs.220, 930 (0.05%) out of Kshs.400, 823,130. These allocations do not augur well for nutritional improvement in this country.

Children are our future, pride and hope. Yet, the starving child is now a common image in communities in Nyanza. Such a situation is stigmatising every other aspect of development. The nutritional status of children must no longer be regarded as a welfare issue or just a development imperative, but rather as a basic human right. A new paradigm shift must therefore be adopted into the wider understanding of malnutrition

than has been the case. This however is well-articulated in this study through the recognition of the Human Development Approach to nutrition.

It is within the context of the above discussions that a summary of major findings has been presented below;

5.2 Summary of the major findings

5.2.1 Nutritional status

The main objective of this study was to determine the effectiveness of nutrition within the context of Primary Health Care in Kisumu District. Specifically, this study set out to establish the child nutritional status, the food security situation and the nutrition education programs.

The findings of this study have established that malnutrition has its causes emanating from a number of complex factors for which specific interventions could be developed. Some of the nutritional risk factors established by this survey as causes of decline in child nutritional status included limited maternal education, household food insecurity, family size, child age, disease prevalence and maternal caring capacities.

However, at the macro levels, country studies show that decline in Kenya's economic growth in the 1990s, the rise in food prices, increased poverty levels, the HIV pandemic and poor utilization of health services as a result of the governments restructuring caused by Structural Adjustment Programs have been contributing factors.

The findings of this study therefore suggest that a multiplicity of factors interact to influence child's nutritional status. Specifically, the study revealed that there was a higher proportion of stunted children in the study community with 31.1% of the surveyed children being stunted, 15.2% underweight and 9.1 % as wasted.

The most vulnerable age group in all these categories was established to be children falling in the age range between 12-23 months of age. This period apparently coincides with the period when malnutrition prevalence is observed to be highest for all the three indicators of Height-for-Age; Weight-for-Age and Weight-for-Height respectively.

Data from the survey showed that by and large, family diet is dominated by basic staple foods supplemented by complementary foods usually in the form of stew. Staples such as maize, cassava, potatoes and rice were observed as sources of energy. It was further observed that there is a tendency towards exclusive reliance on starches and omena (sardines).

This study community simply does not have enough food to eat day in day out. There are alternating periods of abundance (post harvest) and shortage i.e. the "hungry" season with rainfall variations from year to year. Hence cereal production which constitutes the bulk of the staple diets fluctuates widely. Food supply and availability also fluctuates according to variations in local production capacities with significant effects on household food and nutritional status.

It was noted by the study that starchy staples are used in the preparation of weaning diets. By implication such a diet tends to be too bulky and filling for children, and consequently have little or no nutritional value at all.

Unreliability in shortages of water and fuel for cooking was established as a factor leading to heavy workloads for women and in turn affecting the frequency of feeding children who may end up not meeting their daily nutritional requirements. A general trend is for the under five year olds to be given food infrequently and these foods are by and large contaminated thus leading to a vicious circle of malnutrition and infection.

Food quality and safety are in this regard potential hazards to the health and nutrition of the under five-year-olds. These factors were noted to adversely affect children's nutritional status in the study community.

Inadequate nutrition is therefore an issue of grave concern and the following were noted as major causes of inadequate nutrition in the study community, namely, inadequate dietary intake; infection; poverty; maternal caring capacities; and inadequate nutrition education. All these are immediate underlying setbacks to children's growth and nutritional status in the surveyed households.

5.2.2 Child Age versus Nutritional Status

Children in this survey were categorized into different age brackets namely: 6-12months; 13-24 months; 25-36 months; 37-48 months; and 49-60 months old. The results of the study indicated a strong relationship between age and nutritional status. For instance, it was found that the prevalence of malnutrition increased with age.

The highest proportion of stunting occurred between 13-24 months and 25-36 months, and the lowest proportion was established at 6-12 months. These findings compare very favourably with those of the Fifth Nutrition Survey whereby the highest rates of stunting were noted to be between age groups 24-36 for Kisumu District. Age of the child was established as one of the most important demographic variables affecting child's nutritional status.

After twenty-four months of age, one would expect a child's nutritional status to improve with age. The correlation between age and stunting was negative but not significant. The negative effect could have been due to the fact that a smaller proportion of children below twelve months of age are stunted as compared to older children. This is perhaps due to the positive impact of breastfeeding since mothers were observed to breastfeed till a child was older.

That older children were prone to nutritional deficiencies could very well imply that older children are more prone to environmental stresses than younger ones. At ages 13-24 and 25-36 months, the study established that children are more susceptible to infectious diseases. These age groups coincide with the time when children are walking and will put

literally anything in their mouths. This behaviour pattern is likely to bear implications on their health and nutritional status.

5.2.3 Child's Sex and Nutritional Status

Among the surveyed children, 55.6 percent were females and 44.4 percent males. There were however no significant differences in nutritional status of children by gender although there were some slight variations in the proportion of males and females across the study population.

Available data indicated that sex was not significantly associated with the nutritional status of children. This finding is in conformity with other researches that have been conducted in the country especially the Nutrition Survey of 1994. In countries notably in Asia, girls are denied equal access to food and health care (SCN, 1991). But data for this study indicate that there were no gender biases relative to children who participated in the study.

5.2.4 Morbidity Status

There seems to be a high prevalence of infectious diseases amongst the sampled population in the week preceding the survey. Malaria had the highest contribution (50.8%) followed by diarrhoea (22.0%); measles (6.1%) and skin rash (0.4%). See figure 6. The findings of the present study conform to those of previous studies whereby infectious diseases had negative effects on child's Height-for-Age; Weight-for-Height and Weight-for-Age (Waterlow, 1992).

Prospective studies of growth and morbidity in children in Kenya have also identified the above listed infectious diseases (diarrhoea, malaria and measles) as particularly important causes of poor growth.

Diarrhoea is strongly associated with malnutrition and it kills by triggering off dehydration and electrolyte balance. Repeated episodes of diarrhoea have far-reaching consequences leading to growth failure and malnutrition. Diarrhoea results mainly from using unsafe water and neglecting personal hygiene. Food hygiene during weaning period is therefore crucial to diarrhoeal prevention.

Amongst the vector borne diseases, malaria stands out as the single most important cause of morbidity in the study community. It was established that its incidence is growing rather than reducing. Malarial infection predisposes children to malnutrition and makes them more vulnerable to secondary infections. The findings of this study are in agreement with those of UNICEF (1992) and World Bank (1991) that malaria is a major cause of sickness in this country and that prevalence rates are higher in areas around Lake Victoria which constitutes up to 30 percent of all child deaths.

Of the immunizable diseases, measles was established as the biggest problem. The nutritional consequences depend on the length of the episode, but the relatively high death rates from measles point to the need to extending immunization programs to achieve more coverage. According to a national survey of 1992, Kenya Expanded Program for Immunization (KEPI) coverage was 76.2 percent but this figure tended to hide wide geographical variations (World Bank, 1991).

The results of this study further indicate a co-variation between malnutrition and disease. For example, if a child experiences more episodes of illness, then the likelihood for malnutrition becomes higher. Similar findings have been reported by National Council for Population and Development (1994), in which high prevalence of malnutrition was attributed to diarrhoeal diseases and vomiting. Other contributing factors are eating dirt especially when children learn to crawl and walk, so is their exposure to poor sanitation.

Morbidity status has been established to be higher in children over one year old than those under 6 months of age. These findings compare favourably with Niemeyer et al's., (1985) findings in Kano irrigation rice fields. In this regard, the age 6-12 months is when

most mothers start weaning their children and it is also the age that coincides with children beginning to crawl and move about, hence pick anything to eat. This predisposes them to infections.

At later stage i.e. 48 months and above, the relationship between malnutrition and diseases reversed with children being more malnourished while at the same time less ill. Therefore malnutrition among older children is not necessarily associated with illness but probably with inadequate dietary intake.

5.2.5 Maternal Education

The relationship between nutritional status and maternal education is striking. Lack of knowledge contributes to undernutrition especially in poor feeding practices in weaning diets. It has been observed through this study that the period where greatest undernutrition occurs is closely related with weaning periods.

Studies have indicated that improvement in women's education leads to decreases in infant mortality, total fertility rates, as well as increases in nutritional status of children (UNICEF, 1994; Brock and Cammish, 1991).

Women's education and literacy levels affect almost all aspects of their caring capacity. Investments in the education of the girl-child will therefore have long term returns because of her pivotal role (both productive and reproductive) in the future of her own family.

Findings of the present study may be a reflection of the inadequacy of nutrition and health relevant components in education curriculum especially in primary schools i.e. the level of schooling which most mothers in the study community have attended. To this end, emphasizing on the science of home economics and improving the quality of nutrition education taught at schools will generally improve the state of knowledge and future caring capacities of mothers.

5.2.6 Household Food Security

The study has established that the household's ability to acquire food in terms of quality, quantity and safety is far from satisfactory. Food insecurity status continues to threaten large proportions of households and the problem remains unsolved in the study communities. As a matter of fact, these communities survive on grossly inadequate diets. The findings of the study are in agreement with the National Survey on Income and Expenditure (1982), which states that 20 percent of rural Kenyan households did not have enough income to afford a basic diet to meet their nutritional requirements. While these may be old statistics, the situation has remained the same, if not worsened. What then are the causes of this food insecurity in the country?

A number of factors leading to the food insecurity situation have been unearthed by this present survey including unemployment, inadequate wages, poverty, high food prices, seasonality in food availability and family size. These factors either singly or collectively have impacted on the food security status of households.

The results of this study have shown that it's the household's ability to obtain food that is critical in ensuring food security. Clearly, the ability to obtain food is related to household's purchasing power, which in turn is related to household's income. To this end, increasing household income contributes to improving purchasing power and to increased household food availability. But this situation largely depends on who controls the financial decision-making within the household.

The findings of this study have further established that there are certain survival or coping mechanisms that are now adopted by households especially during the "hungry" seasons to cope with hunger and starvation. These findings are in agreement with a study conducted by Oniang'o (1992) who observed that women resort to using wild fruits and vegetables which are much more nutritious than the conventional foods as survival foods especially during pre-harvest season.

Women also maintain kitchen gardens to enhance food security at the household level. In these "home gardening", they grow all sorts of vegetables some of which are of drought resistant origins. Due to their close proximity to the house, the so called "home gardens" are frequently watered and as a result they have a potential of producing good yields resulting from constant manuring emanating from household refuse and wastes added to them on a regular basis. By and large, these kitchen gardens are also a good source of micronutrients such as vitamins and minerals.

Women in the study community were engaged in various forms of income generating activities. While these activities are characterized by low profit margins, they are nonetheless sources of income for feeding families in these communities. Some of the petty trades that women engaged in as a means of catering for their food baskets includes basketry, pottery, mat-making, brick-making, chicken rearing, hawking etc.

Another interesting phenomenon observed was temporary migration. Men and women often migrate in search of casual employment to sugar and rice plantations. Families are also known to sell wage labour in exchange of lower quality foods.

There was also the practice of meal adjustment from three meals a day to one or two meals a day. In addition, food substitution was the norm. Staples such as cassava became substitutes for maize and consumption of wild vegetables such as "osuga", "apoth", and "ododo", "akeyo" etc became common relishes accompanying staples such as cassava and sweet potatoes.

During these "lean" periods, shifts from preferred meals to non-exotic food e.g. wild vegetables were noted as common foods served on most family tables. Apparently, some of these wild vegetables and indigenous cereals contain substantial amounts of micro-nutrients such as iron and Vitamin A. Unfortunately, these highly nutritious foods are rarely grown and are becoming the forgotten species rarely consumed and have been replaced by highly refined foods such as rice, white maize.

From the above discussion, it is now evident that there is need to launch campaigns towards the promotion of indigenous and traditional foods in as far as their re-introduction into family diets is concerned. Such foods besides being drought resistant implying that their availability throughout the year will be ensured, they are also absolutely useful in addressing issues of micronutrient deficiencies and food security respectively.

The experiences addressed by this study now point to the need for policies to pay special attention to food security issues. This study realizes that a lot has been said about how to improve food security and nutrition but very little has been translated into public policy. It is high time rhetoric's were transformed into action lest hunger and malnutrition will continue to bite and threaten the lives of the vulnerable groups of population for centuries and generations to come.

5.2.7 Child Caring Capacities

Within the context of nutrition, child caring capacities have been observed as inadequate in the surveyed communities. Given that care involves the provision of time, attention and support to meet the physical, mental, and social needs of a growing child, child caring capacities were noted to be minimal to meet the child's nutritional and health status.

Care of children was largely determined by women's roles and resources including their knowledge, time and control over resources. Implications according to the findings of this study were that mothers could not ensure optimal breastfeeding, offer complementary feeding practices, and ensure feeding quality and feeding frequency as direct interventions towards improving child nutritional status.

The findings of this study and those of Oniang'o (1992) are once again mutually reinforcing. The quality of the total care available to the child is key to the proper development of that child in terms of physical, emotional and mental aspects. To this end,

the amount of time a mother spends away from the child influences not only the frequency of feeding but also the quality of food the child is going to receive. The study found that mothers were out all day engaged in petty trades in order that they could put some food on their family tables. This implies that the amount of time spent with children was limited.

Further, a child eats well in a warm and caring environment. Such an environment is first and foremost possible in the presence of a mother. Child health and nutritional status is therefore largely influenced by caring capacities as were established by this study.

Reports from this study indicated that there exists a situation of food insecurity in the study community. Under these prevailing conditions, it is doubtful whether childcare could have been optimal given that care can only be effective if households can ensure food security.

Similarly, Women's literacy levels were reported as low. Women's education and literacy affect almost all aspects of caring capacities. Education no doubt determines women's ability to enhance children's nutritional status. Lack of adequate knowledge, time and control over resources are likely to have significant implications on child caring capacities. Improvements in women's education are therefore critical to health status and caring capacities of the future generations.

Finally, this study contends that emphasis should be placed on the value of home economics and majority of girls and women are encouraged to pursue home economics education. This will improve the quality of nutrition education at all levels of education will not only to enhance the quality of knowledge but also the caring capacities of homemakers of tomorrow.

5.2.8 School Health Programme

The findings of this study have revealed that specific health and nutrition education as part of the school curriculum will not only influence acquisition of knowledge and skills but also favourably influence changes in behaviour likely to enhance health and nutritional status.

The study also recognized that children could spread health and nutrition ideas as well as teach good health and nutritional practices. That through child-to-child approach, children could pass health messages and take health action for themselves, their families, and communities respectively. This approach, it was further established, could bridge the gap between what's known and what's done, between what's done in class and what's done in a child's residence.

In Kenya, statistics show that more than three million i.e. 65 percent of children below the age of 0-6 years have no access to education and live under the threat of malnutrition (GOK/UNICEF, 1998). These children are not developing as expected of their age. In addition they are out of school at a time when they should benefit from schooling.

This present study advocates that school children through the school health programme and child-to-child concept could have a potential of helping those who are not in school by sharing their knowledge and skills through play, songs, and acting health messages with those at home. The child at school therefore becomes the partner, friend and teacher at home.

In other parts of the world, Kenya included, children have been known to be very influential in imparting knowledge to their peers. Older children in the African context have cared for younger ones since time immemorial. Teachers and parents can therefore build on this reality by using child-to-child approach to reach children who may never get to school, and older children may be the channels through which the world beyond the school could be reached.

It is in the world outside the school that the health and nutritional needs of younger children are mostly at stake. Child-to-child concept has been discovered by this study as a life saving knowledge and a lifeskills education. It encourages the concept of caring capacities by children, parents and the community. The idea brings the school, parents and communities together. It's an innovative approach which present nutrition programs can now build upon to strengthen nutritional status in communities.

Unfortunately, the school health programs in the Kisumu Primary Health Care region have not been strong enough to yield desirable effects. This survey recognizes that school health programs are in need of strengthening if sustainable effects in health and nutrition are to be realized.

School health program was only initiated in very few pilot schools in Kajulu division of Kisumu District. The Aga Khan Foundation has since pulled out, implying that the project life has come to an end. Given that the concept of child-to-child has a potential of having a multiplier effect in health and nutrition, it would therefore be feasible if the idea is revisited and extended to as many schools as possible in the study region.

The effects of school health programmes through child-to-child can be long-term, indeed intergenerational, since the people currently being educated are expected to be those who will provide better conditions for their children in future. The usefulness of school health programs therefore cannot be underestimated. This current study therefore contends that school health programs should be encouraged and expanded in scope to impact on and yield sustainable effects on health and nutrition.

5.2.9 Nutrition Trends

Current stunting rates stand at 34 percent (KDHS, 1993), While wasting is 6 percent and underweight 23 percent (CBS, 1996). These statistics are in total agreement with the present study in which 31.1% of the under five-year-olds were found to be stunted, 9.1%

wasted and 15.2% were underweight. The following below is a manifestation of the trend analysis.

Table 35 Showing Distribution of Nutritional Indicators in 1982, 1987 and 1994 By District

Province/	% stunted < -2SD HA median			% wasted < -2SD WH median		
District	1982	1987	1994	1982	1987	1994
Nyanza	43.1	41.3	36.4	5.5	6.2	5.5
Kisumu	30.8	38.2	31.6	7.2	6.3	8.7

Source: CBS, 1982; 1987; 1994

Stunting levels showed in 1994 a marginal increase compared to 1982. This could be attributed to the prolonged drought in the preceding years. Assessment of the impact of the Structural Adjustment Policies on food availability and consumption within the households has been linked to the nutrition status indicators (Fifth Nutrition Survey, 1994).

It appears that the prevalence of stunted children rose from 30.8 percent to 31.6 percent between 1982 -1994 while that of wasted children rose from 7.2 percent to 8.7 percent between the same period.

This same picture has been depicted in the wastage rates in the district between 1982-1994. High levels of nutritional wastage are rampant in the district and surveyed communities and the situation is aggravating. The Nutrition Surveys between 1982-1994 further shows that the proportion of children who are stunted and wasted has been increasing.

The current trend in the district for stunting is disturbing. For the region as a whole, no progress has been made for reducing the prevalence of child malnutrition over the past

fifteen years, and there is some indication that the prevalence has increased. The percentage of stunted children has been increasing substantially.

While at the International Conference on Nutrition (ICN) in 1992, governments endorsed ambitious goals including a call for reducing the cases of underweight prevalence by the year 2000, these goals are far from realization at the dawn of this millennium. According to the ICN Summit goals, Kenya is still lagging behind and overall, the average rates of change are inadequate to meet these goals.

The observed rate of underweight prevalence shows that malnutrition is far from being a problem of the past. The end of hunger and malnutrition in the study community is not in sight and the basic question now being addressed by the current study is that: how can nutrition improve rapidly for Kenya's malnourished children during this millennium? This same question was addressed by ACC/SCN (1996).

The nutrition situation in Kenya and in the survey communities respectively, is now lagging having shown some improvements in the last decade. Some substantial improvement in nutritional status occurred in the 1980's but there is now evidence of a deterioration situation due to the effects of recent setbacks such as SAP's and the HIV/AIDS. If nutrition improvements were to accelerate, then the improvement to the year 2000 could indeed be more or less in line with the World Summit for Children and ICN goals.

There is now a concern that the nutrition situation is deteriorating overall. It is very clear from data presented here that unprecedented efforts are needed to prevent a continued deterioration in the nutritional deterioration in the country as a whole.

Maybe, rigorous community level programs have the answer to protect and improve nutrition. In Tanzania, improvements in Iringa (the longest community level programs) have contributed to the improvements in nutritional status of populations in the region. The Triple A processes in Iringa empowered and mobilized communities to optimally utilize whatever resources they had locally. This is what is wanting in Kenya.

However, for the purpose of this discussion, let me borrow from Kavishe (1996) who reiterates that there is now a broad consensus that main indications of change in nutritional status of the under five year olds have been evidenced in areas implementing integrated nutrition programs.

In this regard, interfacing nutrition education and community-based nutrition programs are therefore needed as a direct means of improving nutrition and as concrete focus for nutritional concerns and policies.

5.2.10 Gaps in Primary Health Care

While the Kisumu Primary Health Care project set out very good intentions, it follows that it encountered fundamental managerial and financial constraints, all of which consequently resulted in the ineffectiveness of PHC programs in the region. This implies that sustainability of PHC programs can be resolved if workable infrastructures and resources are initiated on a long-term basis.

It has been proved through the findings of this study that donors are more willing to support basic activities in the short term but are less interested in long term investments or in infrastructures that will result in effective delivery systems. This was the case evidenced in the Kisumu Primary Health Care Project by the Aga Khan Foundation, which survived for ten years before the donor pulled out.

The Kisumu Primary Health Care project offered a limited range of PHC services. There was no offer of a comprehensive package of services as would be expected in an integrated health care system. While the KPHC claimed that it pursued a "middle path" between comprehensive and selective approaches, what was evidenced was that the program was largely selective in nature.

Further, it was established that the program did not assure ownership whatsoever in the implementation of PHC by the involved communities. A case in point was the reference

that was often made to the water supply. These communities always referred to the constructed boreholes as "Aga Khan's", whose program was it, is the question?

It was also noted that the PHC programme never benefited from strong community level organizational capacity and spirit, which pre-dated its inception. Initially, the spirit was high but gradually plummeted with time. At any rate, the community health workers were enthusiastic at the inception of the project but later lost interest due to lack of incentives. The defaulting rate increased in tandem, and the drop-out rate intensified as the project propelled. Popular participation came to a halt due to ineffective organizational structures at community levels which were noted to be weak, poor coordination and planning of activities and ineffective management all resulted in lack of commitment by communities.

The study observed that for any PHC programme to gain strong ground there is a need for a strong political back-up, community commitment and financial support. But under the present economic crisis in Kenya, it is not surprising to note that the PHC structures have come to a halt.

While Kenya has responded to the concept of PHC through her national policies, statements of intents, and plans for including PHC into the national planning process, these have remained promises not obligations. Little effort has been geared towards translating these plans into actions. Central to the concept of PHC is that individuals, families, and communities should take the major responsibility of their own health. The current economic environment has not made this possible.

The progress in PHC, if any, seems to be along conventional basic health services. But even where PHC exists, it has been extended to a cheaper version of community health workers. The scope and depth of community involvement are too scanty to yield useful results, and the coordination of health activities under PHC remains weak.

Lack of back-up funding for essential drugs means that the concept of village pharmacies or the popularly known Bamako initiatives have been short-lived. While the essential

drugs were made within reach and at affordable cost, the village pharmacies failed to achieve their missions of sustainable development. The pharmacies were faced with problems of mismanagement and competition from hawkers selling similar drugs at even lower prices.

On the issue of mismanagement, some community health workers received drugs from the pharmacy but failed to account for funds from sales. By the time this study was being conducted, there were no rules governing efficient management and record keeping. Some of the community health workers therefore ended up using the resources derived from the sale of drugs and their rate of defaulting increased once they could not account for the supplies. Some of the village pharmacies visited had been closed down due to such cases of mismanagement.

While some very good structures were set in place for the implementation of PHC and while village health workers and community health workers were trained on various aspects of health care, such popular participation by communities seemed to have come to a halt. According to verbal autopsies, there appeared to have been poor coordination and planning hence a lack of commitment to the noble cause.

If PHC is to be sustainable, then ways must be sought for accelerating rural development. Until requisite economic growth is attained, PHC has no future. At the Alma- Ata it was stipulated that "no child should go to bed hungry", yet we have already entered the year 2000 with the image of the starving child as the norm. Whether PHC has achieved its earlier intended goals of *Health For All by 2000* is now the startling question. Health for All has to date remained a mere slogan.

Consequently, health and nutritional status is in jeopardy. Food shortages are now chronic and high rates of inflation are making it absolutely difficult for increased proportions of rural households to purchase the basic foods and access health care services.

The health sector in turn lacks adequate drugs, adequately trained staff, equipment transport and effective supervision mechanisms. Morbidity and mortality are on the rise associated with the dreaded HIV/AIDS, poverty related causes as well as lack of food.

Under all these circumstances, PHC is sleepwalking towards its final collapse. It has to be revitalized if efforts towards its re-awakening and sustainability are to succeed.

5.2.11 Nutrition Education

The importance of nutrition education is yet to be felt in the study community despite the pertinent fact that nutrition education is critical to changed health behaviours at the household level. The survey found that mother's nutritional knowledge *per-se* did not seem to influence child health to recognizable proportions since mothers lacked the necessary resources to put into practice what they had learnt. It therefore came out clearly from the findings of this study that nutrition education is unlikely to bear an impact on an environment in which resources are the primary constraint.

While some limitations to nutrition education have been identified, this study realized that not all causes of malnutrition are reversible by nutrition education. For instance, it has been established that some causes of malnutrition like utilization of unsafe water may have solutions in other approaches e.g. provision of safe water supplies. This implies that education only becomes practical after communities have access to safe drinking water. The underlying assumption here is that development of infrastructure, access to income and information are all needed to bring about desired health changes and sustained improvements in nutritional status of households.

In the same context, it is pointless teaching a villager about the essentials of a balanced diet if he/she lives under conditions of abject poverty and has no hope of being able to eat anything approaching the advocated diet. While maintenance of sound health and nutrition clearly calls for major efforts on the part of the individual, this will however be successful only if backed by collective and governmental action.

An interesting observation that has emerged from this study is that nutrition education coverage was confined to health centres alone. The above described nutrition education programs centred at MCH/FP clinics are unlikely to reach majority of mothers especially those who do not attend these antenatal services. There is therefore need of extending nutrition education beyond the confines of maternal child health clinics.

Nutrition education in Maternal Child Health/Family Planning was observed to be influenced by the principles of the medical approaches in which nutrition education was used as a treatment of disease. This means that the patient was supposed to follow the use of food groups prescribed as a means of curing "malnutrition". This study confirms Hornik's (1985) findings, which revealed that nutrition education programs are haphazardly delivered as prescriptions to curative services. This approach to nutrition education in the form of prescriptions was offered to mothers when they took their children for antenatal care.

The quality of nutrition education offered at the MCH/FP, the approaches used, the quality of personnel offering nutrition education were all falling short of desired expectations. The nutrition content was criticized as being too theoretical by the discussants. The use of food groups to teach nutrition concepts was perceived as impractical and irrelevant. In addition, overemphasis on imported Home Economics style of education on the prime importance of a balanced diet was deemed as irrelevant. Emphasis on balanced diets was further conceived as impractical and beyond the economic realities of the studied households.

The nutritional messages did not reflect the needs of the learners. The implication here is that, no need assessment was established at the design stage of the taught messages to facilitate their relevance. This is seemingly a gap that needs special focus in future nutrition education programmes.

The audience also criticized the approach to teaching, which was described as too top-down depicting monologue and delivered in rigid classroom-like settings. Teaching was

described as less participatory in nature and therefore learning was rated as ineffective in influencing changed health behaviour patterns.

Majority of the clinical staff that are imparting information on nutrition education have had little or no training on nutrition education. Consequently, nurses have been utilized in imparting nutrition education messages to mother's visiting health centres. The implication of using non-professionals in a field they have not been trained in is that there is a high likelihood of distorting information due to lack of professional preparation in that discipline.

Similarly, patronizing attitudes have been evidenced between health providers and clients. Majority of the respondents complained of lack of communication with the health service providers. Female patients revealed that they are treated rudely by nurses and are unsatisfied with the health services provided, including nutrition education. If nutrition information is to be effectively imparted, then special attention should be paid towards ways of improving interpersonal relationships between female patients and health providers. Probably, more attention should now be paid towards "transformative approaches" rather than mere "transmission" in the delivery of the content.

Emerging from the findings of this study is the fact that nutrition education programs are likely to cause substantial behavioural changes if accompanied by action-oriented strategies. For instance, nutrition education combined with feeding programs or even food supplementation activities are more effective than nutrition education offered alone.

It has equally been evidenced by this study that community-based participation in the formulation of concepts and message design is an indispensable part of nutrition curriculum, as perceived by the need for such an education. Similarly, it is now clear through this study that education must be designed and planned with program beneficiaries and not by nutritionists alone as has been the practice in the past. Nutrition education must begin with a good qualitative research and must utilize a mix of media (mass and interpersonal) in delivery of content.

Emanating from this discussion, nutrition education can result in improved nutritional practices if planners pay attention to the following questions: Which groups of people in the community have nutritional problems? What types of problems? To whom should nutritional messages be directed? What specific behavioural changes are required? Are the nutrition issues advocated practical, affordable and culturally acceptable to the target groups social, economic and time availability?

Given that the nutrition curriculum is lacking, a sample curriculum has been designed by this current study, taking into consideration all the methodological and contextual factors to overcome the listed limitations (See figure 12).

5.3 Recommendations and Suggestions for Further Policy Reformulation

Despite impressive efforts aimed at securing adequate nutrition for populations in Kenya, hunger and malnutrition continue to pose problems of staggering proportions in the study communities. Considering that malnutrition is extremely complex, it appears that a combination of different policies and programmes are now needed to alleviate this phenomenon.

It is also doubtless to say that while malnutrition and hunger mainly manifests themselves at the household level, the causes may be prompted by some macroeconomic factors. Therefore without developing an understanding of these intertwining factors, it may not be possible to address the malnutrition problem. To this end, several recommendations and suggestions are addressed in this study:

5.3.1 Policy on Nutrition

1. At the World Food Security Conference in Rome in 1996, it was recognized that governments must take initiatives at the country levels to improve their nutritional problems through developing Nutrition Plans of Action (NPAN). To-date, the

National Plan of Action for Nutrition in Kenya remains on paper and has not been translated into practice. Until this tool is effected and structural frameworks for its implementation set in place, very little will be achieved in improvements in nutrition in this country. In short, how to translate NPAN into action must be urgently sought and utilized as a tool for nutrition advocacy.

2. It has further been revealed by this study that the nutritional status of the under five year olds has deteriorated and continues to do so. Unfortunately, the prevalence of malnutrition is still understood as emanating from lack of food rather than an outcome of many processes. It is in this context that renewed commitment and efforts are needed to translate nutritional experiences such as NPAN into reality if any gains in nutritional improvement are to be realized.

3. The current nutrition situation in the study community is a cause for alarm and the analysis of causes shows their complexity and multiplicity. This means that no one solution by itself will be effective in addressing the malnutrition situation. A collective set of policies is now deemed necessary. The analysis of the nutrition situation further calls for coordinated action by various sectors of the government especially ministries of agriculture, health, education, planning, water, culture & social services and information respectively. Coordinated action must therefore be forged by all towards the goal of improving nutritional status of the vulnerable populations.

4. One clear policy imperative is that the recognition of the nutrition-agriculture link. How agriculture affects nutritional status and which food communities grow to make a difference on their nutritional status should be given serious attention. At the moment a good number of people survive on grossly inadequate diets and these food insecure and malnourished populations live in the rural areas where agriculture is the major sector. Agricultural policies and strategies are therefore important in achieving food security objectives. In particular, agricultural policies that are labour intensive stand to offer effective strategies for change. Also, increased investments in

agricultural productivity and research are in dire need. Finally, combining nutrition activities with agricultural programs are an important strategy for improving nutritional status.

5. Policies directed at household food security must be intensified. It is now apparent that it is not the national food security that is needed but rather access to household's ability to obtain food that is most critical in ensuring household food security. Policies that ensure access and availability to food through increased incomes of the poor and decreased food prices must be pursued intensively.

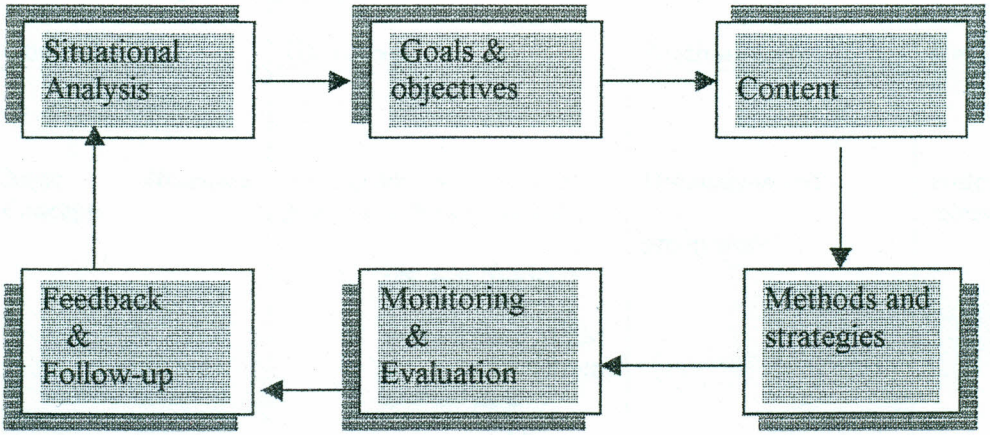
6. Given that women are key to food security, strategies towards their access to productive resources, education, health and other factors that increase their well being and their human capital must be sought as this will have a tickle down effect on the food security and nutrition. To this end, policies directed at feminisation of poverty must be intensified to address the food security issues.

Adequate access to food and nutrition is a fundamental human rights issue and if the right to adequate food is not assured then populations will not achieve their full potential and well being. That is why policies must regulated and enacted.

5.3.2 Community-Based Nutrition Education curriculum

1. This study has developed a community-based nutrition education curriculum that can be utilized as a reference material by all duty bearers in dealing with issues of nutrition education in their programming (see figure 11). As a point of departure, below is a sequential series of steps that should be followed in the development of such a curricular. This proposed procedure targets communities, program developers, nutrition planners and non-governmental organizations interested in developing community-based nutrition education.

Figure 10: Proposed Model on Procedures required for Curricular Design for Community-Based Nutrition Education:



As a result of the above procedures, the following sample curriculum has been developed through this study. Note that this community-based nutrition curriculum is flexible and adaptable for different contexts in the country. While this guide has been developed for Nyanza, it can be nonetheless be adapted to other communities in the country. This sample curriculum is broad based and has gone beyond the traditional approach in nutrition education of perceiving nutrition beyond the confines of the food groups. The strength of this sample nutrition curriculum lies in the fact that it has incorporated various nutrition-related issues experienced in the study community. This makes it a relevant tool for use not only by communities involved but also by program developers and planners in nutrition programs (See Table 36).

Table 36 Showing A Proposed Sample Curricular for Community-Based Nutrition Education in Kisumu District:

Content	Objectives	Methodology	Resources
Basic Nutrition Concepts	Participants will be able to grasp an understanding of; ▪ the food Nutrients ▪ malnutrition (PEM, & Micronutrient malnutrition ▪ Food Security	Discussions and group work	Posters; charts, relevant texts
Dietary diversification	Identify foods in the community that contribute to healthy diets. Understand what constitutes a good diet	Cookery demonstrations, Sample menu for a healthy diet using locally available foods.	List of locally available foods and their nutrient content
Food quality and safety	Develop an understanding on the hygienic practices associated with food handling. Acquire knowledge and skills on keeping food and the environment safe and clean	Demonstrations on food and household hygienic practices Investigative methods e.g. a health map to show the location of where latrines, water points, houses and kitchen ought to be situated. Discussions Group work	Posters, pictures
Food Choices and preferences	Identify cultural practices and habits that affect nutritional status		

Sample Community-Based Nutrition Education Curriculum cont...

Content	Objectives	Methodology	Resources
Household food preparation, storage and processing	Prepare a nutritious meal for an under five-year-old child using locally available foods. Develop an understanding on how to store and process locally available foods	Cookery demonstration Identification of locally available foods Appropriate storage and processing of local foodstuffs.	Sample menu, charts
Household-food security **Coping strategies**	Assess the food demand and supply status Identification of the most pressing food needs in the community and ways of combating them. Identify coping strategies in times of food stress. Determine acceptable and innovative strategies for improving food security.	Groupwork Information sharing experiences. Map building on agricultural practices. Stories to stimulate. Decision-making amongst participants.	Flip charts Resource persons
Maternal health and child care	Develop an understanding on the importance of breastfeeding Acknowledge and practice appropriate child caring practices Acknowledge importance of immunization Recognize the importance of ante natal and post natal care	Discussions Role playing	Posters charts

Sample Community-Based Nutrition Education curriculum cont...

Content	Objectives	Methodology	Resources
Maternal health and child care cont....	Identify causes of morbidity and mortality in early childhood Identify causes of morbidity and mortality during pregnancy	Critical incident skills Contests on issues of Maternal Child Care. Information exchange on maternal and child caring practices.	Charts Transparencies Posters
Low birth weight and associated complications	Identify causes of LBW and its implications for health and well-being	Skit on nutrition before, during and after pregnancy in two families.	
Income Generation Projects	Identify appropriate income generation activities in the community Develop skills in resource mobilisation	Discussions	Texts Handouts Posters

5.3.3 Child Rights to Adequate Nutrition.

1. Among partners and agents of health behaviour change, children can participate in imparting health messages to their parents on the importance of adequate nutrition through child-to-child interventions. Children at school must be empowered with knowledge and skills that will enable them to link what they learn at school with what they practice at home.

2. Malnutrition denies a child the right to "live a healthy life and achieve maximum survival". To this end, the quality of care for young children in the study communities is insufficient to promote their survival at a time they need it most. Community programs geared towards the promotion of child rights to survival through adequate nutrition and care must be vigorously sought.

5.3.4 Community-Based Nutrition Interventions

1. Direct nutrition interventions are likely to be more effective and worthwhile when they are genuinely community-based. This means that nutrition programs that are strongly rooted at the community level should be advocated. This implies that decentralized decision making power and not just responsibility is crucial. A mix of top-down and bottom-up planning is pragmatic and effective with beneficial synergism likely to be evidenced between the two. Such an approach to nutrition programs is also likely to result in more successful and sustainable effect.

2. Genuine community involvement and ownership is key to successful nutrition education programs. Community participation must be more than an involvement in implementing certain aspects of nutrition programs. It must include a full role in assessment, analysis and action. Communities must be prepared and committed to contribute to ensure the sustainability of nutrition education programs.

3. Given the volatile nature of HIV/AIDS in society today, and in view of its direct implications on the socio-economic status of households, there is an urgent need to pay special attention to the linkage between HIV/AIDS and Nutrition education. By implication therefore, community-based programs should be devised that will address the nutritional status of HIV victims and the affected households.

5.3.5 Nutrition Personnel

1. Inadequate personnel throughout the country hinder the effective implementation of a number of planned nutrition education activities. There is need to have qualified nutritionists to educate, monitor and evaluate the progress of nutritional status of children.

2 If health workers are to change health and nutrition behaviour, then they need a minimum of theoretical nutrition information and knowledge base. They must know about local food habits and they must understand the families they are trying to educate. Unfortunately, many clinical staff has had very little or no nutrition training and this have serious implications for the transmission of nutrition information.

5.3.6 The Primary Health Care Strategy

Strategies for achieving Health for All remains weak, particularly the organizational and management structures. Efforts to strengthen health and nutrition systems by improving their efficiency and efficacy through prioritisation and decentralization are all essential to revitalizing Primary Health Care, especially at the community levels so that health and nutrition improvements of the vulnerable groups of population can be assured.

5.4 Conclusion

In conclusion, this study has proved that the provision of nutrition performance primary Health Care in Kenya has been inadequate both in impact and sustainability. Looking back, it is doubtful whether the outcomes of PHC yielded positive impact in terms of enhancing the nutritional status of children, in terms of promoting food security and better management of the project. A new paradigm shift to PHC is now required.

The findings of this study have revealed that the integration of Human Development Approach in nutritional development is likely to produce better health and nutrition results, in as long as duty bearers understand and respond to nutritional challenges in a manner that will determine improvements in nutrition. This implies building a consensus and seeing nutrition with a human face, i.e. having a mindset that nutrition is imperative to human development.

This study has shown that the pace of attaining Health For All by the year 2000 has not been feasible, therefore there is need to re-think PHC strategies. A consensus must be built towards a new paradigm shift that will perceive nutrition as an outcome of various processes rather than an outcome of a specific factor. A new paradigm shift that will result in a totalistic rather than reductionist actions, hence the development of an understanding of mainstreaming nutrition into programmes of various sectors such as education, agriculture, water, finance, culture, commerce and industry. In short a new paradigm shift of human development and of nutrition with a human face is now critical.

Finally, this study concludes that no one solution by itself will be effective in addressing malnutrition. The findings of this study has come to the realization that there is what Kavishe (1997) refers to as no "single magic bullet solution" to the issue of malnutrition and hunger. In this respect, a major challenge now is to treat the malnutrition-hunger phenomenon in a holistic approach. Further, addressing malnutrition now requires both scientific and ethical considerations and that nutrition interventions must be based on sound scientific basis and that their application must be a matter of political consensus and commitment.

This survey believes strongly that Kenya has the domestic potential to keep most of her children well nourished, and if this potential were to be tapped and adequately supported, then the proportion of poorly nourished children and families being malnourished could be significantly reduced in the study community.

Indeed, it is the country's capacity to adequately invest in nutritional improvements that will eventually determine how children and families grow and develop. This investment can turn around the vicious circles of malnutrition into a virtuous circle of a well-nourished nation. Investment in nutrition is therefore critical to the 'development' in this country, and no development can take place in the absence of a well-nourished population.

It is in view of the foregoing that a collective set of policies, a holistic approach and transformative nutrition programs is now needed to tackle the menace of hunger and malnutrition in Kenya. It is only then, that nutrition can claim its place in "development".

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APPENDIX 1

Focus Group Discussion with Women Groups & Community Health Workers

1. Tell us the different types of nutritional disorders in this community
2. What are the causes of these nutritional disorders?
3. What measures is the community taking to address these disorders?
4. Comment on the effectiveness of nutrition education programs in the community
5. To what extent are the existing nutrition education programs relevant to the communal needs?
6. Are nutrition messages offered realistic?
7. What is the food situation like at the household level?
8. What coping mechanisms is the community employing towards food insecurity situation?
9. How can food security be promoted in this community?
10. Currently what are the most urgent health needs by the community?
11. Tell us what you like about the PHC programs
12. Describe how PHC has benefited the community
13. If you could change anything about PHC, what could it be?
14. Think back to the time before PHC was introduced in this community, What were the health problems? Which ones are prevalent today?
15. Lets talk about other sources of health care services other than PHC, Where else do you go?

16. When your children are sick?

17. What are your impressions about these sources?

18. Are they reliable, useful and practical?

19. Think back to the time PHC was introduced in this community, how did you feel about it? How do you feel about it today?

20. What can or should be done to make PHC Program than what it is currently?

21. Thinking back over the past months, what health and nutritional problems have faced this community?

22. Comment on the available health facilities in terms of cost, access, drug availability, and quality of care.

23. Do you have any final thoughts on how food security can be ensured in this community?

APPENDIX 2

Focus Group Discussion Guide to Mothers attending Ante-Natal Care

1. What nutritional challenges are mothers facing in this community?
2. What is your comment on the type of education you receive when you take your children to the clinics?
2. Is the type of education offered relevant to your needs? If not please comment?
3. What is your comment in the manner in which this information is relayed to you at the clinic? (Probe for content, methodology, and client provider relationship).
4. To what extent do you put into practice the information acquired? If there is no application, give reasons.
5. In your own opinion, how best would you like to see changes in the nutrition education provided?
6. How best can the nutrition education offered be improved to enhance your understanding and behaviour change?
7. Is the content appropriate? What should be added or subtracted?
8. What other comment would you like to make on the quality of nutrition education offered?
9. Any other general comment?

APPENDIX 3

Interview Schedule for the KPHC Project Manager

1. Since the initiation of the KPHC project, highlight some of the changes in health status of communities involved.
2. What do you see as the most pressing health needs in the project community?
3. Prior to the introduction of PHC in Kajulu/Nyakach, what were the notable health problems? How has the program addressed them?
4. Is PHC sustainable? Comment.
5. What is the future of KPHC?
6. Do you habour any fears about the sustainability of PHC?
7. Comment on the management of village pharmacies? What are the flaws?
8. Comment on the defaulting rates by community health workers.
9. In your view, what obstacles are constraining the effective implementation of PHC programs?
10. What can be done?
11. Comment on the school health program.
12. What nutrition intervention programs do you have in place?
13. How do the community members respond to the nutrition education programs offered to them?
14. Any general comment regarding PHC concept in KPHC.

APPENDIX 4

Interview Schedule for Ministry of Health Officers, & Project Officers in NGO's:

1. Do you have a nutrition education curriculum that assists in educating communities on nutrition issues? (Probe for availability/reasons for non-availability; alternative strategies for educating communities in the absence of a uniform curriculum).

2. What do you think should be included in a nutrition education curricular if one was to be developed? (Probe for content, methodological considerations, learning activities).

3. Looking at your interactions with communities, including training and nutritional education responses, what nutritional challenges are confronting communities in Kenya today?

4. From the ministerial point of view, what should a nutrition education program aim to achieve?

5. Are the educational messages you offer to communities making any impact? How?

6. What nutritional behaviour changes have you noted in your nutrition education campaigns? If none, what could be the underlying reasons?

7. If you were to make any changes in the current nutritional challenges, what would be the change/s?

8. How best can nutritional status of households be enhanced in the given economic conditions in the country?

9. If a nutrition education curricular were to be developed, how would it benefit your on-going programs?

10. Make any other comment on the nutritional situation in the country.

APPENDIX 5

Interview Schedule for curriculum experts

1. What do you think should be included in an education curriculum if one was to be developed? (Probe for content, objectives, Philosophical and psychological considerations, methodological considerations, learning activities).

2. Advise on key components on any curriculum design.

3. I am in the process of developing a community nutrition education curriculum, would the requirements of this informal curriculum differ significantly with that of a formal setup? What in your view would an informal curriculum emphasize?

4. What other general comments/remarks would you like to make concerning curriculum development?

APPENDIX 6

Main Survey Questionnaire on Nutrition Performance in PHC:

Identification

Division.....

Location.....

Sub-location.....

Date.....

Code No. .....

Interviewers name .....

Background Information

1. Name of respondent.....

2. Age .....

3. Sex: 1. Male

   2. Female

4. Marital status: 1. Homogeneous marriage

   2. Heterogeneous marriage

   3.Divorced

   9.other specify

5. Level of education: 1. None

2.Standard 1 – 4

3.Standard 5 – 8

4. form 1 – 2

5.Form 3 – 4

6. Other specify

6. Occupation:

1. Farmer

2. Business / trader

3. Casual laborer

4. Teacher

5. Other specify

7. Religion:

1. Catholic

2. Protestant

3. Islam

4. Other specify

Mortality / Morbidity Issues

1. List all the members of your household including relatives and visitors who have slept and eaten in this house for the last one week

Name	Relation to household head	Age

2. Are you still breastfeeding your last child?

   1. Yes 2. No

3. If No, at what age did you stop breastfeeding? Please mention

   .....

4. What is the current measurements of your child / ren between 6 months and 48 months?

Name	Age	Sex	Weight (kg)	Height (cm)

5. Have any of your children suffered from a nutritional disorder in the last one-month?

1. Yes 2. No

6. If Yes, which nutritional disorder?

   1. Kwashiorkor

   2. Marasmus

   9. Other

7. What measures did you take towards overcoming the above problem?

   .....

8. Have any of your children been sick in the last two weeks?

   1. Yes 2. No

9. If Yes, what was the child suffering from? Please mention .....

10. What treatment was received?

    1. Health Centre

    2. Traditional healer

    3. Faith healer

    4. Other specify

Nutrition and Food Security Issues

11. Did you grow any food crops during the last season?

    1. Yes 2. No

12. If Yes, what types of food crops did you grow? Please mention .....

13. How many acres of land do you and your household own?

1. < 1 acre 2. 1-3 acres

3. 3-5 acres 4. 5-7acres

5. 7-9 acres 6. > 10 acres

14. How would you describe your last harvest?

1. Very good

2. Good

3. Average

4. Poor

5. Very poor

15. Do you presently have food in store?

1. Yes 2. No

16. Do you normally sell some of your harvested produce?

1. Yes 2. No

17. Why? .....

Water Supply and Sanitation

18. Where do you get drinking water? Please mention. .....

19. Is the source of water permanent or temporary? Please mention .....

20. When water is in short supply, how do you cope? Please mention.....

21. Do you boil water for drinking?

1. Yes 2. No

26 If No, why? .....

27 What do you think should be done to alleviate the water problem in this community?

Nutrition Education and Intervention Programs

28 Are nutrition education programs offered to you in this community?

1. Yes 2. No

29 If Yes, where do you receive information on nutrition education? Please mention.....

30 When you attend clinics, are you offered any nutrition education?

1. Yes 2. No

31 Do community health workers offer nutrition education to you on their routine home-to-home visits?

1. Yes 2. No

32 What are you taught? Please mention .....

33 How would you describe the content of nutrition education you receive?

1. Extremely relevant

2. Relevant

3. Not Sure

4. Irrelevant

5. Extremely irrelevant

34 To what extent do you apply the knowledge learnt? .....

35 What are some of the changes you would like to see in the way nutrition education classes are conducted to fully make them meaningful to you? Please mention.....

36 Which PHC activities are in existence in this community? Please mention

.....

37 How effective are the PHC activities? .....

38 At the household level and in order of priority, which are some of your most pressing needs? Please mention.

39 How best can the above needs be solved from your own personal view? Please mention .....

40 What are some of the constraints you encounter at the household level concerning the food and nutrition situation? Please mention .....

41 What innovative strategies do you think should be undertaken to improve the food and nutrition situation in your community?

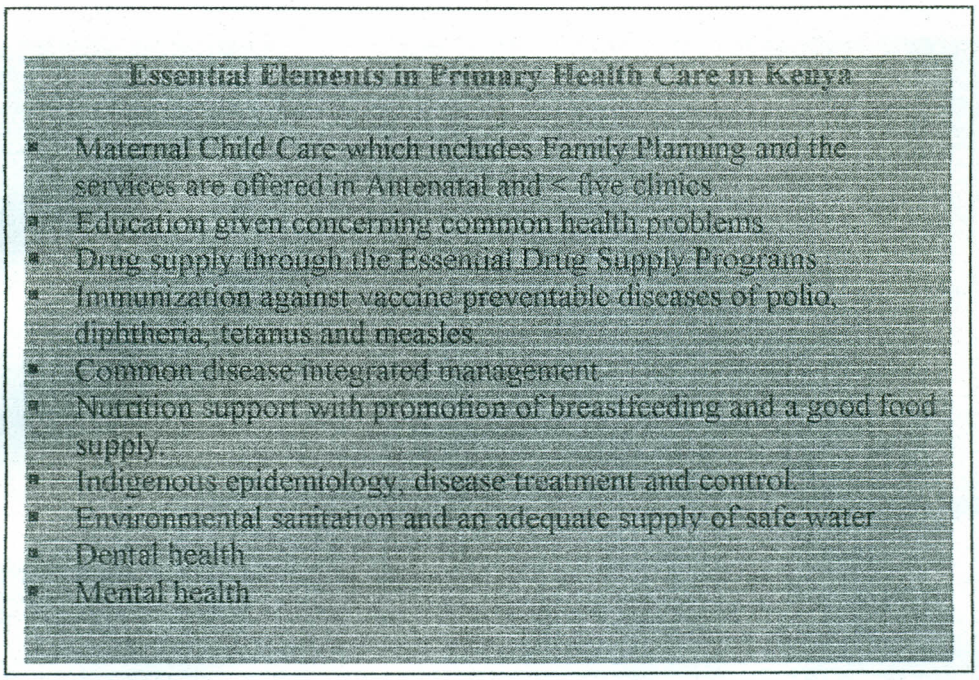
Health Care Services

42 How effective are the utilization of health services in your community in as far as the following issues are concerned:

Drug availability	Very Good	Good	Fair	Poor	Very Poor
Treatment / cost / affordability					
Accessibility					
Quality of care					

APPENDIX 7

Ten elements of Primary Health Care in Kenya



Ministry of Health (1996): Twelve Years of Primary Health Care In Kenya

A summary of the Elements:

1. Health Education
2. Nutrition & Food Supply
3. Water and Environmental Sanitation
4. Maternal Child Health and Family Planning
5. Immunization
6. Control of Epidemic diseases
7. Control of minor ailments
8. Treatment of Common Conditions
9. Supply of Essential Drugs
10. Mental Health
11. Dental Health
12. Ear/ Nose and Throat.

**The initial elements soon after Alma Ata were eight. They have since increased to twelve due to emerging changes in the health scenario.

APPENDIX 8

Trends Analysis in Nutritional Status between 1982-1994

District	Percent stunted			Percent wasted		
	< -2SD Height-for-Age Median			< -2SD Weight-for-Height Median		
	1982	1987	1994	1982	1987	1994
National	37.1	32.1	33.6	4.5	4.0	7.8
Nyanza	43.1	41.3	36.4	5.5	6.2	5.5
Kisumu	30.8	38.2	31.6	7.2	6.3	8.7

Adaptation from Welfare II Basic Report 1994, CBS.

CONCEPTIONAL FRAMEWORK SHOWING THE CAUSES OF MALNUTRITION