FACTORS AFFECTING NUTRITIONAL STATUS OF FIVE YEARS OLD CHILDREN IN ISLAMABAD, PAKISTAN

FAYYAZ AHMED SHAIKH

A THESIS SUBMITTED IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE DEGREE OF MASTER OF PRIMARY HEALTH CARE MANAGEMENT FACULTY OF GRADUATE STUDIES MAHIDOL UNIVERSITY 2007

Thesis
entitled

FACTORS AFFECTING NUTRITIONAL STATUS OF CHILDREN 5 YEARS OLD IN ISLAMABAD, PAKISTAN

.....
Mr. Fayyaz Ahmed Shaikh
Candidate

.....
Lect. Wirat Kamsrichan
Ph.D.
Major-Advisor

.....
Assoc. Prof. Sairudee Vorakitphokatorn
Ph.D.
Co-Advisor

.....
Prof. M.R. Jisnuson Svasti
Ph.D.
Dean
Faculty of Graduate Studies

.....
Assoc. Prof. Sirikul Isaranurug
M.D., Dip. Thai Board of Pediatrics
Chair
Master of Primary Health Care Management
ASEAN Institute for Health Development

Thesis
entitled

FACTORS AFFECTING NUTRITIONAL STATUS OF CHILDREN 5 YEARS OLD IN ISLAMABAD, PAKISTAN

was submitted to the Faculty of Graduate Studies, Mahidol University
for the degree of Master of Primary Health Care Management

on
March 28, 2007

.....
Mr. Fayyaz Ahmed Shaikh
Candidate

.....
Prof. Teera Ramasoota
M.D., Dip. Thai Board of Prev. Med.
Chair

.....
Assoc. Prof. Sairudee Vorakitphokatorn
Ph.D.
Member

.....
Lect. Wirat Kamsrichan
Ph.D.
Member

.....
Prof. M.R. Jisnuson Svasti
Ph.D.
Dean
Faculty of Graduate Studies
Mahidol University

.....
Assoc. Prof. Sirikul Isaranurug
M.D., Dip. Thai Board of Pediatrics
Director
ASEAN Institute for Health Development
Mahidol University

ACKNOWLEDGMENTS

First of all I am most grateful to the Government of the Islamic Republic of Pakistan, Japan International Co-operation Agency (JICA) and Thailand International Co-operation Agency (TICA) for giving me the opportunity to study for the degree of Master of Primary Health Care Management (M.P.H.M.).

I express my deep sincere of gratitude to my major advisor, Dr. Wirat Kamsrichan for his valuable guidance, advice and inspiration from the beginning till the completion of my thesis. I would like to express my deep sincere thanks to my co-advisor Assoc. prof. Sairudee Vorakitphokatorn for her kind advice, guidance and support of this thesis.

I would also grateful to all staff of MPHM office and AIHD office for their help during my study. I would also grateful thanks for all my research interviewers and their children. and their diligence in conducting data collection. I want to give my thanks for all the teachers and my classmates friends.

I am grateful to the District Health Officer of Islamabad and their staffs especially health personnel (Leady health Visitors) for their diligence in conducting data collection, helping and supporting me to carry out this study.

I am also grateful to all respondents (mothers), their children's and their willingness to be interviewed and helping me in completing data collection and questionnaire pretest in this study.

Finally I want to give my thanks to my parents and my friends, for their sustained encourage and support from Indonesia throughout this course.

Fayyaz Ahmed Shaikh

FACTORS AFFECTING NUTRITIONAL STATUS OF FIVE YEAR OLD CHILDREN IN ISLAMABAD DISTRICT, PAKISTAN

FAYYAZ AHMED SHAIKH 4937997 ADPM/M

M.P.H.M. (PRIMARY HEALTH CARE MANAGEMENT)

THESIS ADVISORS: WIRAT KAMSRICHAN Ph.D., SAIRUDEE VORAKITPHANKATORN. Ph.D.

ABSTRACT

This cross-sectional study aimed to analyze the factors affecting the nutritional status of five year old children in Islamabad District, Pakistan from 11th January to 30th January 2007. Two hundred mothers who were taking care of five year old children were interviewed and these children were measured for weight and height with the aims of finding maternal characteristics, children characteristics, maternal knowledge and practical factors affecting nutritional status of children. Epi info version 6 was used to analyze the data in terms of descriptive statistics.

The result revealed that there was a high prevalence of malnutrition in the children (37%) in this area. The result indicated that low education of mothers was significantly related to a child's poor nutritional status (p – 0.024). Other contributing factors were the childhood illness causing itching around the anus (saw pin worm) (p = 0.023), low protein consumption (Beef) (p = 0.031) and low daal (p = 0.028) in regular meals. The result also showed that 50% of children of mothers who were working at other occupations were malnourished and parents where there were more than six children in the family, 37% of were malnourished. Mothers who were living alone had more children with malnutrition (66.6%) and children who were incompletely immunized had more chance got of malnutrition (40%). Also more girls were malnourished than boys.

Based on these results, it is suggested that intervention strategies must be planned to stop this catastrophe immediately. The education system must be improved and improvements must be made to primary health care in the areas of groups at risk of malnutrition caused by illness, childcare, immunization and nutrition. Furthermore, problem solving should focus on discrimination between boys and girls, maternal education, occupation, marital status and provision of nutritious food.

KEY WORDS: FACTORS AFFECTING/ NUTRITIONAL STATUS/ CHILDREN 5 YEARS OLD

90 P.

CONTENTS

Page

CONTENTS (Cont.)

Page

LIST OF TABLES

TABLE Page

LIST OF TABLES (Cont.)

TABLE Page

LIST OF FIGURES

FIGURE Page

CHAPTER 1
INTRODUCTION

1.1 Rationale and justification

After the ALMA ATA declaration 1978, the concept of health care and medical care has markedly changed, The concept of health care at present emphasizes for not only curative care among ill patients but also provides prevention, promotion and rehabilitation. The World Health Organization has been promoting this new concept about taking care of health (1).

Health is a state of complete physical, mental and social well-being and not merely the absence of disease. Health is fundamental human right and constitutes a worldwide goal of the utmost importance (2).

Health is related to nutrition status. This shows most clearly and especially in children, they are 5 years old. Most brain development happens before a child reaches three years old. In the past almost people were not understandable that all cognitive, psychological and functioning of brain will enlarge rapid growth and change during the first three years of life. In the first three-year period of life, children develop their abilities to think and speak, learn and reason and lay the foundation for their values and social behaviors as adults. With brain connections proliferating during the first three years of life, children are detecting new things helpful every waking moment. At birth a child has about 100 billion brain cells. Most of them cannot connect to each other. These connections are wonders of the human body, depending partly on genes and on the events of early life. Many kinds of experiences affect how young brains develop, but nothing is more important than early care and nutrition (3).

Emphasizing the care of babies and toddlers means focusing both on women whose physical and emotional condition influences their pregnancies and their babies'

development (3). A study in Bangladesh showed that when a woman dies in childbirth, her surviving baby is 3 to 10 times more likely to die within 2 years than a child who is living with parents (4). Thus, mother is the most important person for child development both physical and mental development.

At present the importance of children's nutritional status is not well recognized, therefore, malnutrition in children has remained a big problem worldwide among developing and developed countries.

Table 1 Malnutrition in 5 years old children in developing countries, 1999

Regions	**Malnutrition of 5 years old (%)**
South Asia	51
Latin America and Caribbean	10
Middle East and North Africa	18
East Asia and Pacific	22
Sub-Saharan Africa	32

Source: The State of the World Children, 2000.

From table 1 indicate that currently, in developing countries, the rate of under weight found among children 5 years old is still high in some regions. In South Asia, malnutrition 0f 5 years old is the highest in the world, 51%, compared to Latin American and Caribbean 10%, the Middle East and North Africa 18%, East Asia and Pacific 22% and Sub-Saharan Africa 32% (5).

Prevention of stunting in girl children during the first two years can help to break the vicious cycle of malnutrition. The nutrient stored built up in adolescence will help the nutritional well being of women during and between pregnancies. The mother's nutritional status before and during pregnancy influenced growth and development of the foetus and its birth weight and it affects her chances of surviving the delievery (7). More over the mother's nutritional well being is important for practicing child rearing and care, performing household and economic tasks and for her eventual recovery (7).

Improved feeding practices to prevent or treat malnutrition could save 800,000 lives per year (6).

The effects of malnutrition on human performance, health and survival have been the subject of extensive research for several decades and studies show that malnutrition affects physical growth, morbidity, mortality, cognitive development, and physical work capacity. Malnutrition is an underlying factor in many diseases in both children and adults, and it contributes greatly to the disability-adjusted life years worldwide. Malnutrition is particularly prevalent in developing countries, where it affects one out of every three preschool-age children.

A well-nourished child is one with access to adequate food supply, care and health. Such a child will have weight and height measurements that compare very well with the standard normal distribution of heights (H) and weights (W) of healthy children of the same age. Thus, the best way to evaluate the nutritional status and overall health of a child is to compare the child's growth indices with the set cut-off points in the standard normal distribution of well nourished children that are associated with adequate growth. Consequently, the assessment of children's growth is a suitable indicator for investigating the well-being of children, and as well as for examining households' access to food, health and care (7).

Nutrition is a fundamental pillar of human life at least at the start of life. From the earliest stages of fetal development, birth, infancy, childhood, adolescence, and adulthood, proper food and good nutrition are essential for survival, physical growth, mental development, performance, productivity, health, and general well being (6). Inspite of this knowledge, malnutrition is widespread problem with over 200 million children in developing countries with children under the age of five years are malnourished. It weakens their immune system and worsens frequent illness is thus leading to devastating consequences. It is implicated in more than half of all child deaths (7).

The health and nutrition of mothers and children is closely linked and highly dependent on care practices. Under nutrition in women have severe consequences' including low productivity, poor child caring practices, poor physical growth and inadequate mental development in their children. More over there existed higher risk of mortality in infants, greater risk of obstetrical complications and more serious and prolonged illness in both women and their children (7). Malnutrition often begins at conception and most of its damage is already done by the second year of the child's life. Children born to unhealthy and malnourished mothers are more likely to die as infant who but if survives; they may already have permanent developmental damage by the second year of their life (7).

For most children, lack of access to food is not the only cause of malnutrition but also due to poor feeding practices and opportunistic infection, or a combination of the two. Like frequent and persistent infections such as diarrhoea, pneumonia, measles and malaria undermine the nutritional status of children. Poor feeding practices, such as inadequate breastfeeding, offering the wrong, giving insufficient quantities and not ensuring that the child gets enough food, contribute to childhood malnutrition.

Despite adequate food supply, Malnutrition is widespread in Pakistan and remains a serious obstacle to efforts to improve health and reduce infant and tinder five mortality. The nutritional status of the population has not improved over the past ten years (8). Only 43% of children fewer than five years of age were found to be of normal nutritional status, while 42% were stunted (low height for age). 11% were wasted (low weight for height) and 4% were both stunted and wasted. Unusually high rate of wasting occurs among Pakistani infants under one year of age. One child in five is wasted even before six months of age, and the prevalence remains high in older children (9).

One of the most prominent variables that reflect household nutrition and health is the nutritional status of children, in particular those 5 years old. A very recent World Bank nutrition reports reiterates that malnutrition remains the world's most serious health problem. Poor nutrition is implicated in more than half of all child deaths

worldwide, a proportion unmatched by any infectious disease since the Black Death. Over the years, nutritional and health outcomes for Pakistani children have been very poor. By the NCHS yardstick (National Center of Health Statistics), 54% children were underweight in terms of weight-for-age in Pakistan in 1975. In 1987, 52% of children were underweight, 42% were stunted and 11% had below satisfactory weight-for-height. The improvement in these figures has been slow; by 1990, 41% of preschool children were still classified as underweight and over the period 1995-2003 38% of children continued to be moderately and severely malnourished, representing a decline of only around 25% over more than quarter of a century, while 12% children were regarded as severely malnourished (10).

The effects of malnutrition in children can be crippling. Malnutrition inhibits growth, increases risk of morbidity, affects cognitive development, and reduces subsequent school performance and labor activity. Indicators suggest that malnutrition is still a problem in the country. Stunting, underweight and wasting are a cause of concern and concerted efforts are needed to combat this problem.

In Pakistan, traditional family provides for an inherent safety set up for children. Women and children enjoy emotional, social and economic support and security not found in many other systems. Joint and extended family systems are prevalent.

In line with Pakistan's overall poor performance in nutrition and health, its figures on micronutrients consumption are far from satisfactory. The levels of deficiency in consumption in key micronutrients such as calories, proteins, and iron is quite high for children. According to a relative consumption deprivation threshold of 70% of the recommended daily allowance (RDA) for each of these three nutrients, the average proportions of children who were found to consume below this nutritional poverty line were 35% of children for calories, 15% for proteins, and 25% for iron, figures which reflect substantial deprivation. Moreover, the prevalence of insufficient iodine consumption, which causes problems such as mental retardation, brain damage, and thyroid malfunction and deformed and depleted growth is also a major issue in Pakistan that affects children (and adults) estimate that around 20% of school going

children in Pakistan are affected by goiter, and as many as 40 million people in Pakistan consume insufficient iodine. This dire situation is borne out by the fact that only 17% of the population consumed iodized salt in the period 1997 to 2003 (11).

In Thailand, the proportion of underweight children declined rapidly during the 1980s from about 35% in 1982, to lower than 20% in 1985 and to about 15% in 1990 (12). But a study conducted in Yala province of Thailand by Hashimah in 2001 showed that the prevalence of malnutrition among children under the age of five years was 30.1% by weight for age (13). Moreover a study conducted in the remote areas of Kanchanburi province in 1998 by Maung found the prevalence of malnutrition for age (First and second degree combined) to be 17.8% by weight for height (14).

However, among these studies and like other studies there has been more focus on maternal knowledge, attitude, beliefs and psychological practice with less emphasis on maternal and childcare practices. These practices have a direct effect and impact on child nutritional status and they include maternal diet during pregnancy and lactation, micronutrient supplementation, work load, food taboos and aversions, growth monitoring, cultural eating habits and child feeding practices (12). Given that these factors have a direct on the nutritional well being of children, any intervention and programmes at this level can significantly contribute to the improvement of maternal and child health. However many programmes are initiated without consideration of the actual needs on the ground and more often than not, this has been the major cause of the failure of nutrition programmes and hence the exacerbation of malnutrition.

1.2 Research question

What are the factors affecting nutritional status of Children 5 years old?

1.3 Research objectives

1.3.1 General objective

The objective of this study is to analyze the Nutritional status of 5 years old children and its affected factors.

1.3.2 Specific Objectives

1.3.2.1 To determine the nutritional status of children 5 years old.

1.3.2.2 To determine the association between maternal knowledge and nutritional status of children 5 years old.

1.3.2.3 To determine the relationship between socio-demographic characteristics of mother and nutritional status of children 5 years old.

1.4 Conceptual framework

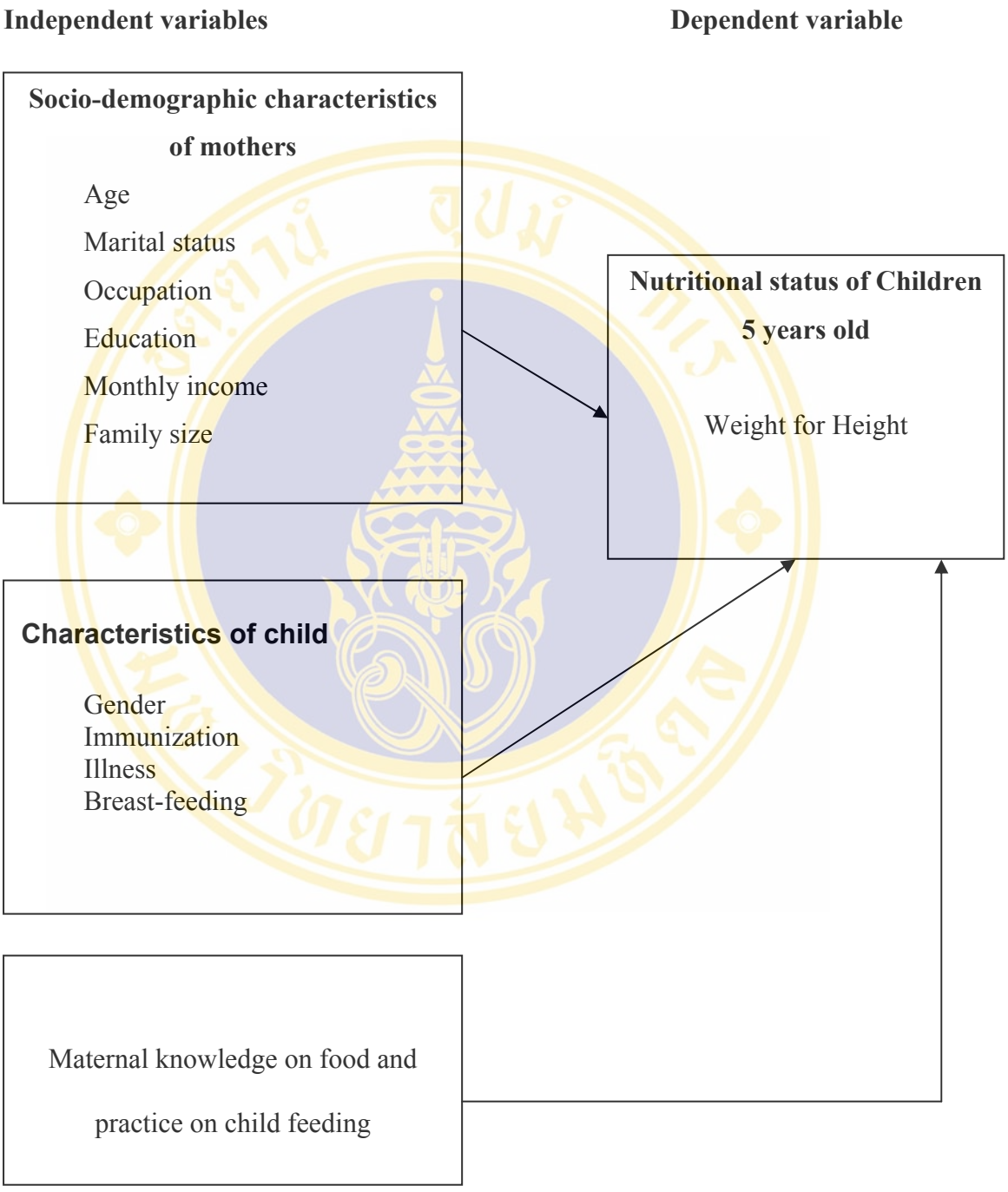

Figure 1 Conceptual framework

1.5 Research Hypothesis

1.5.1 There is relationship between age of mothers and Nutritional status of children 5 years old.

1.5.2 There is relationship between education of mothers and Nutritional status of children 5 years old.

1.5.3 There is relationship between occupation of mothers and Nutritional status of children 5 years old.

1.5.4 There is relationship between monthly family income and Nutritional status of children 5 years old.

1.5.5 There is relationship between number of family size and Nutritional status of children 5 years old

1.6 Operational Definition of studied variables

Outcome variable (S)

Nutritional status of child: Ordinal

Weight for Height: Ordinal

1.6.1 Nutritional Status of Children 5 years old

Nutritional status in children 5 years old in this study reflects normal nutrition and malnutrition. Malnutrition includes protein calorie Malnutrition only as measured by Anthropometrics. Nutritional status of children is defined by using weight for age, height for age and weight for height. But in this study, acute malnutrition is referred to, so weight for height (W/H) is concerned because weight for height is the best indicator as: (15)

- It reflects the present situation.
- It is sensitive to rapid changes (problem and recovery).
- It is good predictor of immediate mortality risk.
- It can be used to monitor the evaluation of the nutritional status of the population.

Over nutritional (overweight) might be needed for other indicator, especially weight for age.

Weight for height is a comparison between observed weight of a child expressed as a percentage of the expected weight of the child and that height based on the formula. (1)

Expected weight = 9kg + 0.3 (H-75)

It is calculated from two formulas:

Weight =9kg + 1.5 (n-1)
Height = 75cm + 5cm (n-1)

When n is age of child in years (n is equal or higher than 2).

1.6.2..Weight for Height

The classification of normal children and the degree of malnutrition is based on Waterlow classification, 1972 by comparison of expected weight and observed weight of that height of child. These classifications just mentioned only among under weight, not among obesity children. So in this study, obesity and normal group are put in well-nourished group. All of the children with odema are regard as being severely acutely malnourished, irrespective of their weight for height.

This index expresses the weight of child in relation to his or her height, to determine whether a child is thin or not. It is the index used to measure acute malnutrition called “wasting” meaning current or acute malnutrition at the given time of the study. Child nutrition status on basis of weight for height is then determined according to the waterlow classification as shown in table 2.

Table 2 Weight for height (Kg / Cm).

% Expected weight for height.	Classification of nutritional status.
> 90 %	Normal
80-89.9 %	First degree malnutrition (Mild malnutrition)
70-79.9 %	Second degree malnutrition (Moderate malnutrition)
< 70 %	Third degree malnutrition (Severe malnutrition)

Source: Waterlow, 1972

Independent Variables

Socio-demographic characteristics of mothers

Variables	Measurements of scales
Age	Numerical
Marital status	Nominal
Education	Ordinal
Occupation	Nominal
Monthly Income	Numeric

Characteristics of Child

Variables	Measurements of scales
Gender	Nominal
Immunization	Ordinal
Illness	Nominal
Breast feeding	Nominal

Knowledge on food and practice of child feeding……..Ordinal

1.6.3 Socio demographic Characteristics of Mother

Age: actual age of mother is divided into four groups (1: < 20 years, 2: 20-29 years; 3: 30-39 years; 4: 40-49 years).

Marital status: two groups of marital status are classified as 1. Married (living together) 2. Separated / divorced / widowed.

Education: is the level of education of the mother. It was divided into five groups:

1=Primary school or below, 2= Secondary school, 3=F.A / Diploma, 4= Higher such as Bachelor / Master, 5= Un-educated.

Occupation: Main occupations in this study related to the job of the mothers. It is dividing into 4 groups:

1=Housewife, 2=Government servant, 3= Farmer, 4=Others.

Monthly income: is the total monthly income of family .It is dividing into four groups:

1=< 5000 Rupees, 2= 5000-9999 Rupees; 3= 10000-19999 Rupees;
4= > 20000 Rupees.

Family size: means the number of people in the family live together in same house, but in some families' grand parents, un-married brother and un-married sisters they also live together in same house. In this study, the family members who are depending on family resources were concerned. Joint and extended family systems are prevalent. This form of families belongs to Pakistan communities.

1.6.4 Characteristics of Child:

Gender: means in some countries, there are not equal between male and female children. Some studies are reported that the proportion of female children of being malnourished much higher than the male.

Immunization: This study applied the schedule of children's vaccination in Pakistan.

Table 3 The schedule of Pakistanis children's vaccination.

Age (Months)	Types of vaccines
At birth	BCG
2 Months	DPT + Polio: first time
3 Months	DPT + Polio: second time
4 Months	DPT + Polio: third time
9 – 11 Months	Measles

Source: Guidelines taking care of children at community, 1994.

Illness: is history of children's diseases last month. The diseases were focused on symptoms of diarrhea (loose or watery stools), runny nose, cough, fever, pinworm and dental problem or other symptoms.

Symptoms of pinworm were itching around anus and mother can see pinworm, (1 cm long, white color, very thin and thread like).

Symptoms of dental problem like: tooth ache and dental decay.

Other symptoms as stomach problem are included in this study.

Breast-feeding: refers to the giving of breast milk to children while exclusive breast feeding is the giving of infants only breast milk, no other liquids or solids except vitamins or mineral drops and medicines. WHO and UNICEF recommended

that infants should be exclusively breast feed for at least the first six months of life, also it recommended that a child is breast feed at least 24 months before stopping.

Breastfeeding is a unique process that provides ideal nutrition for infants and contributes to their healthy growth and development, reduces incidence and severity of infectious diseases, thereby lowering infant morbidity and mortality. It contributes to women's health by reducing the risk of breast and ovarian cancer, and by increasing the spacing between pregnancies. It provides social and economic benefits to the family and the nation.

1.6.5 Maternal knowledge on food and practice of child feeding

1.6.5.1 Maternal knowledge on child food

Maternal knowledge means the mother's wisdom about the nutrients needed for her child development. Maternal knowledge in this study is measured by using a constructed questionnaire asking toward food intake, cause of malnutrition, symptoms of diseases and prevention of malnutrition.

1.6.5.2 Maternal practice on child feeding

Maternal practice means the mother's habit how to provide food and nutrients to her child. This referred to mother's practice about profit of nutrient food, hand washing before preparing meal, cooking meal and the danger of malnutrition and prevention. The mother also hand food practice such as with the lower cost she can manage daily in order to prepare enough nutrient foods and number of meals for her child.

1.7 Scope and Limitation of the study

Scope: The study conducted at communities**.**

This study is a cross sectional observational study, so it is only to identified the factors affected to nutritional status and no causal inference. The study limits in 5 years old children. The target population is not representation to the total children in the whole province and the study just concerned to the present situation. The study results can be applied only on the studied area Islamabad district, Pakistan.

1.8 Expected outcome e.g. implication from the result of your study

The result after this study will be high maternal and child morbidity and mortality because nutrition is very important to health and this study will play a vital role in children's survival, grow well, work hard, and keep healthy and there if there will any increasing evidence that good nutrition will helps the body resist infection. This program will also succeed satisfactory for three decades.

CHAPTER 2
LITERATURE REVIEW

2.1 Nutritional Status of children

Definition: Nutritional status is a status that associates with health and the absence of nutrition related disease (2). Nutritional status indicators are usually Weight for Age (W/A), Height for Age (H/A), and Weight for Height (W/H). They can reflect acute status and chronic status and they were direct measure of malnutrition affecting children. Most standardized indicators of malnutrition in children were based on measurements of the body. Height for Age, Weight for Age and Weight for Height (15), there is three degree of protein caloric malnutrition.

Mild malnutrition: Weight loss is about 20-30% compared with standard weight and the child has not had clinical signs.

Moderate malnutrition: Weight loss is about 30-40% compared with standard weight and some clinical signs are showed such as disorder of ingestion and disorder of intestinal movement.

Severe malnutrition: Weight loss is more than 40% compared with standard weight. There are three clinical forms of severe protein caloric malnutrition measures, kwashiorkor and marasmic kwashiorkor. A marasmic child is extremely emaciated and a child with kwashiorkor has bilateral edema. The clinical forms are helpful for diagnosis (16).

Nutritional and child growth development: Nutrition is very important to health. It plays a vital role in children's survival, grow well, work hard and keep healthy, and there is increasing evidence that good nutrition helps the body resist infection, that when infection occurs, nutrition relieves its severity and seriousness,

and that it speeds recovery (17). Children with good nutrition were the key to have healthy body, condition to the development of families and societies, overcoming many of the greatest health changes facing to mankind, as well as burden of chronic and degenerative diseases, maternal and children mortality (17).

During the first year of life, the infant wants to get enough food in order to increase the size. Birth weight is > 2,500 gms, Average weight gains in the first year about 7 kg. These foods conclude; human milk, formula milk or both.

Five months of age, the infant wants level of caloric expenditure for physical activity, developmental readiness and physiological capacity.

By 8-9 months the babies have teeth and enhance capacity of solid foods consumption. So the solid foods provide significant source of energy and other nutrients to supplement the basic intake from human milk or formula.

Babies usually increase by 50% in the length by one year of age, double by 4 years of age, triple in length by 13 years of age (18).

Table 4 Weight and height of children from 5 years old.

Age in month	Weight (kg)	Height (cm)
At birth	2.9-3	48-50
Three month	4.2	57.5
Six month	6.0	63
Nine month	7.5	67.5
Twelve month	9.0	75.0
Twenty four month	10.5	80
Thirty six month	12	85
Forty- eight month	13.5	90
Sixty month	15	95

Source: Evaluation and follow up the physical development of children.

In general nutrients were indispensable for physical development. The report from Goulda Downer- an expert on child hood nutrition showed that foods could make our children smarter. The proper foods provide the energy for the mind to develop and scholastic achievement, a balanced diet with grains, eggs, fish, lean meats, vegetables and fruits should be provided (18).

In developing countries, at least 2 billion people mostly women and children are deficient in one or more micronutrients for example: iodine, iron and vitamin A. Iodine provided not enough is the greatest cause of preventable mental problem, because of their mothers were iodine deficient when pregnant. Iron deficiency causes 120,000 children a year to be born as cretins and is the world's leading cause of preventable mental retardation. Iron deficiency anemia is responsible for 20% all maternal deaths.

World wide over 250 million children under 5 years of old age suffer from vitamin A deficiency. In developing countries vitamin A deficiency permanently blinds about 250,000 children less than one year (18).

2.2 Global malnutrition

Malnutrition in children is synonymous with growth failure because of not eating nutrient foods or eating not enough. According to a recent study in Philippines, it indicates that the early life malnutrition is linked to deficits in children's intellectual development that persist in spite of schooling and impair their learning ability according to a recent study in Philippines (17).

About 174 million children under five years old in the developing countries are malnutrition. The ecology of malnutrition is complex. Many households in poor neighborhoods run short of food between harvests or amid drought and war. Yet most malnourished children live in homes with adequate supplies (19). Over 2,000 million people experience micronutrient deficiencies and hundred of million people suffer from diseases caused by unsafe food or by unbalanced food intake.

In 1995 malnutrition was responsible for 6.6 million of the 11.2 million deaths in fewer than five years old children. This represents 54% of young children mortality in the developing countries. During the same year the growth of more than 200 million children was stunted by malnutrition. These children were likely to have poor cognitive development and neurological impairment in adulthood. They were at increased risk of cardiovascular diseases, high blood pressure, obstructed lung disease, diabetes mellitus, high cholesterol concentrations and renal damage (18).

Malnutrition is widely prevalent in many regions of world. It is one of the big problems for almost developing countries Malnutrition causes many problems for people especially for children under 5 years old. It reduced physical activities; lowered resistance to infection reduced the body's ability to resist many kinds of illness and even kills the people and cognitive abilities. In malnourished children resulting from a diet imbalance in caloric and protein seem to be most serious illness and they are responsible for large promotion of deaths among children in developing countries.

WHO estimates that of all the 10.4 million deaths of children under the age of five years that occurred in 1995, approximately half were associated with malnutrition. Worst of all about 80% of the malnutrition related deaths were due to mild or moderate forms of malnutrition rather than severe malnutrition.

In 1999, underweight in moderate and severe malnutrition was highest in the South Asia (51%). Wasting and stunting were also highest in the South Asia (table 5).

Table 5 Worldwide malnutrition among under 5 years old children.

Regions	underweight% Moderate And severe	Wasting% Moderate and severe	Stunting% Moderate and severe
Sub- Saharan Africa	32	9	41
South Asia	51	18	52
East Asia and Pacific	22	18	36
Latin America & Caribbean	10	3	18
Developing countries	31	11	39
Least developed countries	40	12	47

Source: The State of the World's children. UNICEF, 2000.

Mortality rates for children less than five years old also declined in all developing countries from 1960 to 1998 (table 6). For example, sub saharam Africa in 1960 was 261 reduced to 173, developing countries were 216 reduced to 95, etc.

Table 6 worldwide mortality rates per 1,000 live births of children under five years old.

Region	1960	1998
Sub Saharan Africa	261	173
South Asia	239	114
East Asia and Pacific	201	50
Industrialized countries	37	6
Developing countries	216	95
Least developed countries	282	167

Source: The State of the World's children. UNICEF, 2000.

2.3 Malnutrition in Pakistan

Malnutrition is in many respects the common denominator of disease and deprivation processes that reduced child survival. Under nutrition affects nearly 40% of all children in developing countries and contributes directly or indirectly to an estimated 60% of all child deaths (20). Lack of food is only part of the problem in developing countries like Pakistan. Other major factors leading to malnutrition are: very high incidence of low birth weight. Lack of exclusive and early cessation of breast feeding use of complementary intellectual of feedings like plain boiled water particularly during hot summer months, diluted or undiluted fresh animal milk or commercial formula delayed and inadequate introduction of weaning foods particularly around four to six months of age when breastfeeding alone will not meet the nutritional requirements of the growing infant. Disease itself is principal agent of child malnutrition. The most cause of malnutrition in Pakistan is poverty and ignorance. Poverty is a world of darkness, where every day struggles to survive. People endure lives of hunger, malnutrition and illness (24). A heavy burden of infection places a formidable strain on what may already be the precarious nutritional balance. As a result the child is left with a nutritional debt that causes dangerous lags in growth and further vulnerability to the cycle of disease and malnutrition. Human behavior is also another important major factor in malnutrition. Feeding practices, for

example, especially during illness, can make the difference between normal growth and malnutrition, or even between life and death.

Pakistan is a developing country, GNP per capital was about 280 US$ in 1996 compare with other countries in the South Asia.

GNP per capita and HDI, which include GNP but also such indicators as life expectancy and literacy are, flow concepts. In practice, when the negative changes in wealth brought on by environmental degradation are included in measures of the changing quality of life over time, these measures also become negative. This means that it is possible to see money in people's pockets and higher life expectancy and literacy rates and, at the same time, to be destroying capital and hence severely damaging the prospects for future improvements.

Table 7 This table shows measure of wealth per capita compared with GNP per capita and HDI for a number of developing countries.

	Average Annual Percentage Yearly Change in		
Country	**Wealth per capita (1970-93)**	**GNP per capita (1965-96)**	**Human Development Index (1987-97)**
Bangladesh	-2.6	1.0	3.3
India	-0.1	2.3	2.2
Nepal	-3.0	1.0	5.3
Pakistan	-1.9	2.7	1.8
Sub-Saharan Africa	-3.4	-0.2	0.9
China	0.8	6.7	-0.2

Source: United Nations' Human Development Index (HDI)

For example, Pakistan's GNP per capita grew at a healthy 2.7% per year, implying a more than doubling of living standards in the period 1965-96. However, the per capita wealth measure shows that living standards actually almost halved over

this period. For sub-Saharan Africa the picture is even worse with living standards halving after only 20 years (34).

Now the government is trying to reduce malnutrition in children five years old as much as possible through many steps, visiting the families, giving health education, expanding more health care services. The government hopes to reduce the ratio of the malnutrition about 15 % in 2007. But some of the rich families also have malnourished children, because the children's mother don't know how good the food is, how to cook the best food, so their children didn't received the right food for them to develop both physical and mental well being.

2.4 Malnutrition in Thailand

At present the nutritional status of Thai children under five years old has greatly improved compared to the situation. However a study in 1997 on Thai children from the highlands who are in the under privileged group revealed malnutrition rates of 30.3% for first degree and another 10.6% for second/third degree. Generally the rate of protein energy malnutrition has been reducing steadily over the years, dropping from about 20% in 1998 to 7.9% by 1998.

A study conducted in 1995 by Imam Triyanto among children under five years old at Bangkok Metropolitan found the prevalence of the first degree of malnutrition to be 14% based on Gomez criteria using Thai standard, but moderate and severe form of malnutrition were not found (21).

In another study conducted in remote villages of Thong PHA Poom district by Tin Maung near the Thai-Myanmar border in Kanchanaburi in 1998 among under five years old children, the prevalence of malnutrition (first degree and second degree combined) was 36.9% by weight for age, 42.5% by height for age and 17.8% by weight for height. There was no severe form of malnutrition. By using the mid upper arm circumference, the proportion of malnutrition was 39.1% (14).

In 2001 a study carried out by Hashima in Yala province of Thailand among less than five years old children found the prevalence of malnutrition was 30.1% by weight for age, 33.3% by height for age (stunting) and 20.5% by weight for height (wasting). The first-degree malnutrition was found to be 16.7%, second degree 13.5% and there was no third degree malnutrition of weight for age basis (13).

From all of these studies, third degree malnutrition was only found in the congested area of Bangkok. While this is an important achievement it is worthy remembering that off all deaths attributable to malnutrition, 80% are associated with mild form of malnutrition and not moderate or severe categories (12). Hence more programs are needed that target mild malnutrition that poses a great danger but invisible to many.

2.5 Measuring nutritional status: Anthropometrics indicator:

Assessment nutritional status by clinical signs of malnutrition, biochemical indicators and anthropometrical measurements can be observed to the following:

First, children adapted to imbalance diets through reduced physical activity and slowed rates of growth.

At moderate degree of malnutrition, activity and growth rates are affected to a greater degree and signs of wasting and some biochemical abnormalities to show.

At severe degrees all linear growth cases, physical activity is severely curtailed body wasting is marked and clinical signs: (e.g., edema, hair and skin changes) are noticeable.

Anthropometrics thus has an important advantage over other nutritional indicators. Where as biochemical and clinical indicators are useful only at the extremes of malnutrition, body measurements are sensitive over the full spectrum, and

are non invasive, inexpensive and easily to obtain. The main disadvantage of anthropometrics is its lack of specificity.

Children's bodies respond to malnutrition in two ways, which can be measured by anthropometrical method: a declaration or cessation of growth (height for age) and body wasting (weight for height, weight for age) (22).

Low weight for height (wasting): is an indicator of an acute malnutrition that tells us if a child is too thin for a given height (wasting).

Low height for age (stunting): is an indicator of a chronic malnutrition. A child exposed to inadequate nutrition for a long time will have a reduced growth and therefore a low weight compared to other children of the same age (stunting).

Low weight for age (under weight): is a composed indicator of both long-term malnutrition (deficit in height /"stunting") and current malnutrition (deficit in weight /"wasting") (15). In acute situation weight for height is the best indicator because:

- It reflects the present nutritional situation and monitors the nutritional status of population.
- It is sensitive to rapid changes of nutritional status (problem and recovery).
- It is a good predictor of immediate mortality risk (15).

2.6 Characteristics of mother

2.6.1 Age and marital status

The age of mother has been differently affected to poor growth of children in a study done by Basri in 2001 (22). There is a relationship between age of mothers and relative risk of dying before the age of five years (19). If the mothers age are less than 18 years old, her child has 1.5% relative risk of dying before the first five years of the life, and the more age she got the less prevalence risk of dying her child had.

In 2001 the study done in Bangkok slum area by Basri showed that both fathers and mothers at the age of 20-39 have more responsibilities, thinking and planning for happy living lives (22). In Indian mothers age at birth from 40-49 years has the highest under five-mortality rate followed by age less than 20 years (Table 8).

Table 8 Childhood mortality rates by mothers at birth in India 1992-1993.

Mothers age at Birth (Years)	IMR (Per 1000) (Infant mortality rate)	CMR (Per 1000) (Child mortality rate)	U5MR (Per 1000) (under five mortality rate)
< 20	107	38	141
20-29	76	35	108
30-39	91	34	122
40-49	112	58	163

Source: Bulletin of the WHO, 2000.

2.6.2 Education

Girls and young mothers must have educational opportunities to better provide for their children (3). Maternal education affects care giving practices by the ability to process information, the ability to acquire skill and to mold behavior. A study done by Basri in 2001 stated that education women could seek good knowledge from many sources of information so she can provide her child with good food and keep the environment clean and thereby benefit her children. So her child keeps healthy (22).

The table 9 proved that the higher level of education mother is, the lower malnutrition her child gets in Thailand, Pakistan and India.

Table 9 Percentage of malnutrition in some Asian countries by mother's education.

Mothers education	**India Malnutrition 1992-1993**	**Pakistan Malnutrition 1990-1991**	**Thai Malnutrition 1987**
Education	59.2	44.9	35.2
Literate: Level 1	50.4	37.1	27.6
Level 2	43.5	25.8	13.4
Level 3	30.3	13.0	5.3

Source: ACC/ SCN. DHS reports. India 1992-1993, Pakistan 1990-1991 and Thailand 1987, March 1997

Table 10 also showed the higher female education had, the lower under five mortality rates was. So there is relationship between level of education and malnutrition and nutritional status of children under five years old.

Table 10 Comparison of female education with fewer than five mortality rates.

Country	Female education (1995)	Under five mortality rates (1997)
Thailand	92	38
Vietnam	91	43
Nepal	14	104
China	73	47

Source: Health Education in South East Asia, 2000 (23).

2.6.3 Occupation and Monthly Income

Mother's occupation and income affected living condition of their children, and the youngest child is the one who is the most affected. Malnutrition is largely a reflection of poverty; people do not have income for food. With increased income, there is tendency to increase food expenditures.

2.6.4 Family Size

Large families have generally been associated with poor nutritional status (22). Their income is limited; if family have many children so year by year there are more members to share on the limited income that the poor are permitted to use (21).

2.7 Characteristics of children

2.7.1 Gender

Some countries there are not equal between male and female children. The female of poverty often suffer the isolation of ignorance (24). The empirical evidence of bias against female children in nutritional intake has not always been significant (25), but Morduch and sterm reported that there was gender bias in childhood height for age in Bangladesh (26).

Some studies were reported that the proportion of female children of being malnourished was much higher than male and the like hood of a girl being well nourished decreased as age increased (27).

2.7.2 Immunization and Illness of Children

In most countries, there are two major opportunities for a rapid and inexpensive increase in coverage during the next few years, and both depend on making better use of already existing facilities. There are expanded programs on immunization whose objective is to reduce deaths and illness due to immunisable diseases. If unvaccinated children who are brought to clinics for other reasons were either vaccinated on the spot or referred for vaccination, and if their mothers were checked for tetanus immunization, then most countries would rapidly reach the 90% target. Similarly the

target would be reached if all children who are between first and second infections are often as high as 50%, Demand for immunization is there fore as important as supply, and the countries, which have made rapid progress, have used all possible communication channels to promote the immunization message (28).

Vaccination is very important for children under 5 years old to avoid these diseases, DPT:(Diphtheria, Pertussis, Tetanus), polio, BCG, measles. The mothers bring their children to well baby clinic means they concern their children's health, so they will have good practice on their children care. But to 5 years old children, the most important diseases are diarrhea, acute respiratory infection (ARV), pinworm and dental problem affecting nutritional status.

There fore preventing vaccine preventable diseases through in immunization is thought to be very important to children under six month but at the age of 1 to 4 years old how to prevent diseases mentioned above are the most important.

2.7.3 Breast-feeding

Compared to infants who are exclusive breast-feeding means giving the infants only breast milk, no other liquids or solids except vitamins or mineral drops and medicines. WHO and UNICEF recommended that infants should be exclusively breast feed for at least the first six months of life (7). Breast milk is a safe and hygienic source of energy, nutrients and fluids. It contains disease fighting substances and vitamin that support body's natural immune system. Children who are given other infant feeding products have also been found to be at a significantly higher risk of death due to acute respiratory infection than children who are exclusively breast-feed.

According to UNICEF/ WHO/ BASICS, offering a child under the age of six months complementary food is unnecessary and hazards, and bottle-feeding with infant formula is dangerous (29). Yet inspite of the dangers of early introduction of foods, report from South Asia region shows very low practice of exclusive breast-feeding. In East Asia region as a whole, the percentage of children who are exclusively breast feed, even up to three months alone is about 57% and this could

still be an over estimate. In the Philippines, the rate of exclusive breast-feeding is only 40% and in Lao PDR it is 28%.

In Pakistan, a longitudinal followed 910 infants in a poor urban population and found a high frequency of early introduction complementary foods with almost 50% of the mothers introducing a breads milk substitute from one month of age. 94% used buffalo milk as the substitute. Even among those who are completely breast feed, a bottle is use for the administration of extra water during the hot season. Honey and other supplement, which were thought to be highly contaminated by microorganisms, were given during the hot season (30).

2.8 Maternal knowledge on Food and maternal practice on feeding

2.8.1 Maternal knowledge on food

The study reported by Yako Tada in 2001 found that there is the relationship between mother's knowledge on nutrition and malnutrition (25). Infant feeding such as breast-feeding and food feeding are vital for the growth and development children (18).

- Breast-milk alone is the best possible food and drink in the first four to six months of life.
- Babies should be started to breast-feed as soon as possible after birth.
- Frequent sucking is needed to produce enough breast-milk for the babies need.
- Bottle-feeding can lead to illness and death.
- Breast-feeding should continue well in to the second year of a child's life (4).

Breast-feeding is also helpful for mothers. A number of studies have shown a strong link between the early initiation of breast-feeding and reduced risk of postpartum hemorrhage. Initiating breast-feeding immediately following birth, such as most women do, stimulates the contraction of the uterus and reduces blood loss. So breast-feeding is good for mother's health too (17). The UNICEF (1998) showed that breast-feeding for the first six months of child's life not only provide the best

nourishment and protection from infection but also enables mothers and their infants to develop close emotional bonds.

Although the benefits from breast-feeding are known, it is difficult to show that how long breast milk alone is adequate and when is the right time to give solid food.

Recent, the recommendation showed that at about six month of age is suitable for period of complementary food 1-2 times/day (31), and at 12 months of age, feeding food 4-5 times per day (15). At the age of 5 years old, supplement foods are the most important to avoid malnutrition both quality and quantity of food. The foods considered to make children grow well after stopping breast milk are, proteins (body building foods), carbohydrates (energy foods), lipids (energy storage foods), vitamins and minerals (protective foods). The children eat at least three times a day, and also snack between meals. Mixing a little vegetable oil with a child food also help. When over possible, the child should eat other less bulky, more nutrient foods both energy foods and proteins (32). To avoid malnutrition is also to avoid diseases affecting malnutrition such as: ARI, diarrhea, parasites (pinworm, hook worm), dental diseases, and hygiene problems.

Therefore, provide supplement foods and prevent diseases are standard for 5 years old children to grow steadily and keep healthy.

2.8.2 Maternal practice of child feeding

Malnutrition occurs not only in poor families but also in rich families where the members didn't pay attention to the nutrients in daily meal or didn't keep clean when she preparing food for her child.

The level of knowledge about hygiene and disease transmission is an importance of care (33). It involves food preparation, storage and whether both those prepare the food and those who eat it wash their hands properly before handling it.

The under hygienic handling of food as well as unhygienic conditions in and around homes, which cause most childhood diarrhea, infection of intestinal parasites

cause poor growth and malnutrition. In addition, many parents love their children and they can support what he wants even though give him money to get food or some things he or she likes. As a reason, the child can get infectious problem and can make his stomach full and can not eat wore but in fact his body is still starving, preparing and cooking foods properly are another way to provide nutrient foods and prevent malnutrition.

There fore to prevent malnutrition, both cleanliness and nutrient food are very important (32):

To mothers (or care taker), she should:

- Wash the hands before preparing food.
- Bath often every day (after working hard or sweating).
- Boil water.
- Cover food, wash fruits.
- Well-cooked food.
- Keep the house and around clean.

To children, they must

- Wash their hands before eating and after intestinal movements.
- Brush their teeth after eating sweets

CHAPTER 3
RESEARCH METHODOLOGY

3.1 Study design

This study was a descriptive cross-sectional study.

3.2 Study area

This study was carry out at communities in Islamabad District, Pakistan

3.3 Study Population

The study Population is Mothers and their Children.

3.4 Sample Size

The sample size is computed by the following formula.

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

Where: n = Sample size

z = 1.96 (Value associated with the 95% confidence interval)

d = 0.05 (Absolute precision desired at 5%)

p =Prevalence of malnutrition (under nutrition)

q =1 - p

3.5 Sampling technique

Sampling will purposive: The mothers lived in communities with their children 5 years old.

.

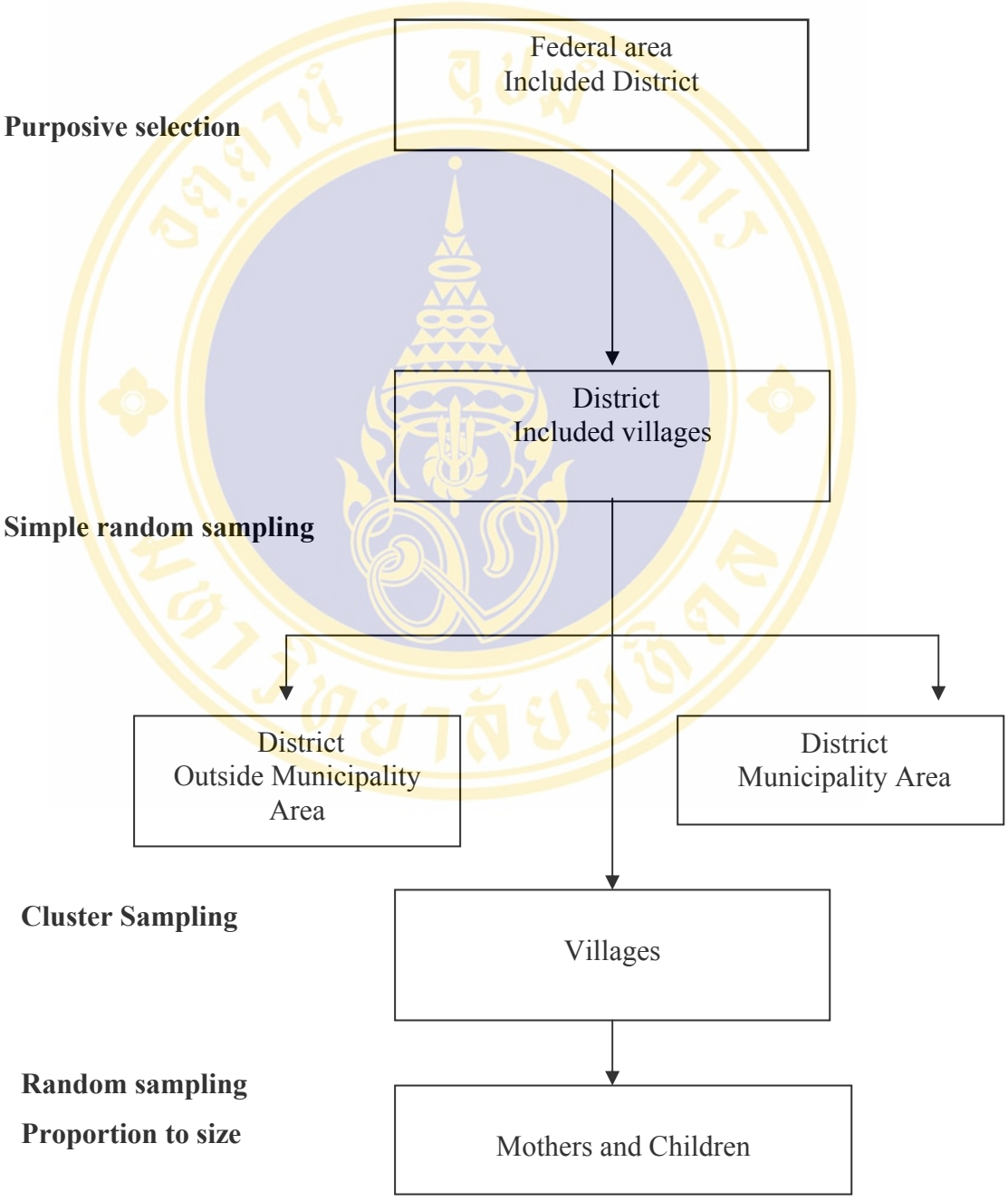

Figure 2 Sampling technique

3.6 Research instruments and data collection

3.6.1 Questionnaire

Height scale and weight scale used to measure children height and weight. Using the set of questionnaires and interviewed to mothers who take care of the children. There were three parts in the questionnaires compose of:

Part 1: Socio demographic characteristics of mother consist of age, marital status, education, occupation, monthly income, and family size.

Part 2: Characteristics of children consist of gender, immunization and illness.

Part 3: Maternal knowledge on food and practice on child feeding.

3.6.2 Data collection

- **Preparation interviewers team.**
- **Entry community.**
- **Official coordination etc.**

After completion of data collection, editing and coding were applied by following coding instruction; Epi 6 was used to make questionnaires and analyze the variables. To calculate the percentage, mean standard deviation of the variables in this study were used descriptive statistics. To test the association among variables by using the chi-square test at $\alpha = 0.05$

Weight expects was compute by the formula:

W expected (kg) = 9 kg + 0.3 kg (H – 75)

Study indicator was Weight for Height following formula:

W / H = (W observed * 100) / W expected

3.6.3 Data collection procedure

Data collection was started from January 2007 by using the questionnaire and interview will among mothers who have children 5 years old in communities by making appointment with them before coming to see them in their houses.

3.7 Data analysis procedure and statistics used

The questionnaires were labeled and using Epi 3.0 and cross table to analyze processed the data.

Data was cleaned and edited before entering in computer at the end of each day.

With data analysis, descriptive statistics (number, percentage, mean and standard deviation) were used to describe the distribution of variables such as; age, marital status, education level, occupation, gender, immunization, and illness, the inferential statistics composed of x^2 and Kruskal Wallis test will use in order to examine the relationship between with the socio-demographic, knowledge and practice the nutritional status of 5 years old children. The level of statistical significance will be $\alpha = 0.05$.

3.8 Socio demographic characteristics of mother

For descriptive purpose and cross tabulations,

Age of mothers was grouped in to 4 groups, under 20 years, 20 – 29, 30 - 39 years and 40 - 49 years.

Marital status was classified as living together and separated / divorced /widowed.

Occupation also divided in to 4 groups, housewife, government servant, farmer and others.

Education level consisted 5 groups such as Primary school or below, Secondary school, F.A / Diploma, higher / Graduate / Masters and un-educated.

Monthly income was total monthly income of family based on Pakistani rupees was grouped in to 4 groups, < 5000 rupees, 5000 – 9999 rupees, 10000 – 19999 rupees and > 20000 rupees.

Family size were the number of family members divided in to 2 – 5, 6 – 8, 9 – 12 and more than 13 living together.

3. 9 Maternal knowledge on food and maternal practice on feeding

3.9.1 Maternal knowledge on food

To knowledge on child food, above or equal 80 % of total score was stated as good, from 60 % to 80 % of total score was tested as fair and less then 60 % of total score was tested as poor. The mother who answered correctly was given 1 score, while who answered in correctly or didn't know was given 0 score. Total score was 17 for 17 questions. Above or equal 13 scores of knowledge on child food was good, from 7 to 12 scores was fair and below 7 scores was poor.

3.9.2 Maternal practice on child feeding

To maternal practice on child feeding, three levels based on the criteria as: if the maternal practice scores > 80 % of standard score (8 score) was high, from 60 – 80 % of standard score (5 – 7) was average and < 60 % of standard score (< 5 score) was low.

To positive question, if the mother said "yes", she got 1 score and if she said "no", she got 0 score. To negative questions, if the mother said "yes", she got 0 score and if the mother said "no", she got 1 score.

3.10 Socio demographic characteristics of children

Gender was labeled as male and female.

Immunization was as complete and in complete vaccination.

Illness during the last four weeks interested in yes and no group, food consumption, vitamin intake also yes and no group.

3.11 Classification of nutritional status of children

Weight for height was calculated into percentage by comparing weight observed with Pakistani standard weight expected. After that based on waterlow classification weight for height was divided into groups. Lastly normal group consisted of normal and overweight and under nourished consisted of mild, moderate and severe malnutrition was done.

Chi square test was used to find the relationship between maternal knowledge on food and maternal practice on feeding and nutritional status of children. Number, percentage, maximum, minimum, mean and standard deviation were computed to describe.

CHAPTER 4
RESULTS

This research was conducted in Islamabad district, Pakistan. The data were collected of 200 mothers who had children 5 years old in this study. The mothers were interviewed by questionnaire and children were measured for weight and height. The research started from 11th January to 30th January 2007. The results from the study were presented in 5 parts consisted of;

Part. 4.1 Nutritional status of children.

Part. 4.2 Characteristics of mothers consisted socio-demographic characteristics as age, marital status, occupation, education, monthly income and family size.

Part 4.3 Characteristics of children consisted socio-demographic characteristics gender, immunization, illness and nutrient consumptions.

Part 4.4 Maternal knowledge and practice.

Part 4.5 Relation ship between child nutritional status and independent variables.

These factors were not only described by number, percentage, maximum, minimum, mean and standard deviation but also tested the association between them and nutritional status of the children.

4.1 Nutritional status of children

Nutritional status of children was determined by measuring weight for height. According to weight for height classification, in which age of the child was not taken into account, disclosed 63 % of normal, 32 % of mild malnutrition, 4.5 % of moderate malnutrition and 0.5 % severe malnutrition (Waterlow classification, 1972) (table 11).

Table 11 Number and percentage of children classified by nutritional status by weight for height (Waterlow classification).

Nutritional status of children	**Number (N = 200)**	**Percentage %**
Weight for height		
Normal (Obesity *)	126	63.0
Mild malnutrition	64	32.0
Moderate malnutrition	9	4.5
Severe malnutrition	1	0.5

*** Weight - for – height > 100 %**

Three groups of nutritional status consisted of normal group (+ Overweight: 63 %), mild malnutrition group (32 %) and severe malnutrition (moderate and severe malnutrition) (5 %) were classified in table 12.

Table 12 Groups of nutritional status.

Nutritional status of children	Number **(N = 200)**	Percentage **%**
Severe malnutrition (Moderate and Severe malnutrition)	10	5.0
Mild malnutrition	64	32.0
Normal	126	63.0

4.2 Characteristics of mothers

The characteristics of mothers investigated in this study included socio demographic characteristics of mothers consisted mother's age, marital status occupation, education, monthly income and family size.

4.2.1 Socio demographic characteristics of mother

Age: Among 200 mothers, majority of them (29.5 and 61.5 %) were found between, 20 – 29, 30 – 39 years respectively and 9 % were 40 – 49 years of age (table 13).

Marital status: Almost mothers and their husbands were living together (98.5 %) and only 1.5 % of mothers were living alone (table 13).

Occupation: More than ninety five % mothers were housewife, from four % work as government servant and the others were one %.

Education Most of the mothers were completed in education at primary school or below 35.5 %, twenty six % were secondary school, nine % were F.A / diploma, three % were higher such as Bachelor / Master level and 26.5 % were un educated.

Monthly income: Under the classification based on standard salary in Pakistan, less than 5000 rupees was 40 %, 5000 – 9999 was 36 %, 10000 – 19999 was 17 % and more than 20000 rupees was 7 % per month.

Family size: Among four groups classified, 6 – 10 members were highest 55.5 %, 3 – 5 members were 36.7 % and more than 11 members were 8 % living together in combine family (table 13).

Table 13 Number and percentage of mother by socio-demographic characteristics.

Socio demographic characteristics	Number (N = 200)	Percentage %
Maternal age in years		
20 — 29	59	29.5
30 — 39	123	61.5
40 — 49	18	9.0
Mean ± SD =31.99± 4.82	**Median = 32**	**Min = 21** **Max = 45**
Marital status		
Married / Living together	197	98.5
Divorced /Separated /Widow	3	1.5
Occupation		
Housewife	190	95.0
Government Servant	8	4.0
Others	2	1.0
Education		
Primary school or below	71	35.5
Secondary school	52	26.0
F.A / Diploma	18	9.0
Higher such as Bachelor / Master	6	3.0
Un-educated	53	26.5

Table 13 Number and percentage of mother by socio-demographic characteristics (Cont.).

Socio demographic characteristics	Number (N = 200)	Percentage %
Monthly income		
< 5000 Rupees	80	40.0
5000 –9999 Rupees	72	36.0
10000 – 19999 Rupees	34	17.0
>20000 Rupees	14	7.0
Family size (persons)		
3 – 5	73	36.5
6 ─10	111	55.5
11─19	16	8.0
Mean ± SD = 6.71 ± 2.54	**Median = 6**	**Min = 3** **Max = 19**

4.3 Characteristics of children

4.3.1 Socio demographic characteristics of children

Gender was labeled as male and female.

Table 14 Number and percentage of children by socio-demographic characteristics.

Socio demographic characteristics	Number (N = 200)	Percentage %
Gender		
Male	105	52.5
Female	95	47.5

4.3.2 Medical history

Immunization: Most of the children (97.5 %) got completed vaccination; only 2.5 % of the children were in completed vaccination (table 15).

Illness: For all mentioned illness during the last four weeks, majority of children (53 %) have experienced with illness during the last four weeks. These illnesses were diarrhea, runny nose, fever, cough, itching around anus (saw pinworm), tooth pain and other diseases (Stomach pain, Eye problem, etc.) as shown in table 15. Among illness last four weeks, fever, runny nose and cough were found as major illness (66 %, 47.2 % and 41.5 %) table 15.

Table 15 Number and percentage of children by immunization, illness and feeding practice.

Immunization, Illness and feeding practice	Number (N = 200)	Percentage %
Immunization status		
Complete	195	97.5
Incomplete	5	2.5
Illness during the last four weeks		
Yes	106	53.0
No	94	47.0
Types of illness during the last 4 weeks (>1 answers) (N = 106)		
Diarrhea	12	11.3
Runny nose	50	47.2
Fever	70	66.0
Cough	44	41.5
Itching around anus (saw pinworm)	7	6.6
Tooth pain	7	6.6
Others disease (stomach pain, Eye problem)	11	10.4

Table 15 Number and percentage of children by illness and feeding practice (cont.).

Illness and feeding practice	Number (N = 200)	Percentage %
Type of foods and used during diarrhea (>1 answers)	**(N = 12)**	
Fresh milk alone	2	16.7
Oral rehydration salt	8	66.6
Water with feeding during some part of the day	9	75.0
Water alone	3	25.0
Any other locally acceptable home fluids	6	50.0
Nothing	2	16.7
Amount of food consumption during illness	**(N = 107)**	
None	6	5.6
Less than normal	56	52.3
Same amount	43	40.2
More than normal	00	00.0
Don't know	2	1.9
Food withholding during diarrhea		
Yes	17	16.0
No	90	84.0
Types of foods withheld during diarrhea	**(N = 17)**	
Milk	1	5.9
Powdered milk	1	5.9
Food with cooked oil	12	70.6
Other……..	3	17.6

Table 15 Number and percentage of children by illness and feeding practice (cont.).

Illness and feeding practice	**Number (N = 200)**	**Percentage %**
Encouragement of the child to eat when sick	**(N = 107)**	
Yes	100	93.5
No	7	6.5

Utilization of health service: Among 200 children become severe illness, the mothers were asked to state the kind of symptoms that would cause them to take their children immediately to hospital and the majority 77 % of them said if the child develop fever and others were very low % (table 16).

Table 16 Number and percentage of children Utilization of health services.

Utilization of health services	**Number (N = 200)**	**Percentage %**
Symptoms type	**(N = 74)**	
Child not able to drink or eat	1	1.4
Child become sicker	7	9.4
Child develops fever	57	77.0
Child has fast breathing	1	1.4
Child has difficult breathing	7	9.4
Child has blood in stool	1	1.4

Vitamins intake: Among 200 children researched, 22.5 % of children used additional vitamins. Table 17 presented more detail, multivitamin, vitamin C, vitamin B1, vitamin B6 and vitamin B12 were used.

Table 17 Number and percentage of children Vitamins intake.

Vitamins intake	**Number (N = 200)**	**Percentage %**
Additional vitamins	**(N = 200)**	
Yes	45	22.5
No	155	77.5
Types of additional vitamin given to children	**(N = 45)**	
Multivitamin	16	35.5
Vitamin C	7	15.5
Vitamin B1	9	20.0
Vitamin B6	9	20.0
Vitamin B12	2	4.5
Others	2	4.5

4.3.3 Food and nutrient consumption

Regular food in meals: Among 200 children, type of food and nutrients consumed by the mothers were vegetables, which were consumed by 91 %, daal (83 %), milk (79%), egg (78.5 %), fruits, (76.5 %), rice / noodles (76 %), chicken (72.5 %) and beef (62.5 %). Other items of regular meals were used not much 34 – 44 % (table 18).

Table 18 Number and percentage of children by food and nutrient consumption.

Food and nutrient consumption	Number (N = 200)	Percentage %
Regular food in meal (> 1 answer)		
Meat	68	34.0
Chicken	145	72.5
Beef	125	62.5
Fish	55	27.5
Egg	157	78.5
Fruits	153	76.5
Rice / Noodles	152	76.0
Vegetables	182	91.0
Milk	158	79.0
Butter	88	44.0
Daal	166	83.0
First type of food introduced to children		
Brest fed	149	74.5
Formula Milk	4	2.0
Cow / Goat / Buffalo milk	18	9.0
Honey	21	10.5
Other	8	4.0

Table 18 Number and percentage of children by food and nutrient consumption (Cont).

Food and nutrient consumption	Number (N = 200)	Percentage %
Reasons for introduction of other foods to children		
Advised at the hospital	108	54.0
Mother was sick	3	1.5
Breast milk was not enough	10	5.0
Others	8	4.0
Advised by grand parents	71	35.5
Difference in nutritional needs of a male and female		
No	171	85.5
Yes	25	12.5
Don't know	4	2.0
Who needs more nutrition?	**(N = 25)**	
Male	10	40.0
Female	**15**	**60.0**
Source of this belief		
Family	4	16.0
Society	8	32.0
Religion	2	8.0
Self	11	44.0

4.4 Matenal knowledge on food and maternal practice on child feeding

4.4.1 Maternal knowledge on food

Maternal knowledge about nutrient and nutrition was shown in table 19 by 20 statements and percentage of correct answers. Knowledge statement 1, 2, 3, 4, 11, 14, 15, 16, and 17were achieved < 80 % correct answers. Knowledge statement 8, 9, 10, 12 and 13 were reached 60 % - 80 % of correct answers. Knowledge statement 5, 6 and 7 were < 60 % correct answers.

Table 19 Percentage distribution of mothers' knowledge on child nutritional status.

Knowledge statement	Correct answer	
	Number	Percentage
1. Malnutrition means insufficient food for body.	183	91.5
2. Foods are needed for energy in the body.	199	99.5
3. Loss of weight is a sign of malnutrition.	195	97.5
4. Inadequate food intake causes malnutrition.	198	99.0
5. Extra/high food consumption may also cause malnutrition.	49	24.5
6. Diarrhea can affect malnutrition.	100	50.0
7. Child's dental problems can lead to malnutrition.	117	58.5
8. Worm infestation can affect to malnutrition.	143	71.5
9. Acute Respiratory Infections can lead to malnutrition.	124	62.0
10. Malnutrition is common among 5 years old children.	134	67.0
11. Fat (cooking oil, butter, milk, etc) are one of the essential foods for children.	190	80.0
12. Carbohydrates (rice, noodles, bread, etc) intake alone is not enough for child growth.	148	74.0

Table 19 Percentage distribution of maternal knowledge on child nutritional status (cont.).

Knowledge statement	Correct answer	
	Number	Percentage
13. Protein (egg, meat, fish, milk, daal, etc) intake is necessary to prevent malnutrition.	160	80.0
14. Several kinds of foods should be included in daily meal, to prevent malnutrition.	198	99.0
15. Fast food is not better than cooked food at home.	200	100.0
16. Child should be given normal food when the child gets sick.	199	99.5
17. Child gets diarrhea, ORS should be given to drink as much as possible.	197	98.5

Table 20 showed the level distribution of mothers according to their knowledge score on child feeding. Three levels of knowledge based on the criteria as;
More than 80 % of standard score was good, this group accounted for 51 %.
From 80 – 60 % of standard score was fair, this group accounted for 47.5 %.
Less than 60 %of standard score was poor, this group accounted for 1.5 %.

Table 20 Number and Percentage of mothers by level of knowledge on children nutritional status.

Level of knowledge	Number	Percentage
Good (> 14 score)	102	51
Fair (11 - 14 score)	95	47.5
Poor (< 11 score)	3	1.5
Mean ± SD =14.6 ± 2.2 **Min** = 9	**Max** = 15	**Median** = 15

4.4.2 Maternal practice on child feeding

Table 21 described the number and percentage of correct answers to practice based questionnaire. Practice statement 1, 2, 4, 5, 6, 7, 9 and 11 (8 of 11) were achieved correct answers more than 80 %. Practice statement 3, 8 and 10 (3 of 11) were reached less than 80 % correct answers.

Table 21 Percentage distribution of mothers' practice on child nutritional status.

Practice statement	Correct answer	
	Number	Percentage
1. She ensure to keep the child take a rest and drink boiled water and eat soup when the child gets a cold.	197	98.5
2. She always pays attention to the nutrients in daily meal.	198	99.0
3. She gives her child fresh milk every day.	157	78.5
4. She always tries to feed nutritious food to the child.	200	100
5. She feed her child rice/noodles, fish/meat and vegetables together.	196	98.0
6. She washes her hands before preparing food.	197	98.5
7. She cleans raw food materials before cooking.	199	99.5
8. She gives junk food to the child between two meals.	156	78.0
9. She attempts to protect food from houseflies.	200	100
10. She ensures that child takes bath at least one time a day.	153	76.5
11. She ensures that the child washes hands before eating and after defecation.	199	99.0

Concerning the levels of maternal practice, the distribution was based on the criteria as score of maternal practice > 80 % of standard score was high, this group accounted for 96.5, score of maternal practice 60 – 80 of standard score was average (3.5 %). The low score (< 60 % of standard score) was 0 %.

Table 22 Number and Percentage of mothers by level of practice on children nutritional status.

Level of practice	**Number (N = 200)**	**Percentage %**
High (> 8 score)	193	96.5
Average (6 - 8 score)	7	3.5
Low (< 6 score)	0	0

Mean ± SD = 10.3 ± 0.83 **Min** = 7 **Max** = 11 **Median** = 10

4.4 Relation between nutritional status of children and independent variables

Table 23 shown that normal children and mild malnutrition children had older mothers than severe malnutrition (34 years, 32 years and > 30 years).
All of children group had no difference in family size.

For family income, mild malnutrition had higher income than severe malnutrition and normal group. However, the relationship between nutritional status and these variables was not found in this study.

Table 23 Comparison between nutritional status of children and socio demographic characteristics of mother.

Socio demo graphic Characteristics	Nutritional status of children	Number (N = 200)	%	Median	pvalue (two tailed)
Mother's age (Years)	Severe	10	5.0	34	0.218
	Mild	64	32.0	32	
	Normal	126	63.0	31	
Family size (Persons)	Severe	10	5.0	7.5	0.861
	Mild	64	32.0	7.0	
	Normal	126	63.0	6.0	
Family income (Rupees)	Severe	10	5.0	*	0.267
	Mild	64	32.0	*	
	Normal	126	63.0	*	

Among groups of children whose mothers were alone, normal children were less than a half (33.3 %). Compared with parents who were living together, they had more than half of normal children (63.5 %). However, the result did not show any relationship between nutritional status of children and marital status but not so far to significant of relationship between nutritional status of children and marital status ($p = 0.070$) (table 24).

Some (7.2 %)of severe malnutrition children were from mothers who had uneducated or just complete primary school while a few (1.3 %) of severe malnutrition children were from others (secondary school and higher). And the proportion of normal children from the mothers who were at level of less than or equal primary school were the lowest (56.5 %). The table 24 showed there was a significant relationship between nutritional status of children and education of mothers ($p = 0.024$) (table 24).

Housewife had less severe malnutrition children and more normal children than other groups (4.7 % and 63.2 %) because they had time to take care of their children. To the people who work outside such as government servant and others, they had more severe cases of malnutrition children than housewife and also not so far to significant between occupation and nutritional status of children ($p = 0.054$) (table 24).

Table 24 Relationship between socio demographic characteristics of mothers and the nutritional status of children by weight for height.

Socio demo graphic Characteristics	Nutritional status of children						x^2	p-value
	Severe (N) (10)	%	Mild (N) (64)	%	Normal (N) (126)	%		
Marital status								
Living together	9	4.5	63	32.0	125	63.5	5.37	0.070
Separated/divorced / widowed	1	33.3	1	33.3	1	33.3		
Education level								
Un-educated / Primary school or below	9	7.2	45	36.3	70	56.5	7.426	**0.024**
Higher than primary	1	1.3	19	25.0	56	73.7		
Occupation								
Housewife	9	4.7	61	32.1	120	63.2	9.297	0.054
Government servant	0	0.0	3	37.5	5	62.5		
Others	**1**	**50.0**	**0**	**00.0**	**1**	**50.0**		

There were no significant relationship between nutritional status and gender of children (table 25). Female group suffered from severe malnutrition (5.3 %) more than male (4.8 %) and among normal children, proportion of female (61 %) was lower than that of male (64.7 %).

Table 25 Relationship between nutritional status and socio demographic characteristics of children.

Socio demo graphic Characteristics	**Nutritional status of children**						**p-value**
	Severe		**Mild**		**Normal**		
	(N) (10)	**%**	**(N) (64)**	**%**	**(N) (126)**	**%**	
Gender							
Male	5	4.8	32	30.5	68	64.7	0.863
Female	5	5.3	32	33.7	58	61.0	

The rate of normal children in incomplete immunization group (60.0 %) was lower than that in the complete immunization group (63.1 %). But the percentage of severe malnutrition children in incomplete group (20.0 %) was higher than that complete group (4.5 %.). However, the finding did not show any relationship between nutritional status of children and immunizational status (table 26).

Concerning illness during the last four weeks, all items of disease had lower rate in severe and mild malnutrition groups than normal group. There was only significant itching around anus (saw pinworm) ($p = 0.023$) (table 26) relationship between nutritional status and illness of children.

Table 26 Relationship between nutritional status and socio medical history of children.

Medical history	Nutritional status of children						p-value
	Severe		Mild		Normal		
	(N) (10)	%	(N) (64)	%	(N) (126)	%	
Immunization							
Complete	9	4.6	63	32.3	123	63.1	0.280
Incomplete	1	20.0	1	20.0	3	60.0	
Illness during last 4 weeks							
Diarrhea	0		5	41.7	7	58.3	0.590
Runny nose	4	8.0	16	32.0	30	60.0	0.523
Fever	3	4.3	24	34.3	43	61.4	0.849
Cough	3	6.8	15	34.1	26	59.1	0.746
Itching around anus (saw pinworm)	1	14.3	5	71.4	1	14.3	**0.023**
Tooth pain	1	14.3	2	28.6	4	57.1	0.518
Others diseases (Stomach pain, Eye problems)	0		4	36.4	7	63.6	0.722

Table 27 showed the significant relationship between nutritional status and regular meals (Beef (p = 0.031), and Daal (p = 0.028) (protein group). However, lower rate of other items such as chicken (p = 0.065).

Table 27 Relationship between nutritional status and groups of food and nutrient consumptions.

Food and nutrient Consumptions	**Nutritional status of children**								
	Severe		**Mild**		**Normal**			x^2	**p-value**
	(N)	**%**	**(N)**	**%**	**(N)**	**%**			
	(10)		**(64)**		**(126)**				
Regular meal									
Meat	3	4.4	26	38.2	39	57.4	(68)	1.845	0.398
Chicken	10	6.9	49	33.8	86	59.3	(145)	5.462	0.065
Beef	9	7.2	45	36.0	71	56.8	(125)	6.927	**0.031**
Fish	4	7.3	17	30.9	34	61.8	(55)	0.829	0.661
Egg	9	5.7	50	31.8	98	62.5	(157)	0.828	0.661
Fruits	10	6.5	46	30.1	97	63.4	(153)	3.850	0.146
Rice	9	6.0	45	29.6	98	64.4	(152)	2.428	0.297
Milk	7	4.4	47	29.8	104	65.8	(158)	2.633	0.297
Daal	10	6.0	58	35.0	98	59.0	(166)	7.121	**0.028**
Butter	6	6.8	28	31.8	54	61.4	(88)	1.107	0.575

There was no relationship between nutritional status of children and vitamins intake.

Table 28 Relationship between nutritional status and vitamins intake.

Additional vitamins	**Nutritional status of children**						
	Severe		**Mild**		**Normal**		**p-value**
	(N)	**%**	**(N)**	**%**	**(N)**	**%**	
	(10)		**(64)**		**(126)**		
Additional vitamins							
Multivitamin	2	12.5	4	25.0	10	62.5	0.913
Vitamin C	0		1	14.3	6	85.7	
Vitamin B1	0		2	22.2	7	77.8	
Vitamin B6	0		3	33.3	6	66.7	
Vitamin B12	0		1	50.0	1	50.0	
Others vitamin	0		1	50.0	1	50.0	

There were no significant relationship between nutritional status and maternal knowledge and maternal practice (table 29).

Table 29 Comparison of maternal knowledge and practice between PCM vs normal children.

Socio demo graphic Characteristics	Nutritional status of children	Number (N = 200)	Median	x^2	pvalue
Knowledge	Severe	10	15	1.24	0.539
	Mild	64	15		
	Normal	126	14		
Practice	Severe	10	10	2.33	0.312
	Mild	64	10		
	Normal	126	11		

CHAPTER 5
DISCUSSION

5.1 Nutritional status of children

The present nutritional status in this study was measured by weight for height based on Waterlow classification and presented in table 10, 11. The classification was based on calculating the observed values in relation to Pakistanis standard. The prevalence of malnutrition children in this study was 37 % (severe malnutrition children was 5 %, and mild malnutrition children was 32 %). This brought higher than that routine nutritional surveillance system. Older children tend to be neglected by their mothers. The children can choose the food they like, even though they can buy food to eat. There fore they often suffer from malnutrition. This phenomenon was also clearly described by Winichagoon (1997) (35). She mentioned that all reported prevalence in all surveys were higher than the yearly surveillance system. The high rate of prevalence malnutrition had positive contributed by various factors such as children factors, mother factors and knowledge and practice factors. Next step, discussion will be on these contributing factors to nutritional status of children aged 5 years old.

5.2 Characteristics of mothers and its relation to nutritional status

Mother's age: This study did not find any significant relationship between age of mother and nutritional status of children because all of the mothers were over 20 years old and they had enough experience to take care of their children (the same study was done in Thailand in 2001 by Basri) (22).

Marital status: Regarding marital status, 98.5 % of mothers were living together. It is possible that the husband could help his wife to do the house work and the wife had more time to pay attention on child feeding, even though the statistical

relationship could not find in this study but among separated / divorced / widowed groups the prevalence of normal children was lower than a half (33.3 %). The rates of severe malnutrition children (33.3 %) and mild malnutrition children (33.3 %) in-group of mother living alone were higher than that in-group of parents living together (table 23).

The mother living alone is not interested in cooking; she often gets fast food from food shops, which are not enough basic nutrients for children development.

The mother living alone has to work hard to earn income, so she does not have time to look after her child. There fore the children suffer from malnutrition.

Occupation: Concerning mother's occupation in nutritional status, it also had statistically significant relationship with nutritional status of children indirectly ($p = 0.054$) (table 24).

Education level: The lowest prevalence of normal children (56.5 %) (table 24) was found in children whose mothers had primary school level or below and uneducated and the highest rate of severe malnutrition children was also found in that group (7.2%).

In this study, the mother's education was significantly association with children's nutritional status on weight for height ($p = 0.024$) (table 24). The positive and significant association between mothers education and child nutritional status indicates the important role of education for women. The more education people get, the less malnutrition their children have. A study conducted by the International Food Policy Research Institute had also found that half of the reason why malnutrition fell from 40 % to 23 % in East Asia over the period of 1970 – 1995 was attributable to improvement in women education (36). Information revolution is one of the hallmarks of this country. Use of satellites for radio, television are helpful to mothers even in remote geographically area. Innovative programs through these media have provided dissemination of scientific information, including health related information. Thus,

education is thought to be important. It also helps the mother to have more chance to identity a good job and more income.

Among rural area mothers whose majorities were not complete knowledge of education, they were not able to distinguish well-nourished and malnourished children.

Moreover, they stilled to have misconception and belief toward child caring. She would not accept any change in her life style unless she is convinced by the health hazards, which affected in her life directly.

Family size: In this study the family size was not significant relationship with nutritional status. The children in large family and poor family trend to suffer from the malnutrition problem, if the children in the large family with low income may have more problem in children's nutritional status.

Family income: Family income was also not significant and not successful to reach the relationship to nutritional status. In this study, the population area was rural, so the mostly people have land to plant and raise livestock. As the result, the land provides enough food for each family in this area. If the children in large family with low income may have more problem in children's nutritional status.

5.3 Characteristics of children and its relationships to nutritional status

Gender: The proportion of female severe malnutrition (5.3 %) was higher than male severe malnutrition (4.8 %) in this study and the rate of normal female (61.0 %) was lower than that of normal male (64.7 %) (table 24). There was no relationship between gender and nutritional status of children. Some countries (including Pakistan), there are not equal between male and female children. The female children suffer from the isolation and ignorance (24). In Pakistan, people are interested in boy more than girl, because boy will be strong enough to help them when they get older and the most important thing is boy can be hereditary, but girl will follow her husband

to find another place to live when she is old enough, thus she can not help her parents. To avoid discrimination between boy and girl to keep children grow well.

Medical history: There was only significant relationship between illness (itching around anus saw pinworm (p = 0.023) (table 26) and nutritional status of children 5 years old in medical history.

In immunization the finding showed that the children who had incomplete immunization had higher chance to get severe malnutrition (20 %) than the children who had complete immunization (4.5 %) (table 26). The normal children in group of complete immunization (63.1 %) were higher than in group of incomplete immunization (60 %).

It is thought to be partly due to immunization because it has positive impact on the immune system and the whole body. Immunization indicated that whether people have to concern about their children's health. This study did not concern about the disease of immunization (measles, whooping cough…).

Food consumption: Among food consumption (table 27), the prevalence of all items was in lower in malnutrition group (mild and severe) than in normal group. Table 27 proved the significant relationship between Beef (p = 0.031) and Dall (p = 0.028) (protein group) nutritional status of children. If the child gets less protein consumption in meal, he or she will have more chance of malnutrition. This study did not concern about the amount of quality of each nutrient, so the data showed that most of the mothers reported that they fed their children with protein, carbohydrate and fat etc, in all of three groups. Therefore, the amount of consumption may be different among the groups.

Vitamins intake: Among vitamins intake (table 28), the prevalence of all items of vitamins was lower in severe and mild malnutrition group than in normal group.

5.4 Maternal knowledge and Maternal practice

There were not significant relationship between maternal knowledge and maternal practice of nutritional status of children five years old in this study. If the mother has changed the traditional belief, then she will accept how to improve her behavior appropriately, reject Junk food and select adequate nutrient food for her child. So maternal knowledge and practice were not affecting nutritional status of children in this study. The result in this study is the same to the study done by Yako Tada (2001).

5.5 Limitation of study

- Some mothers might have received vitamin A, but because of not knowing what it was, they might have given a negative answer contrary to the reality.
- Mothers whose children were closer to 5 years may have not have been accurate in remembering when they exactly introduced other foods. As such, this may have been subjected to recall bias.
- Given the most of the children had various illnesses, the proportion of malnutrition reported here in might be slightly higher than would be expected among children who were not sick in a general population?

CHAPTER 6
CONCLUSION AND RECOMMENDATIONS

6.1 CONCLUSION

This study was conducted to determine maternal childcare practices that are affected to child nutritional status in Bhara kahoo could be regarded as rural area of Islamabad District Pakistan, where a cross sectional study was conducted in this research. The main purpose of researcher was to analyze the present nutritional situation of children 5 years old and potentially affected factors. To this effect, it was established that different aspects of mother childcare practices have varying influences on the nutritional well being of children 5 years old. The data collection was achieved by interviewed of mothers directly and weight for height was computed from the weight and height of children and based on Pakistanis standard.

It was found that among the urban poor in the Islamabad; the problem of malnutrition still remained. This problem should not be overlooked and counter measures an expected to be developed.

The variables of in this study were characteristics of mothers, characteristics of children, maternal knowledge and maternal practice.

6.1.1 Nutritional status

Now this study revealed high prevalence of malnutrition in children 5 years old (37 %) (table 12), where as the mild, moderate malnutrition and severe malnutrition were 32 %, 4.5 % and 0.5 % respectively (table 11).

6.1.2 Characteristics of mothers

Age of mother: In this study, majority of mother's age was 30 – 39 years old (61.5 %) (table 13).

Marital status: The prevalence of normal children in separated / divorced / widowed group (1.5 %) was lower than that of normal in living together group (98.5 %) (table 13).

Education level: Lower than half of mothers were at primary school or below (35.5 %) (table 13).

Occupation: More than half of that mother's were housewives (95 %). The tables 22 revealed the mothers who work as housewives had the highest normal children (63.5 %) and the lowest severe malnutrition children (4.7 %) and no have severe malnutrition children in Government servant (table 24).

Family income: 40 % of mother's had high income < 5000 rupees/month, 36 % of mother's had income 5000 – 9999 rupees/month, 17 % of mothers had income 10000 – 19999 rupees/month and 7 % of mothers had income >20000 rupees/month.

Family size: 55.5 % of mothers come from the family with 6 – 10 members, while, 36.5 % come from the family with 3 – 5 and 8 % of mothers were in the family with more than 11 members (table 13).

6.1.3 Characteristics of children

Gender: Half of the children in this study were male children (52.5%) (table14).

Medical history: The finding showed that the rate of normal children who had incomplete immunization (60 %) was lower than that of normal children who had complete immunization (63.1 %) (table 26), and the proportion of severe malnutrition children in incomplete group (20 %) was also higher than that of severe malnutrition children in complete group (4.6 %) and regarding the illness there was significant nutritional status of children and itching around anus (saw pinworm) ($p = 0.023$) (table 26).

Food and nutrient consumption: The proportion of all items was lower in malnutrition group than in normal group (table 27).

6.1.4 Maternal knowledge and Maternal practice

The rate of mothers, who had good knowledge, was 51 % and high practice 96.5% (table 20 and 22).

6.1.5 Relationship between nutritional status and independent variables

Regarding the characteristics of mothers and children, there was significant relationship between nutritional status of children and some selected variables as mother's education ($p = 0.024$), beef ($p = 0.031$) and daal ($p = 0.028$) consumption in regular meals (table 27), illness (itching around anus) ($p = 0.023$) (table 26).

6.2 Recommendations

6.2.1 For action

The result showed that the prevalence of malnutrition in this study was higher than routine surveillance and the problem of present nutrition situation of children 5 years old were lack of education level, child caring about illness and lack of nutrient food for child feeding. Another reason is still discrimination between boy and girl in this study area.

Education, occupation, marital status, immunization status, gender, food and nutrient consumption were related to nutritional status of children in this study. To reduce the prevalence of malnutrition, these following activities should be emphasis as:

1. A compulsory education system should be strengthened, improvement of a good primary health care that reaches all the risk group of malnutrition. Health centers have a duty on providing health information to the families; especially the families have children five years old and following up those children by measuring their weight and height in order to discover malnutrition situation.

To ensure support for parents and other care-givers in nurturing and caring for children; to prevent separation of children from their families and, where such separation takes place, to ensure appropriate alternative family care or institutional placement.

To enhance the status of girls and women and ensure their full access to health, nutrition, education, extension, family planning, pre-natal, delivery, referral and other basic services.

The health personnel to reduce the rate of malnutrition should concern surveillance program for malnutrition children.

2. Health centers have a plan to talk to mothers or use videotape to explain the usefulness of food cooking at home and food selecting in order to keep children healthy. The improvement strategies should be planned such as selective feeding program, including supplementary feeding program and medical follow up for the risk groups and treatment-feeding program for the severe malnutrition and moderate malnutrition.

3. Expanded immunization program should be emphasis (100 % of children should complete vaccination before they reach two years old). Expanded immunization program should be on television; radio at weekends and health centers should be focused on children at the age of vaccination (< 12 months) and also had health education to mother about nutrient food and hygiene to prevent disease when they take their child to health centers for vaccination or for treatment.

4. Family planning program should be performed strictly (every couple should not have more than two children) in order to keep children grows well and reduces discrimination between boy and girl.

5. Occupation and family income of parents can also lead the children to malnutrition; intervention strategies must be focused on risk group of malnutrition children by spending more time to take care of them, paying attention to them in nutritious meals and keeping the money for good food for them. Both of mother and father have to have duty on taking care of their child, not only mother, and the intervention strategies must be intensive nutritional program targeted toward the families of low income, low education towards the parents who work out side.

6. As a global goal for optimal maternal and child health and nutrition, all women should be enabled to practice exclusive breastfeeding and all infants should be fed exclusively on breast milk from birth to 6 months of age. Thereafter, children should continue to be breastfed, while receiving appropriate and adequate complementary foods, for up to two years of age or beyond. This child-feeding ideal is to be achieved by creating an appropriate environment of awareness and support so that women can breastfeed in this manner.

7. That women's nutritional status and health are related to their "economic status" is demonstrated both by macro- or regional-level analyses as well as micro- (household) level data. The North-South dichotomy in nutritional levels and differentials discussed above suggests that where females have high economic "value," they receive larger shares of food and health resources; where their economic value is lower, they remain at considerable disadvantage. Regional analyses of health indices other than nutritional status, such as mortality rates or sex ratios, further substantiate this relationship. Two particular aspects of women's economic value have been related to health status.

6.3 Recommendation for future study

1. For future study, this kind of study should be conducted with a population of country as large as possible in order to get more reliable and meaningful results.

2. Specification of research variables should be done such as factor affected to socio-economic and its economic structure of the people because the result in this study revealed that socio-economic factor (education level) was revealed to the nutritional status of children 5 years old ($p = 0.024$).

3. For further study, the study may be include for other factors as Health service utilization, growth monitoring.

4. Weight for age should be concerned for further study.

REFERENCES

1. Nhan Nguyen Thu. Guideline taking care of children at community. In children health protection institute. Ha Noi: capital; 1994.
2. Elder JP, Geller ES, Hovell MF, Mayer JA. Motivated Health Behavior; New York: Delmar Publishers 1994.
3. Bellamy C. The state of the world's children 2001. New York: UNICEF; 2001.
4. Grant JP. The state of the World's Children 1991. Oxford: Oxford university press; 1991.
5. Bellamy C. The state of World's children 2000. New York: UNICEF; 2000.
6. UNICEF. Progress report since the World Summit for Children: Assessing the situation of children 2001 [on line]. Available from: http//www.childinfo.org/index2.htm [Accessed 2001 Nov 25].
7. UNICEF. The state of the World's children 1998. Oxford: Oxford University press; 1998.
8. National Institute for Health, Government of Pakistan. Pakistan National Nutritional Survey (1988). [Online] Available from: http://www.whoint/ /& child-pdf/ [Accessed 2006 Dec 10].
9. ACC / SCN Second report of the world Nutrition situation 1993.
10. Growth charts for children developed by the National Center of Health Statistics (NCHS), USA [Online] Available from: (http://www.cdc.gov/nchs) are widely used as a 'reference' when calculating children's nutrition and health statistics. [Accessed 2006 Nov 10].
11. Bellamy C. The State of the World's children 2005. New York: UNICEF; 2004.
12. WHO / BASICS / UNICEF. Nutrition essentials: a guide for health managers. Geneva: WHO; 1999.
13. Hashima B. Psycho social factors and nutritional status among children age 1-5 years in Yala province, Thailand [M.P.H.M Thesis in Primary Health Care Management] Nakhon Pathom: Faculty of Graduate Studies, Mahidol University; 1998.

14. Hilaing TM. A study of nutritional status of children 1-5 years in Malaria endemic area, Kanchanburi, Thailand [M.P.H.M Thesis in Primary Health Care Management] Bangkok: Faculty of Graduate Studies, Mahidol University; 1998.
15. King FS, Burgees A. Nutrition for developing countries. 2nd ed. Oxford: Oxford university press; 1993.
16. Anh Nguyen Ky. Taking care of children and education of children less than 6 years old. HaNoi: Nhan Dan Paper; 1989.
17. Carol Bellamy C. The state of the world's children 1998. Oxford: Oxford university press; 1998.
18. Nhuyen Pham Thi. Psychosocial factors affecting the performance of village health volunteers in nutrition promotion activities for children under five years of age in Hai Duong province, Viet Nam [M.P.H.M. Thesis in Primary Health Care Management]. Nakhon Pathom: Faculty of Graduate Studies, Mahidol university; 2001.
19. Grant JP. The state of the World's Children, 1994. Oxford: Oxford university press 1994.
20. Less than –3 Standard deviation vis-à-vis the NCHS figures. [Online]?
21. Triyanto I. The relationship of child rearing practice and Nutrition status of children under two years among mothers in Rajburana Health Center, Bangkok Metropolitan Administration, Thailand. [M.P.H.M. Thesis in Primary Health Care Management] Bangkok: Faculty of Graduate Studies, Mahidol University; 1995.
22. Basri HB. Psychosocial factors of caretakers and Nutritional status among children age 1-5 years in Yala province, Thailand. [M.P.H.M. Thesis in Primary Health Care Management] Nakhon pathom: Faculty of Graduate Studies Mahidol University; 2001.
23. Gopalan C. Nutritional and developmental transition. Lessons from Asian experience 2000 Jan; XV (1): 5-25.
24. Bellamy C. The state of the world's children 2000. New York: UNICEF; 2000.

25. TadaY. Nutritional status of children (1-5 years old) living in Bangkok congested area [M.P.H.M. Thesis in Primary Health Care Management] Nakhon pathom: Faculty of Graduate Studies, Mahidol University; 2001.
26. Morduch JJ, Stern HS. Using mixture model to detect sex bias in health outcomes in Bangladesh. J Econ 1997; 259-76.
27. Pal S. An analysis of childhood malnutrition in rural India: Role of gender, income and other household characteristics. World development, 1999; 27(7): 1151-71.
28. Grant JP. The state of the World's Children, 1991. Oxford: Oxford university press; 1991.
29. Victora CG, Smith PG, Vaughn JP. Evidence of protection by breast-feeding against infant deaths from infectious disease in Brazil. Lancet ii: 319-22.
30. Jalil F, Karlberg J, Hassan LA, Lindblad BS. Growth disturbances in an urban area of Lahore, Pakistan Related to feeding patterns, infection, age, sex, socio-economic factors and seasons. Acta Peadiatr supply, 1989: 350: 45-45.
31. Kwavnick B Jonathan, Stein, Nhuyen PT, Thanh PX and Gien L. Childhood Nutrition in the Thanh Binh: Viet Nam. Thanh Binh: [s.n.]; 2000.
32. Werner D. Where there is no doctor. A village health care handbook. California: Hesperian Foundation; 1997.
33. Grant JP. The state of the World's Children, 1998. Oxford: Oxford university press; 1998.
34. Royal Economic Society [Online] Available from: http://www.res.org.uk/mediabriefings/2001/maydasgupta [Accessed 2007 Feb 15].
35. Winichagoon P. Protein energy-malnutrition situation and growth monitoring and promotion program for under five years in Thailand. Nakhonpathom: Institute of nutrition, Mahidol University; 1997.
36. Smith, Lisa C and Lawrence Haddad. Explaining child malnutrition in developing countries: A cross sectional analysis. Washington: International Food Policy Research Institute. Research Report 111; 2000.

APPENDIX

APPENDIX A

Mothers who take care of children five years old should be interviewed to finish the set of questionnaire.

Questionnaires

Factors affecting Nutritional status of children Five years old in Islamabad, Pakistan.

House hold/ respondent information;

Sector's reference……..

House hold no…….

Respondent's identification (ID)…….

Name of interviewer……

Date of interview……./ January / 2007

A. 1 Socio demographic Characteristics of Mothers

Please put your answer in the blank column or put (✓) mark in the check box.

1. Age of mother……..years old.

2. Marital status: two groups of marital stats are classified as.

☐ 1. Married
☐ 2. Separated/ divorced/ widowed

3. Occupation: Main occupation in this study related to mother. It is dividing in to 4 groups.

☐ 1. House wife
☐ 2. Government servant
☐ 3. Farmer
☐ 4. Others (Specify)…….

4. Education: is the level of education of the mother. It is dividing in to five groups.

☐ 1. Primary school or below
☐ 2. Secondary school
☐ 3. F.A / Diploma
☐ 4. Higher such as Bachelor / Master
☐ 5. Un-educated

5. Monthly income: is the total monthly income of family. It is divided in four groups.

☐ 1. < 5000 Rupees
☐ 2. 5000 –9999 Rupees
☐ 3. 10000 – 19999 Rupees
☐ 4. > 20000 Rupees

6. Family size: What is the number of your family members living with you now?

……. Persons.

A. 2. Characteristics of Child

7. Gender:

☐ 1. Male ☐ 2. Female

Weight: _____ Kg. Height: _____ c.m.

8. Immunization: from the well-baby card

☐ 1. Complete ☐ 1. In complete

9. Illness: In the last four weeks, has your child had any of the following illness?
(If answer to all fields below is **NO** then **SKIP TO QUESTION NO 16**).

✱ Diarrhea ☐ Yes days…….. ☐ No

✱ Runny nose ☐ Yes days…….. ☐ No

✱ Fever ☐ Yes days…….. ☐ No

✱ Cough ☐ Yes days…….. ☐ No

✱ Itching around anus (saw pinworm)
☐ Yes days…….. ☐ No

✱ Tooth pain ☐ Yes days…….. ☐ No

✱ Others (Specify) ☐ Yes days…….. ☐ No

10. During the last episode of diarrhea, did the child drink any of the following?
(The table below is only applicable for the child who had diarrhea in the last four weeks, if not skip to next question)
(Ask the mother following questions, based on her past experience when the child had diarrhea. Read a loud each item and record the response before proceeding to the next item).

Food item	Yes (1)	No (2)
Fresh milk alone?		
Oral rehydration salt (ORS) packet solution?		
Water with feeding during some part of the day?		
Water alone?		
Any other locally acceptable home fluids?		
Nothing?		

11. During illness, how much food (both solid and liquid) does your child take?

☐ 1. None ☐ 2. Less than normal
☐ 3. Same amount ☐ 4. More than normal
☐ 5. Don't know

12. When your child has poor appetite and refuses to eat, do you try to encourage him or her to eat or drink?

☐ 1. Yes ☐ 2. No

13. Are they any foods with held from the child during diarrhea or any other illness?

☐ 1. Yes ☐ 2. No

14. If yes, what foods do you with held from the child during diarrhea or other illness?

☐ 1. Fresh Milk ☐ 2. Powdered milk
☐ 3. Cereals ☐ 4. Fruits/juices
☐ 5. Porridge ☐ 6. Food cooked with oil
☐ 7. Other (specify)……

15. Sometimes children have severe illness and should be taken to the hospital immediately, what kind of symptoms will cause you to take the child to health facility right away?
(Please keep asking for more symptoms and circle or tick all responses received but do not prompt any suggestion).

☐ 1. Child not able to drink or eat ☐ 2. Child become sicker

☐ 3. Child develop fever ☐ 4. Child has fast breathing

☐ 5. Child has difficult breathing ☐ 6. Child has blood in stool

16. Do you give your child any additional vitamins?

☐ 1. Multivitamin ☐ 2. Vitamin C
☐ 3. Vitamin B1 ☐ 4.Vitamin B6
☐ 5. Vitamin B12 ☐ 6. Others (specify)…….
☐ 7. Nothing

17. Which foods did you give your child for regular meal?
(Please keep asking for more foods and circle or tick all responses received but do not prompt any suggestion).

☐ 1. Meat ☐ 2. Chicken
☐ 3. Beef ☐ 4. Fish
☐ 5. Egg ☐ 6. Fruits
☐ 7. Rice/Noodles ☐ 8. Vegetables
☐ 9. Milk ☐ 10. Butter
☐ 11. Daal

18. Which food did you first introduce to your child? (Choose only one).

☐ 1. Breast fed ☐ 2. Formula milk
☐ 3. Cow milk ☐ 4. Honey
☐ 5. Glucose ☐ 6. Others
(specify)……

19. Why did you introduce food at that time? (Choose only one).

☐ 1. Advised at the hospital ☐ 2. Mother was Sick
☐ 3. Breast milk was not enough ☐ 4. Others
(specify)……
☐ 5. Advised by grand parents/ relatives

20. Do you believe that there is a difference in nutritional needs of a male and a female child? (If no, go to A-3)

☐ 1. Yes ☐ 2. No
☐ 3. Don't know

21. If yes, please specify who needs more nutrition?

☐ 1. Male ☐ 2. Female

22. What is your source of this belief?

☐ 1. Family ☐ 2. Society
☐ 3. Religion ☐ 4. Self
☐ 5. Don't know

A.3. Maternal knowledge on food (*Ask the mother following questions*)

Statement	Yes	No	Don't know
23. Does she understand "malnutrition" as insufficient food for body or not?			
24. Does she know that food is needed for energy in the body or not?			
25. Does she know that loss of weight is a sign of malnutrition or not?			
26. Does she know that inadequate food intake causes malnutrition or not?			
27. Does she know that extra/high food consumption may also cause malnutrition or not?			
28. Does she know that diarrhea can affect malnutrition or not?			
29. Does she know that child's dental problems can lead to malnutrition or not?			
30. Does she know that worm infestation can affect to malnutrition or not?			
31. Does she know that Acute Respiratory Infections can lead to malnutrition or not?			
32. Does she know that malnutrition is common among 5 years old children or not?			
33. Does she know that fats (cooking oil, butter, milk, etc) are one of the essential foods for children or not?			
34. Does she know that carbohydrates (rice, noodles, bread, etc) intake alone is not enough for child growth or not?			
35. Does she know that proteins (egg, meat, fish, milk, daal, etc) intake is necessary to prevent malnutrition or not?			
36. Does she know that, several kinds of foods should be included in daily meal, to prevent malnutrition?			
37. Does she know that fast food is not better than cooked food at home?			

38. Does she know that the child should be given normal food when the child gets sick?			
39. Does she know that when the child gets diarrhea, ORS should be given to drink as much as possible?			

A.4. Maternal practice of child feeding (*Observe [where possible] or ask the mother directly and unobtrusively for recording your views about following questions*)

Statement	Yes	No
40. Does she ensure to keep the child take a rest and drink boiled water and eat soup when the child gets a cold?		
41. Does she always pay attention to the nutrients in daily meal?		
42. Does she give her child fresh milk every day?		
43. Does she always try to feed nutritious food to the child?		
44. Does she feed her child rice/noodles, fish/meat and vegetables together?		
45. Does she wash her hands before preparing food?		
46. Does she clean raw food materials before cooking?		
47. Does she give junk food to the child between two meals?		
48. Does she attempt to protect food from houseflies?		
49. Does she ensure that child takes bath at least once time a day?		
50. Does she ensure that the child washes hands before eating and after defecation?		

RECORDING FORM

House hold / Child information:

Sector's reference……..

House hold no…….

Date of interview……./ January / 2007

Gender:

☐ Male ☐ Female

Weight: _____ Kg. Height: _____ c.m.

Weight / Height----------% Degree of malnutrition----------

Age	Vaccination	Complete	Incomplete
At birth	BCG		
2 months	DPT + Polio First time		
3 months	DPT + Polio Second time		
4 months	DPT + Polio Third time		
9 – 11 months	Measles		

APPENDIX B

Score: Knowledge on nutrition

Statement	Yes	No-Don't know
1. Does she understand "malnutrition" as insufficient food for body or not?	**1**	**0**
2. Does she know that food is needed for energy in the body or not?	**1**	**0**
3. Does she know that loss of weight is a sign of malnutrition or not?	**1**	**0**
4. Does she know that inadequate food intake causes malnutrition or not?	**1**	**0**
5. Does she know that extra/high food consumption may also cause malnutrition or not?	**1**	**0**
6. Does she know that diarrhea can affect malnutrition or not?	**1**	**0**
7. Does she know that child's dental problems can lead to malnutrition or not?	**1**	**0**
8. Does she know that worm infestation can affect to malnutrition or not?	**1**	**0**
9. Does she know that Acute Respiratory Infections can lead to malnutrition or not?	**1**	**0**
10. Does she know that malnutrition is common among 5 years old children or not?	**1**	**0**
11. Does she know that fats (cooking oil, butter, milk, etc) are one of the essential foods for children or not?	**1**	**0**
12. Does she know that carbohydrates (rice, noodles, bread, etc) intake alone is not enough for child growth or not?	**1**	**0**
13. Does she know that proteins (egg, meat, fish, milk, daal, etc) intake is necessary to prevent malnutrition or not?	**1**	**0**
14. Does she know that, several kinds of foods should be included in daily meal, to prevent malnutrition?	**1**	**0**
15. Does she know that fast food is not better than cooked food at home?	**1**	**0**

16. Does she know that the child should be given normal food when the child gets sick?	**1**	**0**
17. Does she know that when the child gets diarrhea, ORS should be given to drink as much as possible?	**1**	**0**

Score: Maternal practice

Statement	Yes	No
18. Does she ensure to keep the child take a rest and drink boiled water and eat soup when the child gets a cold?	**1**	**0**
19. Does she always pay attention to the nutrients in daily meal?	**1**	**0**
20. Does she give her child fresh milk every day?	**1**	**0**
21. Does she always try to feed nutritious food to the child?	**1**	**0**
22. Does she feed her child rice/noodles, fish/meat and vegetables together?	**1**	**0**
23. Does she wash her hands before preparing food?	**1**	**0**
24. Does she clean raw food materials before cooking?	**1**	**0**
25. Does she give junk food to the child between two meals?	**1**	**0**
26. Does she attempt to protect food from houseflies?	**1**	**0**
27. Does she ensure that child takes bath at least once time a day?	**1**	**0**
28. Does she ensure that the child washes hands before eating and after defecation?	**1**	**0**

Table B – 1 Percentage of knowledge questionnaires answered by 200 mothers

Statement	Yes	No-Don't know
1. Does she understand "malnutrition" as insufficient food for body or not?	91.5	8.5
2. Does she know that food is needed for energy in the body or not?	99.5	0.5
3. Does she know that loss of weight is a sign of malnutrition or not?	97.5	2.5
4. Does she know that inadequate food intake causes malnutrition or not?	99.0	1.0
5. Does she know that extra/high food consumption may also cause malnutrition or not?	24.5	75.5
6. Does she know that diarrhea can affect malnutrition or not?	50.0	50.0
7. Does she know that child's dental problems can lead to malnutrition or not?	58.5	41.5
8. Does she know that worm infestation can affect to malnutrition or not?	71.5	28.5
9. Does she know that Acute Respiratory Infections can lead to malnutrition or not?	62.0	38.0
10. Does she know that malnutrition is common among 5 years old children or not?	67.0	33.0
11 Does she know that fats (cooking oil, butter, milk, etc) are one of the essential foods for children or not?	80.0	20.0
12. Does she know that carbohydrates (rice, noodles, bread, etc) intake alone is not enough for child growth or not?	74.0	26.0
13. Does she know that proteins (egg, meat, fish, milk, daal, etc) intake is necessary to prevent malnutrition or not?	80.0	20.0
14. Does she know that, several kinds of foods should be included in daily meal, to prevent malnutrition?	99.0	1.0
15. Does she know that fast food is not better than cooked food at home?	100	00

16. Does she know that the child should be given normal food when the child gets sick?	99.5	0.5
17. Does she know that when the child gets diarrhea, ORS should be given to drink as much as possible?	98.5	1.5

Table B – 2 Percentage of practice questionnaires answered by 200 mothers

Statement	Yes	No
18. Does she ensure to keep the child take a rest and drink boiled water and eat soup when the child gets a cold?	98.5	1.5
19. Does she always pay attention to the nutrients in daily meal?	99.0	1.0
20. Does she give her child fresh milk every day?	78.5	21.5
21. Does she always try to feed nutritious food to the child?	100	00
22. Does she feed her child rice/noodles, fish/meat and vegetables together?	98.0	2.0
23. Does she wash her hands before preparing food?	98.5	1.5
24. Does she clean raw food materials before cooking?	99.5	0.5
25. Does she give junk food to the child between two meals?	78.0	22.0
26. Does she attempt to protect food from houseflies?	100	00
27. Does she ensure that child takes bath at least once time a day?	76.5	23.5
28. Does she ensure that the child washes hands before eating and after defecation?	99.5	0.5

BIOGRAPHY

NAME	FAYYAZ AHMED SHAIKH
DATE OF BIRTH	1ST JUNE, 1962
PLACE OF BIRTH	Sindh Province, Pakistan
INSTITUTION ATTENDED	Chandka Medical College Larkana, Sindh Province, Pakistan 1983 – 90: Medical doctor ASEAN Institute for health development Mahidol University 2006 – 2007 Master of Primary Health Care Management
FELLOW SHIP/	JICA (Japan International Co-operative Agency)
RESEARCH GRANT	TICA (Thailand International co-operative Agency
POSITION AND OFFICE	Medical officer in Federal Government Services Hospital Islamabad, Pakistan.