

**DETERMINING CAUSES OF AND DEVELOPING
RECOMMENDATIONS TO ADDRESS MALNUTRITION
IN CHILDREN UNDER FIVE YEARS OF AGE IN AFGHANISTAN**

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DETERMINING CAUSES OF AND DEVELOPING RECOMMENDATIONS TO ADDRESS MALNUTRITION IN CHILDREN UNDER FIVE YEARS OF AGE IN AFGHANISTAN

A thesis submitted in partial fulfillment of the requirement for the degree of Master of Public Health

by


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"We are guilty of many errors and many faults, but our worst crime is abandoning the children, neglecting the foundation of life. Many of the things we need can wait. The child cannot. Right now is the time his bones are being formed, his blood is being made and his senses are being developed. To him we cannot answer "Tomorrow" His name is "Today"."



Gabriela Mistral, 1948

Retrieved on 10 May 2013 from: <http://www.who.int/nutgrowthdb/en/>

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ABSTRACT

Background: Malnutrition is one of the crucial global issues particularly in developing countries. Only 20 countries contribute to 80% of the world undernourished children. In Afghanistan the prevalence of malnutrition in under-fives in form of stunting, underweight and wasting is 52; 25; and 14% respectively.

Objective: To explore the causes of malnutrition in under-fives in order to provide policy makers and stakeholders with recommendations to improve levels of malnutrition in Afghanistan.

Method: This is a descriptive study based on literature review.

Result: Low exclusive breastfeeding rate, early initiation of complementary feeding with inadequate nutrients, high incidence of acute respiratory infections and diarrhea are the main immediate causes of malnutrition in under-fives in Afghanistan. Underlying factors such as low quality and quantity of food intake at the household level, low education level of women, poor health seeking behavior, and poor hygiene and sanitation of household and communities contributed to child malnutrition. The main basic factors are low income of household (36% of the population), insecurity and sociocultural norms such as gender violence, gender discrimination and traditional beliefs.

Conclusion: Malnutrition with different manifestations and consequences is a major public health problem among under-fives who are the most vulnerable population in Afghanistan. Short and long term actions at the household, community and national levels including health and nutrition education, improving quality of healthcare services, provision of safe drinking water and sanitation, agriculture and micronutrient interventions, special attention to gender issues and vulnerable groups are required to change the current nutrition status of children and improve the health outcomes.

Key words: Malnutrition, under-fives, micronutrient deficiency, developing countries and Afghanistan

Number of Words: 12303

LIST OF ABBREVIATIONS

APHI	Afghanistan Public Health Institute
ARI	Acute Respiratory Infections
BCC	Behavior Change Communication
BFHI	Baby Friendly Hospital Initiative
BHC	Basic Health Center
BMI	Body Mass Index
BPHS	Basic Package of Health Services
CHC	Comprehensive Health Center
CHW	Community Health Worker
CMAM	Community based Management of Acute Malnutrition
CSO	Census Statistics Organization
DH	District Hospital
EPHS	Essential Package of Hospital Services
FAO	Food and Agriculture Organization of the United Nations
GCMU	Grant Contract and Management Unit
HF	Health Facility
HSC	Health Sub-Center
IEC	Information, Education, Communication
IYCF	Infant Young Child Feeding
KIS	Kabul Informal Settlements
LMIC	Low and Middle Income Countries
MAIL	Ministry of Agriculture, Irrigation and Livestock
MDGs	Millennium Development Goals
MHT	Mobile Health Team

MI	Micronutrient Initiative
MOC	Ministry of Commerce
MoE	Ministry of Education
MoHE	Ministry of Higher Education
MoHIA	Ministry of Haj and Islamic Affairs
MoLSAMD	Ministry of Labor, Social Affairs, Martyrs and Disabled
MoPH	Ministry of Public Health
MoWA	Ministry of Women Affairs
MRRD	Ministry of Rural Rehabilitation and Development
NSP	National Solidarity Program
OOP	Out-of-Pocket
ORS	Oral Rehydration Salts
PND	Public Nutrition Department
SAM	Severe Acute Malnutrition
TFU	Therapeutic Feeding Unit
UNDP	United Nation Development Program
UNICEF	United Nations Children’s Fund
WHO	World Health Organization

INTRODUCTION

By profession, I am a medical doctor and started my work in December 2000, as head of mobile clinic for internally displaced people with an international non-governmental organization-INGO (Swedish Committee for Afghanistan-SCA) in Baghlan province of Afghanistan. Every day I was busy with treatment of almost 100 patients, specifically young children and women.

In 2002, I changed from clinical to public health with SCA. The focus was on immunization, capacity building of healthcare providers, as well as in management of first basic package of health services (BPHS) project in Kunduz province up to 2007. It was the time that ministry of public health (MoPH) of Afghanistan faced extreme shortage of trained healthcare providers, basic infrastructure and medical supplies, particularly in rural and remote areas. I was a member of a team that expanded the BPHS throughout Kunduz province and increased the number of health facilities (HFs) from 7 to 38.

From 2007 to third quarter of 2008 I worked as BPHS project manager of a National NGO in Baghlan province and I Joined Futures Group in Health Service Support Project-HSSP, a USAID funded project in Kabul to contribute in provision of technical assistance for national NGOs, INGOs and MoPH, in order to improve the quality of healthcare services.

During the 12 years of my work I was wondered why Afghanistan has the highest maternal and child mortality in the world despite expansion of BPHS and increasing the number of healthcare providers. When studying I realized: worldwide malnutrition is involved in 45% of all deaths of under-fives as underlying or contributing causes (El-Ghannam, 2003) and that Afghanistan has a high prevalence of malnutrition in its various forms in children (MoPH et al., 2004). I raised the questions: why is there little focus on this important component of BPHS, what are the main causes and contributing factors of malnutrition, why didn't we train healthcare providers in nutrition, why there are only a few limited studies about malnutrition in Afghanistan.

Therefore, by using this golden opportunity, I decided to search evidenced-based answers to some of my questions through this thesis. I hope my findings and recommendations help the MoPH and other involved stakeholders to appropriately design the practical interventions to improve the nutrition status of Afghan children.

CHAPTER 1: AFGHANISTAN BACKGROUND INFORMATION

1.1. GEOGRAPHY AND CLIMATE

Afghanistan is a land-locked country located in south-western Asia. It has a total area of 647,500 square kilometres. Afghanistan is divided into 34 provinces (Figure 1) and 362 districts. Two-thirds of the country is mountainous and covered by little or no vegetation (CSO, 2012).

The climate of Afghanistan varies. It has an arid to semiarid climate with hot and dry summers and very cold winters. The southern plateau has the highest temperatures and lowest rainfall. The mountains in the northeast have dry and cold winters and temperatures in January may drop to -15°C. In July temperature ranges from 0-27°C (Ronna, 2013).

Figure 1: Afghanistan map:



Retrieved on 15May2013 from: http://www.securityvacancieslist.com/wp-content/uploads/2012/09/afghanistan_province_color_map.gif

1.2. DEMOGRAPHY

The total population of Afghanistan is estimated between 26.5 million (51% male and 49% female) for the year 2011-12 (CSO, 2012) and 30 million (Rosenberg, 2012) with a density of almost 43 inhabitants per square kilometer. Seventy-six percent of the population lives in rural and 24% in urban areas. In addition, 1.5 million people are living as nomads (*Kuchi*) (CSO, 2012).

In Afghanistan almost 50% of the population is aged 0-15 years of which 19% are under-fives (CSO, 2012). The total fertility rate is 5.1 children per woman (APHI et al., 2011).

1.3. POLITICAL AND SOCIO-ECONOMIC SITUATION IN AFGHANISTAN

1.3.1. Religion and Language

The religion of Afghanistan is Islam and about 99% of the population is Muslim. About twenty-one ethnic groups are living in Afghanistan. The two official languages are Dari and Pashto (Rosenberg, 2012).

1.3.2. Education

The literacy rates among adult women and men and among urban and rural areas differ considerably. In urban areas 62% of male and 33% of female aged 15 and over are literate. In rural areas 35% of male and only 7% of female in this age group are literate (ICON-Institute, 2009).

Based on a recent survey (CSO and UNICEF, 2013), one out of five Afghan women aged 15-24 is literate. In rural areas this number is three times lower than urban areas and 10 times lower in the poorest households compared to their counterparts in the wealthiest quintile.

1.3.3. Economy

Afghanistan remains extremely poor. Since the fall of Taliban regime in 2001 some economic recovery took place due to infusion of international assistance. Still Afghanistan has the lowest living standard in the world (UNDP, 2013). The current GDP per capita is US\$572. Approximately 36% of the Afghanistan population doesn't have an official job and lives below the poverty line (World Bank, 2010).

Agriculture plays the important role in the economy and about 80% of Afghans are busy in the agricultural sector. Eighty percent the crops grown are cereals, primarily wheat. Afghanistan is not self-sufficient and still 18% of total imports are agricultural products such as wheat flour, rice, oil, sugar and tea (GAIN, 2011).

The total health expenditure (THE) per capita in Afghanistan is estimated US\$42. The out-of-pocket (OOP) expenditure accounts for 76% of the THE, the remaining is, governmental (6%) and donor funding (18%), (MoPH, 2011).

1.4. HEALTH SYSTEM

1.4.1. Health System Structure

During the last three decades of war and political instability the health system of Afghanistan was demolished. In 2001 after the fall of Taliban the health sector encountered challenges such as fragile infrastructure, low number of health facilities, lack of qualified health workers, lack of capacity at management and leadership level, poor coordination between government and healthcare providers, inappropriate hospital conditions.

The rebuilding of health system of Afghanistan started in 2002 with international support. MoPH determined the priorities to address the main health problem of the population and developed the Basic Package of Health Services (BPHS) and the Essential Package of Hospital Services (EPHS) (MoPH, 2005a).

1.4.2. Nutrition Status in Under-fives

1.4.2.1. Malnutrition

Malnutrition includes under-nutrition as well as over-nutrition. Malnutrition is defined as “the cellular imbalance between the supply of nutrients and energy and the body’s demand for them to ensure growth, maintenance, and specific functions” (WHO, 2009). Table 1 presents the different manifestations of undernutrition.

Table 1: Manifestation of undernutrition	
Stunting	The chronic form of malnutrition that compromises mental and physical growth of children. Shortness in height is its main symptom. Stunting is measured with height for age.
Wasting	The acute form of malnutrition. Children lose their weight due to acute inadequate intake of food or diseases. Wasted children have a low weight compared to same height children. Wasting is measured with weight for height.
Underweight	Underweight children have low weight compared to other children of the same age. Underweight can be either a sign of stunting or wasting or combination of both. Underweight is measured with weight for age.
Micronutrients Malnutrition	Micronutrient malnutrition is caused by a lack of intake, absorption or utilization of one or more vitamins or minerals. Each micronutrient deficiency has its own symptoms. For example; anemia is due to iron deficiency, goiter and cretinism due to iodine deficiency and night-blindness due to vitamin A deficiency. Source: (MoPH, 2010a; UNICEF, 2012a)

1.4.2.2. Consequence of Malnutrition

The consequences of malnutrition in children may be irreversible, especially when the malnutrition is severe or takes place below the age of 24 months. Malnutrition is a leading cause of death of young children throughout the world. Globally stunting and underweight each account for 17% and wasting account for 11.5% of deaths in under-fives (Black et al., 2013).

Fetal growth restriction, stunting, wasting, suboptimum breastfeeding, zinc and vitamin A deficiency jointly attributed to 3.1 million (45%) global deaths in under-fives in 2011 (Black et al., 2013).

Babies who are malnourished in the womb (due to inadequate nutrition of mother during the pregnancy) have a high risk of dying in infancy and are more likely to face lifelong cognitive and physical deficits and chronic health problems. Malnutrition makes children under- two years of age more susceptible to dying from common illnesses like pneumonia, diarrhea and malaria (thousanddays, 2013).

Malnourished children increase the cost of public health due to higher risk of hospitalization and longer hospital stays, loss of employment for caregiver, higher likelihood of chronic diseases such as diabetes and coronary heart diseases in later life, cognitive problems after age of 65 (35% for women and 29% for men) and higher risks of adult schizophrenia (Victora et al., 2008).

Malnutrition decreases the productivity (1% loss of adult height=1.4% loss in productivity and 4% decrease in wages). Further as mentioned above malnutrition impairs cognitive development; for instance low birth weight reduces 5 IQ points, stunting decreases 5-11 IQ points and iodine deficiency reduces 10-15 IQ points (Levitt et al., 2011).

CHAPTER 2: PROBLEM STATEMENT, JUSTIFICATION, OBJECTIVES AND METHODOLOGY

2.1. PROBLEM STATEMENT

Malnutrition is one of the crucial global issues. Only 20 countries contribute to 80% of the world undernourished children (Bryce et al., 2008). Between 1970 and 1995 the overall prevalence of childhood malnutrition declined in Asia, and is estimated at about 16.5%.

A large number of malnourished children are living in South Asia, i.e. in India, Bangladesh, Afghanistan and Pakistan. The prevalence of stunting in these countries is 38-51% and is much higher compared to Sub-Saharan Africa (26%) and Thailand (16%), (World Bank, 2006, 2013).

In Afghanistan the prevalence of malnutrition among under-fives shows remarkable percentages; stunting is 52%, underweight is 25%, and wasting is 14% (CSO and UNICEF, 2013).

From 2002 to 2010 some health indicators present significant improvement; maternal mortality reduced from 1600 to 327/100 000 live births, infant and under-five mortality from 129 to 77 and 191 to 97/1000 live births respectively (APHI et al., 2011). In comparison however, the child nutrition indicators have remained largely unchanged in the same period.

2.2. JUSTIFICATION

In Afghanistan everyone is entitled to nutrition independent of gender, socio-economic status and background (MoPH, 2012).

According to Copenhagen Consensus (2008) interventions to address malnutrition have been selected as five of the top ten best investments for the national development. Improving nutrition status of people specifically of children and women will significantly contribute to achieving other MDGs' goals.

Unfortunately, there are limited studies in Afghanistan about health and nutrition status of children to understand the causes of child malnutrition.

The aforementioned points incentivize me to explore the causes and factors involved in malnutrition in under-fives and to identify the opportunities for the health care system that could improve the nutrition status of under-fives in the country.

This review prioritizes potential interventions based on evidence-based practices. Through this study I hope to contribute to improvement the nutritional status of Afghan children.

2.3. OBJECTIVES

The Main Objective of this study is to determine the causes of malnutrition in order to provide policy makers and stakeholders with recommendations to improve levels of malnutrition in Afghanistan.

Specific Objectives:

- To describe the scale and trends of malnutrition in under-fives in Afghanistan;
- To explore the basic, underlying and immediate causes of malnutrition in under-fives in Afghanistan;
- To compare the existing nutrition policies and their implementation with potential responses;
- To develop recommendations to the Afghanistan ministry of public health (MoPH) and relevant stakeholders to address and improve the existing nutrition challenges in under-fives in Afghanistan.

2.4. METHODOLOGY

This is a descriptive study based on literature review.

To analyze the immediate, underlying and basic causes of malnutrition in under-fives I used the UNICEF (1990) conceptual framework (Figure 2) of malnutrition.

2.4.1. Literature Review

I mainly used the internet to search for relevant articles and did a literature review. I requested data and discussed some of my ideas by email with my colleagues in Afghanistan.

Review of Published Peer-Reviewed Literature: Internet search was conducted in Google scholar, Science Direct, PubMed and Scopus using the key words relevant to malnutrition for review of published articles.

Key Words:

For the internet searches the following key words were used, either singly or the combination: malnutrition, under-fives, micronutrient deficiency, developing countries and Afghanistan.

Grey Literature:

The following grey literature sources were reviewed:

- Publications of UNICEF, WHO, World Bank, FAO, UNFPA, UNDP, Thousand Days, Save the Children and related documents of Afghanistan MoPH, the Afghanistan government published documents like; National Risk and Vulnerability Assessment 2007/8, Afghanistan Mortality Survey 2010, National Nutrition Survey-Afghanistan-2004, and Afghanistan Multiple indicator Cluster Survey (AMICS) 2010/11;
- Unpublished reports and data of nongovernmental organizations (NGOs) were used after getting permission from their authorities;
- Nutrition surveys' reports conducted in some provinces by NGOs.

To collect background information about Afghanistan Google was used.

The search is limited to English (except Dari version of Afghan Civil Service Law) publications from 1990-2013 for developing countries. All publications before 1990 are excluded except to present historical references.

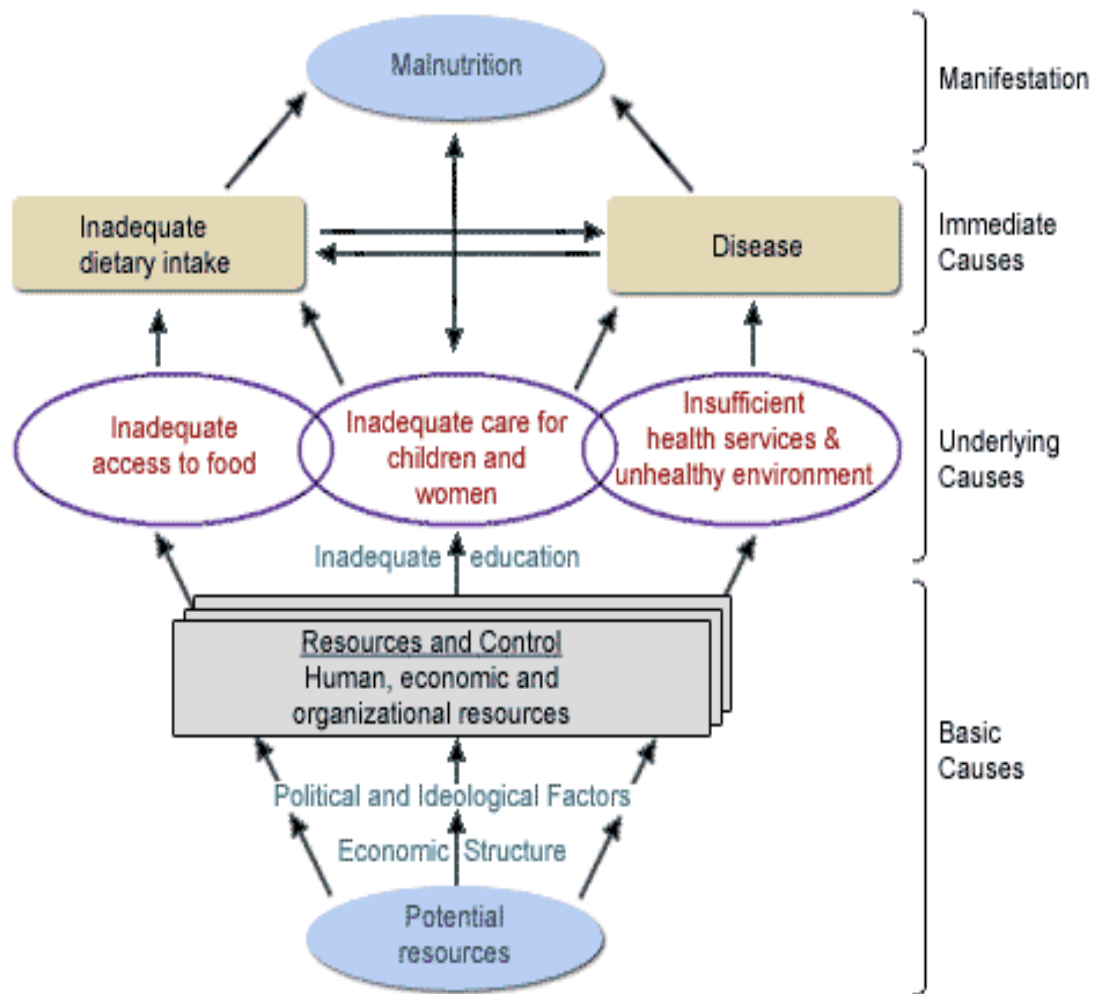
2.4.2. Conceptual Framework

For this thesis I use the UNICEF (1990) conceptual framework (Figure 2) of malnutrition to analyze the immediate, underlying and basic causes of malnutrition in under-fives.

This framework is frequently used in several studies to identify the causes of malnutrition in pregnant women and children in low and middle income countries (LMIC). Examples are the studies of Smith and Haddad (2000); Black et al (2008); and Pangaribowo, Gerber and Torero (2013).

The aim of using this framework is to analyze the role of each of the determinants in nutrition status of children at each level. In chapter 3, I describe the situation in Afghanistan and assess the potential for improvement.

Figure 2: Malnutrition conceptual framework



Source: UNICEF, 1990

CHAPTER 3: DETERMINANTS OF MALNUTRITION

This chapter first presents the scale and trends in the prevalence of malnutrition in Afghanistan. This chapter then uses the determinants of malnutrition, according to the UNICEF framework, to analyze the nutritional situation. In some areas detailed data are scarce.

3.1. LEVELS ON MALNUTRITION AND TRENDS

3.1.1. Levels of Malnutrition in Children

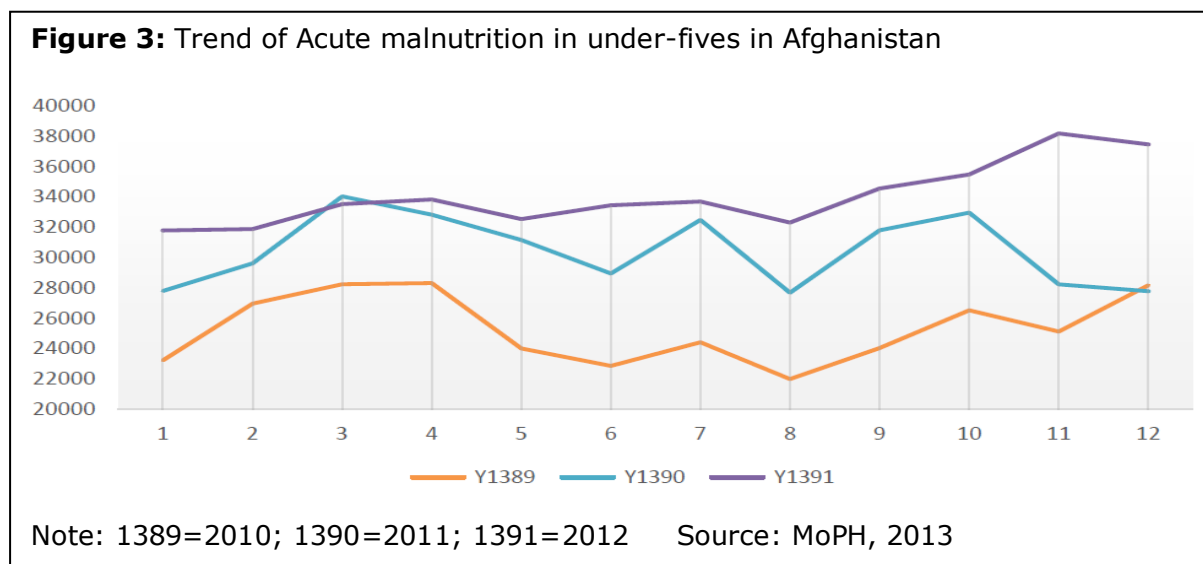
In 2004, according to the WHO classification the prevalence of stunting and underweight among under-fives, in Afghanistan is very high (MoPH et al., 2004). The 2011 data (CSO and UNICEF, 2013) show some minor reduction in prevalence of malnutrition in under-fives compared to 2004 (Table 2).

Table 2: Prevalence of malnutrition among under-fives in Afghanistan in 2004 and 2010-11, according WHO classification				
WHO Classification (Prevalence %)				
	Low	Medium	High	Very high
Stunting	<20	20-29	30-39	≥40-49
Underweight	<10	10-19	20-29	>30
Wasting	<5	5-10	10-14	>15
Afghanistan 2004 (Prevalence %)				
Stunting				60.5
Underweight				33.7
Wasting		8.7		
Afghanistan 2010-11 (Prevalence %)				
Stunting				52
Underweight			25	
Wasting			14	
Source: WHO, 1997; MoPH et al,2004; CSO and UNICEF, 2013				

In comparison levels of wasting are increasing and are alarming high in some parts of the country. The AMICS of 2010/11 found 29.5% of children are suffering from acute malnutrition in southern Afghanistan. A level almost similar to that found (30%) in famine zones (Guardian, 2012).

Annually, more than 300,000 under-fives die in Afghanistan; the third highest mortality rate in the world (Loewenberg, 2009).

The trend is confirmed by the recent HMIS report. The incidence of acute malnutrition (wasting) in under-fives in Afghanistan increased from some 26000 cases in 2010 (1389) to about 36000 cases in 2012 (1391), (Figure 3) (MoPH, 2013).



3.1.2. Micronutrients Malnutrition

Deficiencies in iron, iodine, vitamin A and zinc are major public health problems (Muller and Krawinkel, 2005). The global main causes and manifestation of these four micronutrients are summarized in Table 3.

Iron, iodine, vitamin A and zinc deficiencies largely affect women of reproductive age, pregnant women, adolescents, infants and under-fives in developing countries (Akhtar et al., 2013).

The Afghanistan National Nutrition Survey (NNS) 2004 found that some 72% of under-fives had iron deficiency (MoPH et al., 2004). There are no national-level biological measures of vitamin A deficiency (VAD).

There is no data for iodine deficiency for under-fives. The data for school age children (7-12 years of age) show that prevalence of iodine deficiency is 72% (boys 70% and girls 73.4%). This prevalence can be used as proxy for younger children.

Similarly, there is no data for zinc deficiency. As iron and zinc deficiencies often occur together, it is estimated that the prevalence of zinc deficiency in Afghanistan is nearly 50% in non-pregnant women (Levitt et al., 2011).

Table 3: Cause, manifestation, management and prevention of major micronutrients deficiencies			
Nutrient	Causes of deficiency	Manifestation of isolated deficiency	Management and prevention
Iron	Poor diet Elevated needs (e.g. while pregnant in early childhood) Chronic loss from parasite infections (e.g. hookworms, schistosomiasis, whipworm)	Anemia and fatigue Impaired cognitive development Reduced growth and physical strength	Foods richer in iron and with fewer absorption inhibitors Iron-fortified weaning foods Low-dose supplements in childhood and pregnancy Cooking in Iron pots
Iodine	Except where seafood or salt fortified with iodine is readily available, most diets worldwide are deficient	Goiter, hyperthyroidism, constipation Growth retardation Endemic cretinism	Iodine supplementation Fortified salt Seafood
Vitamin A	Diets poor in vegetable and animal products	Night blindness, xerophthalmia Immune deficiency Increased childhood illness, early death Contributes to development of anemia	More dark green leafy vegetables, Animal products Fortification of oils and fats Regular supplementation
Zinc	Diets poor in animal products Diets based on refined cereals (e.g. white bread, pasta, polished rice)	Immune deficiency Acrodermatitis Increased childhood illness, early death Complication in pregnancy, childbirth	Zinc treatment for diarrhoea and severe malnutrition Improved diet
Source: Muller and Krawinkel, 2005			

3.1.3. Levels of Malnutrition in Women

The nutritional status of women is assessed through anthropometry, anemia, incidence of low birth weight (LBW) and maternal mortality (ACC/SCN 1992; FAO, 2001; Black et al., 2008).

In Afghanistan, about 21% of women aged 15-49 years (non-pregnant) were undernourished (BMI below 18.5) (Levitt, et al., 2011). Undernourished women have a higher chance of giving birth to LBW baby. LBW infant girls may have growth failure during early childhood and may not reach the optimum body size. Early pregnancy may close a cycle of growth failure, as also explained in Figure 4 (ACC/SCN and IFPRI, 1992).

Afghanistan mortality survey (AMS) 2010 found that nutritional deficiencies caused 2% of deaths in women aged 15-49 years (APHI et al., 2011).

Inadequate access of women to amount and variety of food during pregnancy will increase the risk of complication during pregnancy and delivery. Women need extra energy and micronutrients; an additional

300 kilocalories after the first trimester of pregnancy and additional 500 kilocalories and 40% more vitamin A and C during lactation (FAO, 2000). Due to their physiological requirements women are more vulnerable to food insecurity than men.

In developing countries women aged 15-45 years spend a substantial proportion of their lives in a state of pregnancy or lactation or both, which may lead to depletion of maternal nutrient levels (Engle, Menon and Haddad, 1999).

In Afghanistan girls marry early; 15% is married before the age of 15 and 46% before the age of 18. About 2% of women have had a live birth before the age of 15. At 19 years 14% of girls have started childbearing (CSO and UNICEF, 2013).

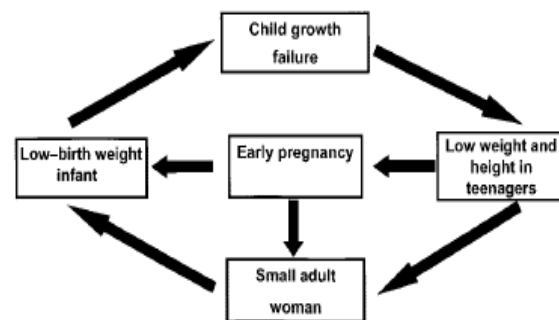
Micronutrient deficiencies in Afghanistan are serious. More than 48% of non-pregnant and 63% of pregnant women had iron deficiency. Among pregnant and non-pregnant women prevalence of iodine deficiency was around 75%. Only 18% of men (18-60 years) had iron deficiency (MoPH et al., 2004; Levitt et al., 2011).

According to Levitt et al (2011), 10% of pregnant women reported night blindness which indicates high prevalence of vitamin A deficiency among Afghan women. This is twice the rate at which vitamin A deficiency is considered a significant public health problem (>5%).

3.2. IMMEDIATE CAUSES

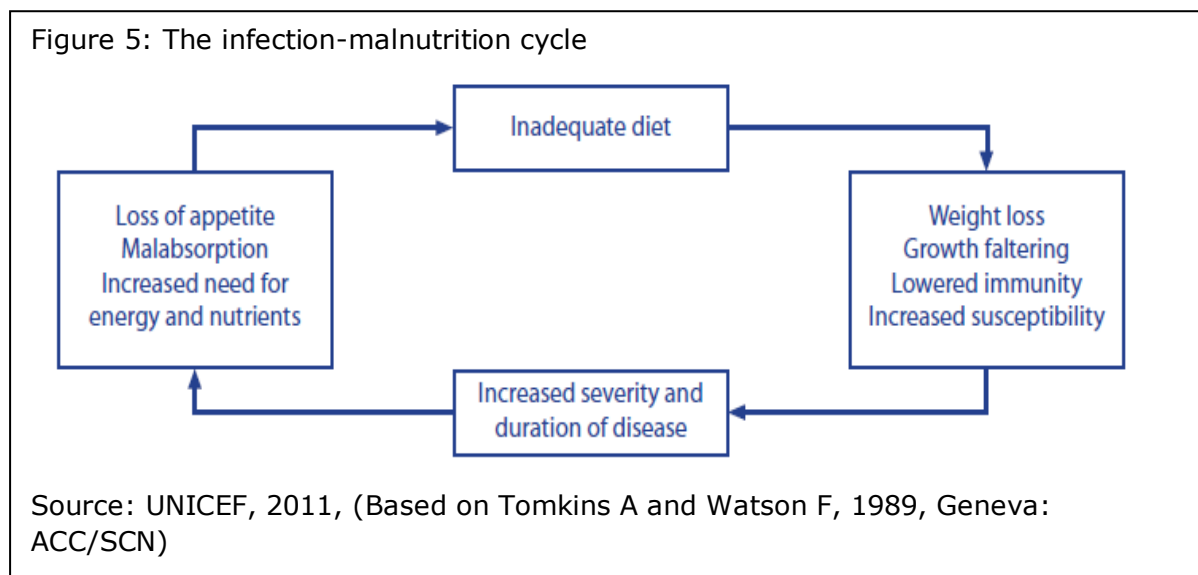
Disease and inadequate dietary intake, or combinations of both are the immediate causes of malnutrition. Infection can cause malnutrition and malnutrition can increase the risk of infection due to poor resistance and

Figure 4: Intergenerational cycle of growth failure



Source: (ACC/SCN & IFPRI, 1992)

capacity of malnourished child which may lead to a vicious cycle (Figure 5) (UNICEF, 2011).



3.2.1. Diseases

Infectious diseases affect the nutrition status and growth of children under-fives, specifically in poor areas, where the incidence of infectious disease is high, the sanitation is poor and the coverage of vaccination may be low (Stephensen, 1999).

Among the infectious disease, diarrhea, acute respiratory infections (ARI), pneumonia, measles and malaria have a major impact on nutrition status of children. Infections reduce appetite, disturb the absorption of nutrients and increase the use and loss of micronutrients. The presence of child malnutrition will increase the severity or duration of infectious diseases (Stephensen, 1999).

The HMIS data for the year 2010-2012/13 (1389-1391) show that ARI, pneumonia and diarrhea are among the top ten disease reported through BPHS health facilities in Afghanistan (Table 4). The CSO and UNICEF (2013) also found that 19% of under-fives had suspected pneumonia and almost 23% had diarrhea in the last two weeks of the survey. Malnutrition contributes the deaths of 52% of children with pneumonia and 61% of children with diarrhea (Caulfield et al., 2004).

Diarrhea is a leading cause of malnutrition in under-fives in the world due to loss of nutrients by each episode of diarrhea (WHO, 2013b). UNICEF (2006) estimated six episodes of diarrhea in under-fives per year in Afghanistan.

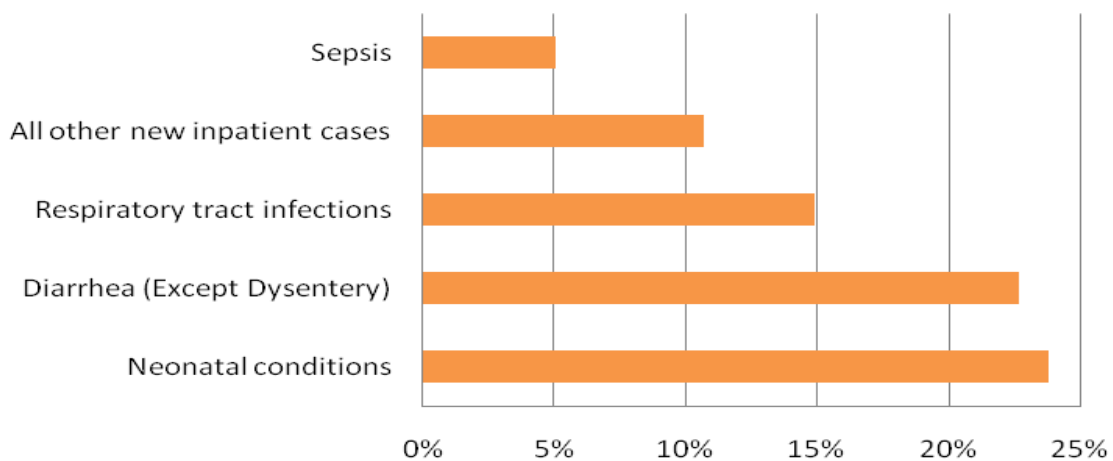
Based on the HMIS report for the period of April- December 2012, diarrhea and acute respiratory tract infections are among the top five causes of hospitalization (Figure 6) for under-fives in Afghanistan (MoPH, 2013).

Malaria: The incidence of malaria reduced by more than 75% in Afghanistan between 2000 and 2011 (WHO, 2012), and for the last three years it is not any more among the top ten diseases in under-fives (HMIS unpublished report 1389-139/12010-2012).

Measles: Measles vaccination coverage at the national level is about 56% (CSO and UNICEF, 2013). It is expected that the current house to house vaccination campaign, will improve vaccination coverage and reduce measles incidence.

Gastro-intestinal worm cases increased in the last two years in under-fives (HMIS unpublished report 1389-139/12010-2012). The main causes are related to water, sanitation and hygiene conditions that are explained in section 3.2.4.1.

Figure 6: Top five causes of hospitalization for under-fives in Afghanistan, Apr-Dec 2012



Source: MoPH, 2013

Table 4: Top Ten Diseases for under-fives in Afghanistan-2010-13							
S.N.	Disease	Number of Cases 1389	% of Total 1389	Number of Cases 1390	% of Total 1390	Number of Cases 1391	% of Total 1391
1	Cough and Cold	1948678	29.7	2197559	27.9	2431725	27.8
2	Acute Watery Diarrhoea	1390193	21.2	1561506	19.9	1616705	18.5
3	Ear, Nose, Throat (ENT) infections	1299462	19.8	1443108	18.4	1602136	18.3
4	Pneumonia	945493	14.4	1026159	13.1	1047613	12.0
5	Acute Bloody Diarrhoea	481338	7.3	536996	6.8	531184	6.1
6	Gastro-intestinal Worms	135	0.0	277520	3.5	502531	5.7
7	Eye Infections	27	0.0	221870	2.8	381944	4.4
8	Trauma	184431	2.8	232383	3.0	254878	2.9
9	Urinary Tract Infections (UTI)	172498	2.6	188810	2.4	201200	2.3
10	Diarrhoea with dehydration	137214	2.1	176667	2.2	179876	2.1
Total		6559469	100.0	7862578	100.0	8749792	100.0
Source: HMIS unpublished report 1389-1391 (2010-2012)							

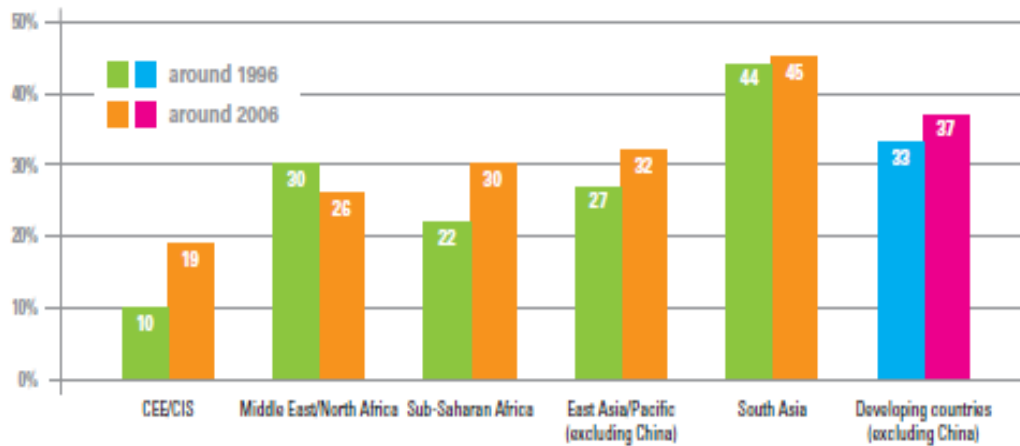
3.2.2. Dietary Intake

In this section the infant and young child feeding practices in Afghanistan are compared with recommendations.

3.2.2.1. Exclusive Breast Feeding

Exclusive breastfeeding for six months is recommended. Children who received six months of exclusive breastfeeding have better growth and fewer infections compared to non-exclusive breastfed children (WHO, 2008). The rate of exclusive breast feeding in South Asia is higher than in East Asia and Sub-Saharan Africa (Figure 7), but there is only one percent improvement between 1996 and 2006 (UNICEF, 2007).

Figure 7: World trends in exclusive breastfeeding rates (1996-2006)



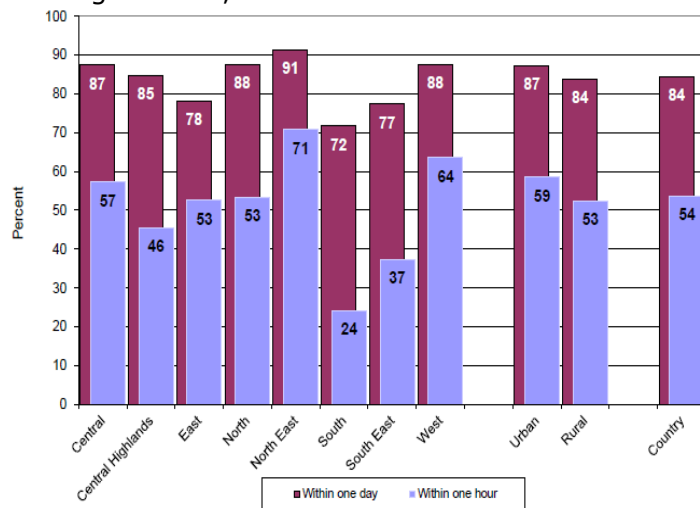
Source: UNICEF, 2007

Globally about 10% of disease burden in under-fives results from non-exclusive breastfeeding in the first six months of life. The chance of dying from diarrhea is fourteen times lower and from pneumonia is four times lower for the exclusively breastfed infant compared to a bottle-fed infant living in poverty (UNICEF, 2008).

The survey conducted by JHU and IIHMR (2006) show that 83% (636 children 0-5 months) of children exclusively breastfed in the last 24 hours before the survey.

The recent survey (CSO and UNICEF, 2013) found that the percentage of children who received breastfeeding within one hour is 54% and within one day of birth is 84% with differences by regions (Figure 8).

Figure 8: Percentage of mothers who started breastfeeding within one hour and within one day of birth Afghanistan, 2010-2011



Source: CSO & UNICEF, 2013

Figures are higher (62% and 89%) for women who delivered in a public HF compared to women who delivered in a private HF or at home.

Approximately 54% of infants are exclusively breastfed for six months. In Afghanistan the infants receive liquids or food other than breast milk at

the earlier ages. There is no significant difference in exclusive breastfeeding rates of boys and girls or in the rates of continuing breastfeeding. Continuing breastfeeding rates to boys is 90% and 71% at 12-15 months and 20-23 months compared to 85% and 68% of girls respectively.

Between 2006-2010/11 early initiation of breastfeeding improved significantly (17%). Exclusive breastfeeding is addressed in the Afghanistan national health and nutrition policy 2012-2020 (MoPH, 2012). Exclusive breastfeeding is one of the sub-criteria of 'staff received training' in Afghanistan balanced scorecard (BSC) indicators (JHU and IIHMR, 2008).

3.2.2.2. Complementary Feeding

Complementary feeding covers the very vulnerable period of child growth from 6 to 18-24 months of age (WHO, 2013a).

The role of continued breastfeeding and adequate nutrient density and frequency of weaning foods after the six months of life become crucial for the prevention of malnutrition. After six months only breastfeeding is insufficient to meet the infant needs (Brown and Lutter, 2000).

Complementary feeding has to be adequate, safe (to minimize the risk of contamination of food with pathogens), appropriate and timely.

The frequency of complementary feeding depends to the age of infant. The required energy from the breast milk and complementary food based on age of child is provided in Table 5.

Table 5: Energy requirements of breastfed children and the contribution of breast milk and complementary food by age			
Age Group of Child	Energy Requirements	Average Breast Milk Energy Intake	Energy Needed from Complementary Foods
6-8 Months	615 Kcal	413 Kcal	200 Kcal
9-11 Months	686 Kcal	379 Kcal	300 Kcal
12-24 Months	894 Kcal	346 Kcal	550 Kcal

Source: Dirorimwe, 2008 (adapted from WHO, 2000)

Several infants feeding practices affect the complementary feeding of infants and young children. Table 6 presents the nutritional consequences of some Afghan infant feeding practices.

Table 6: Nutrition consequences of some Afghan infant feeding practices

Inadequate nutrient density	Children eat watery soup or stew with bread. The soup has little solids. Energy, protein and micronutrient content is inadequate, but fills the children's stomachs. No special food is prepared for the young children (Dirorimwe, 2008).
Inadequate food quantity	Some young children cannot meet their daily food needs due to sharing the family plate with older children who eat first (Dirorimwe, 2008).
Inadequate duration of continued breastfeeding	Many Afghan mothers stop breastfeeding before 24 months or abruptly, due to early pregnancy or illness which may not allow the children to gradually adapt to foods other than breast milk (Dirorimwe, 2008).
Inadequate hygiene	Poor hygiene practices of the mothers affect the feeding of young children. For instance when mothers clean the bottom of children mostly they don't wash their hands with soap. When they feed their children using their fingers they expose their children to potential infection and diarrhea (Dirorimwe, 2008).
Inadequate frequency of feeds	The CSO and UNICEF (2013) found that about 27% of currently breastfeeding infants aged 6-8 months received solid, semi-solid or soft foods in urban areas compared to 18% in rural areas. The frequency of complementary feeding should be increased with the age of child. In Afghanistan only 18% of children aged 6-23 months were receiving solid, semi-solid or soft foods the recommended 5 or more times. Fifty-four percent of the non-breastfeeding children were receiving solid, semi-solid and soft foods or milk feeds four times or more.

3.3. UNDERLYING CAUSES

3.3.1. Access to Food

3.3.1.1 Food Security

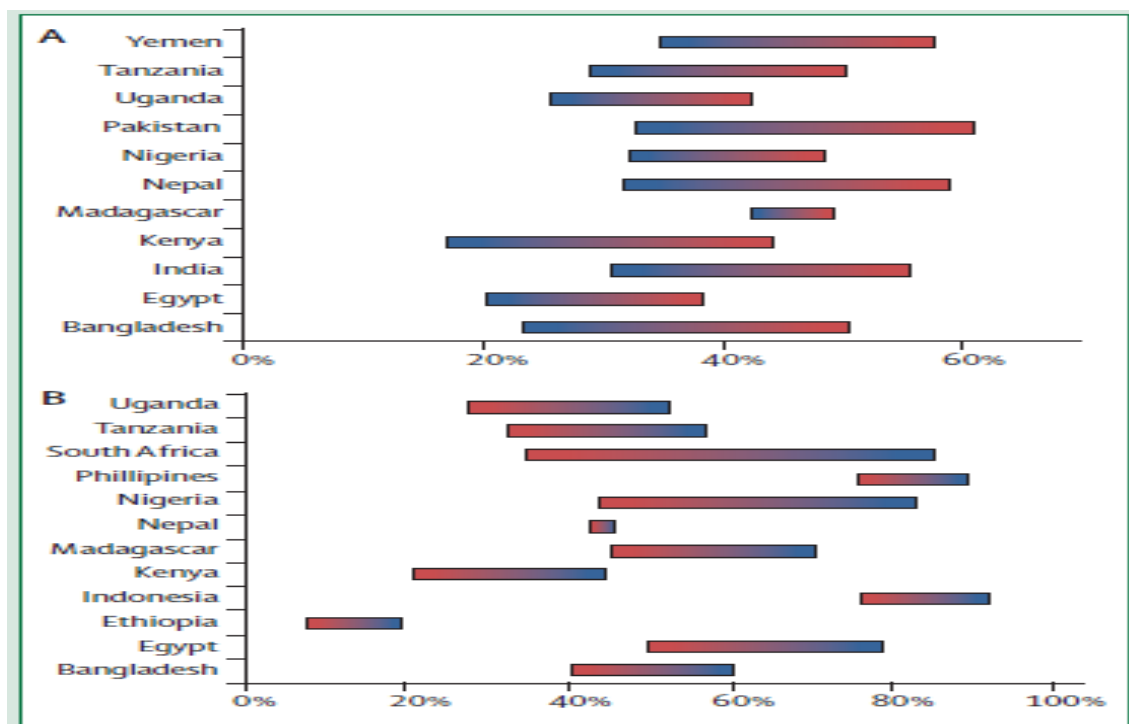
According to FAO (2000) food security refers to sustainable availability and accessibility to nutritious, culturally acceptable and safe food in households to all members of the family with sufficient quantity and quality, as well as with affordable price in the market.

According to World Bank (2005) inadequate access to food due to low income of the household is the main cause of food insecurity at the household level in Afghanistan.

Inadequate intake of animal-source food which is rich of protein and micronutrients is a risk factor in child stunting (Black et al., 2008). Black et al (2008) analyzed the disparities in prevalence of stunting between the top and bottom wealth quintiles of the population in 11 countries (Figure 9A). In most countries poor children are almost twice the rate of stunting compared to wealthier children. The analysis also shows the gap between proportion of children in top and bottom wealth quintiles who ate meat, fish, poultry or eggs 24 hours before the survey (figure 9B).

Food insecurity is one of the on-going challenges of many Afghan people. Thirty-six percent of population (about 10 million) is living in poverty. The national risk and vulnerability assessment (NRVA) shows that 28% of household have inadequate calorie intake in 2007/08. No data are available on diet diversity. Wheat, the major staple of food of Afghans, accounts for about 70% of food consumption (ICON-Institute, 2009).

Figure 9: Stunting and Dietary Diversity



A) Percentage of children aged 0-59 months who, were stunted. Bars show the gap between prevalence in the poorest (red) and least poor (blue) wealth quintiles.

B) Percentage of children aged 12-23 months who ate meat, fish, poultry, or eggs in the 24 hours before the survey. Bars show the gap between intake in the poorest (red) and least poor (blue) wealth quintiles.

Source: Black et al., 2008

The consumption of fresh fruit, vegetables and meat is limited, specifically in poor and low income household and in remote areas. The Afghan family meals generally lack protein, vitamins and minerals (Dirorimwe, 2008).

Insufficient water resources for agriculture, insufficient production of wheat and cereals and declining livestock production are the principle causes of food insecurity in Afghanistan (World Bank, 2005).

The high price of food is affecting the diversity and quantity of consumption of food. The assessment findings of World Food Program-WFP (2008) showed that wheat price between May 2007 and May 2008 in Afghanistan increased 200%. As a result the proportion of households with poor food consumption increased by 16% compared to 2006. Poor people may reduce the consumption of meat and poultry, thereby risking iron deficiency anemia.

3.3.2. Care for Children and Women

3.3.2.1. Care for Children

According to Engle (1992) "Care refers to caregiving behaviors such as breastfeeding, diagnosing illnesses, cognitive capacities and providing emotional support". The mother is the main caregiver for infants and young children in most developing countries. In large families other family members like grandmothers, siblings and the father also contribute in child care (Latham 1997). Afghanistan is one of these countries.

National, local and family factors are affecting in provision of care to children (Latham, 1997). For example, the war and conflict; climate, water supplies, availability of health care services, family size, type of housing and knowledge of mother/caregiver, and caregiver's autonomy in decision making and control over resources .

Studies from LMIC show that the cultural believes, feeding style, mother/caregiver time and verbal and physical behavior are associated with responsive feeding of child. Children eat more or less with positive and/or negative behavior of mother/caregiver (Dearden et al., 2009).

A survey conducted by Roncoroni (2012) among Kabul informal settlement-KIS (refugees and internally displaced people due to war and natural disaster) shows that women allocated only 8% of their daily activities to care their children. The young age of women (no interest to take care of child as still they themselves are child), frequent pregnancy (no energy to spend time with younger children), lack of financial

resource and being under the authority of their husband and mother-in-law were the main reasons.

Feeding Practices: The cultural beliefs in Afghanistan significantly influence in child care practices in both, rural and urban areas. In Afghanistan many mothers discard colostrum and replace it at birth with some ritual foods such as butter and boiled herbs with sugar (Dirorimwe, 2008).

Based on my personal observation, my sister was prohibited by her mother-in-law from feeding of colostrum to her baby after her first childbirth and later they insisted on starting the complementary feeding when the baby was about four months.

According to a report in the Guardian (2012) in southern Afghanistan women are advised that breast-milk is not enough and they give the infant tea and water (which do not have nutrition) or formula milk which is often over-diluted or prepared with unclean water.

Roncoroni (2012) also found that some 42% of women start the solid (mainly bread or biscuit with tea and sugar, banana, rice) complementary feeding while their children are 3-6 months old and some 41% of women when their children are 6-9 months old. The remaining 17% start either later than 9 months or did not know.

About 68% of women provide emotional support to their children such as talking, giving affection and food and sometimes beating the children when they are crying.

Health Care Seeking: Knowledge and understanding of the danger signs of pneumonia are important determinants of healthcare seeking behavior (CSO and UNICEF, 2013). The survey conducted by MoPH, JHU and IIHMR (2006) found that the perception that the illness or disability is not severe enough is one of the main reasons (27.5%) for not seeking care for under-fives. The primary reason for not seeking care for a greater proportion of people in age group of five and over was the inability to pay the transportation cost.

According to CSO and UNICEF (2013) only 32% of mothers/caregivers immediately take the child to health care providers when they identified the fast breathing and some 41% when they identify difficulty breathing of child.

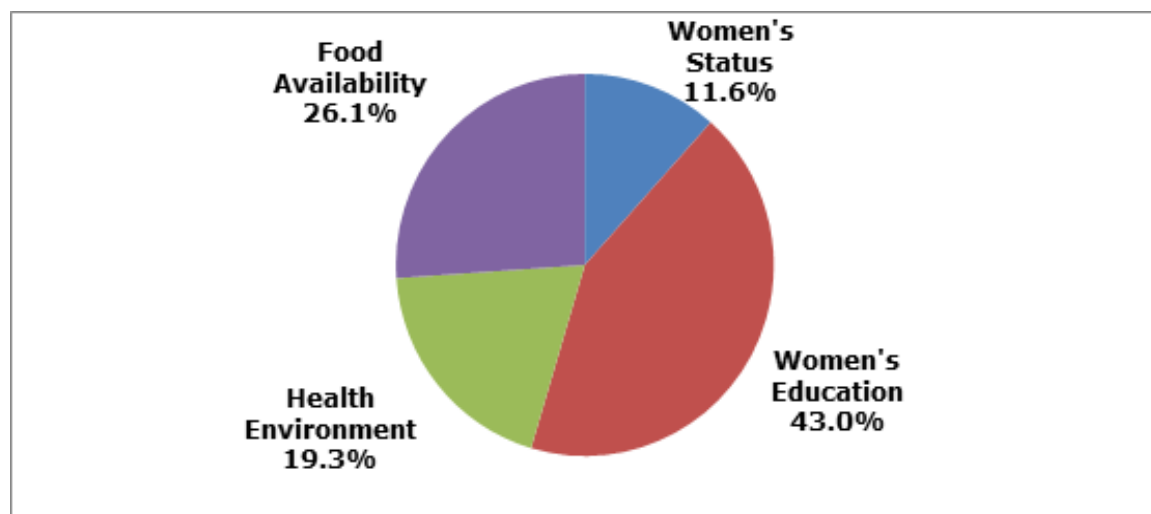
Increasing intake of fluid and continuation breastfeeding during episodes of diarrhea is important to reduce the deaths and malnutrition in under-fives.

CSO and UNICEF (2013) found that about 64% of under-fives received oral rehydration salt or any recommended home fluid. Continued feeding with rehydration therapy during diarrheal episodes was almost 48%.

In Afghanistan 30% of children 12-23 months are fully vaccinated (annex 1). There is no significant gender disparity in vaccination rates.

Education Level of Women: Improvement in women’s education had the strongest effect (43%, Figure 10) in reduction of child malnutrition in developing countries, even stronger than food availability (Smith and Haddad, 2000).

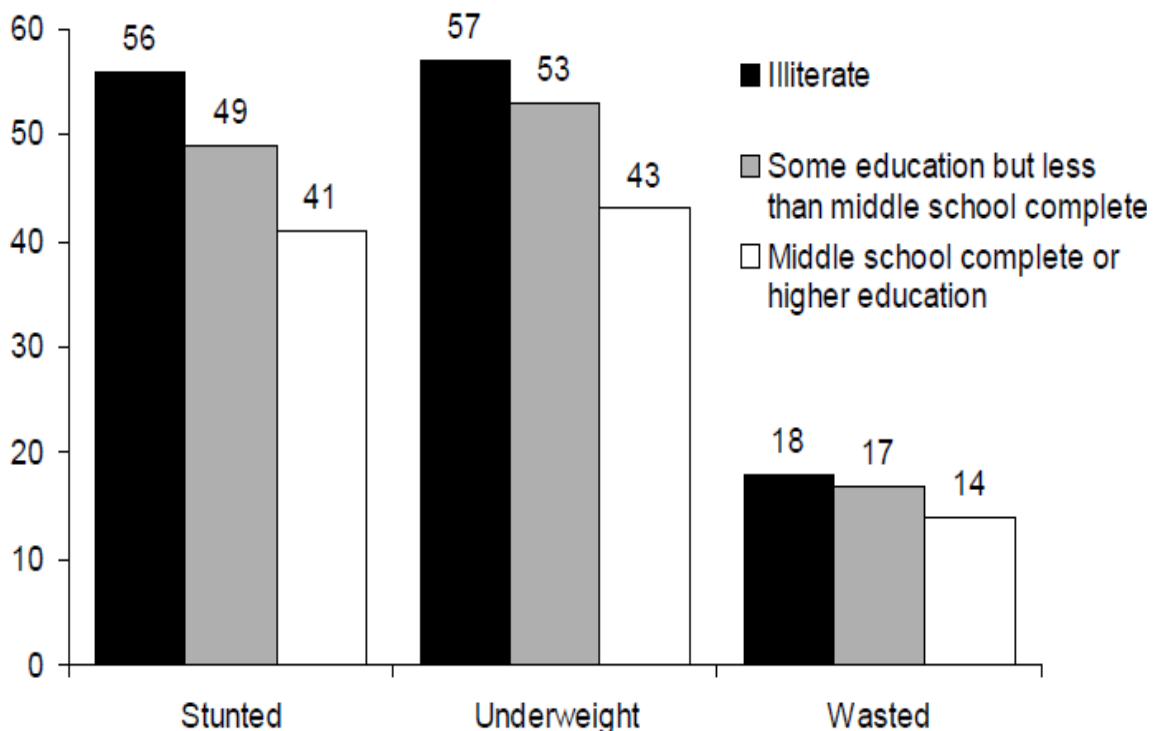
Figure 10: Contribution of major determinants in reduction of child malnutrition, 1970-1995



Source: Smith and Haddad, 2000

According to Black et al (2013), maternal education in LMIC is associated with improved child-care practices, reduction of stunting and better benefit from healthcare interventions. A study in India confirms these findings (Figure 11) (Mishra and Retherford, 2000).

Figure 11: Adjusted effect of mother's education on proportion of children under-four years of age who are stunted, underweight or wasted: India 1992-1993



Source: Mishra & Retherford, 2000

In Afghanistan levels of education, especially of women, leave a lot to be desired. In Afghanistan based on CSO and UNICEF (2013) survey, some 22% of women aged 15-24 years are literate (can read the showed sentence) with a significant difference between urban (51.6%) and rural areas (15.1%) and between poorest (5.1%) and richest (50.3%). The literacy rate is very low in south (2.7%).

There is a positive correlation between education level of mothers and completion of primary school, e.g. 57% of children whose mother has secondary education or higher, completed primary school. This figure is only 29% for children whose mother has no education. Only 21% of girls complete the primary school which is almost half the rate as for boys (40%). The primary school completion rate in urban areas (42%) is higher compared to rural areas (28%) and higher in central regions (17%). There is also gender disparity for primary school (0.74), which significantly drops by secondary level to 0.49 (CSO and UNICEF, 2013).

CSO and UNICEF (2013) found that in Afghanistan those mothers who are more educated it is more likely to immunize their children and themselves

and use contraception. In Afghanistan 41% of mothers protected against tetanus, ranging from 39% in women with no education to 61% with secondary or higher education.

3.3.2.2. Care for Women

Relevant healthcare services for the continuum of care are: antenatal care for safe childbirth, postnatal care for health of both mother and child specifically during the six weeks after birth and its link with family planning, adolescence care for education, nutrition, sexual and reproductive health, care for prevention and treatment of sexually transmitted diseases, care for pregnancy complications (Kerber et al., 2007).

The nutrition status of newborns relies on the health and nutrition status of their mothers before, during and after pregnancy. Improving nutrition status of mother during the pregnancy and first two years of child life (the first thousand days) can lead to considerable reduction of children stunting and improved their survival (Bhutta et al., 2008).

Rayhan and Khan (2006) claim that in Bangladesh children of a well-nourished mother have a 40% lower risk to be wasted ($OR^1=0.594$; $P<0.05$) compared to children of acute malnourished mother.

Yimer (2000), from a study in Ethiopia found the positive correlation of birth interval and child stunting i.e. 47.7% of children were stunted with birth interval of less than 24 months compare to 32.5% with birth interval of more than 48 months.

The use of contraception in Afghanistan is very low (almost 21%), ranging from some 20% in women with no education to 38% in women with secondary or higher education. Fifteen percent of women from poor household use contraception compared to 37% of their counterparts in the wealthiest quintile (CSO and UNICEF, 2013).

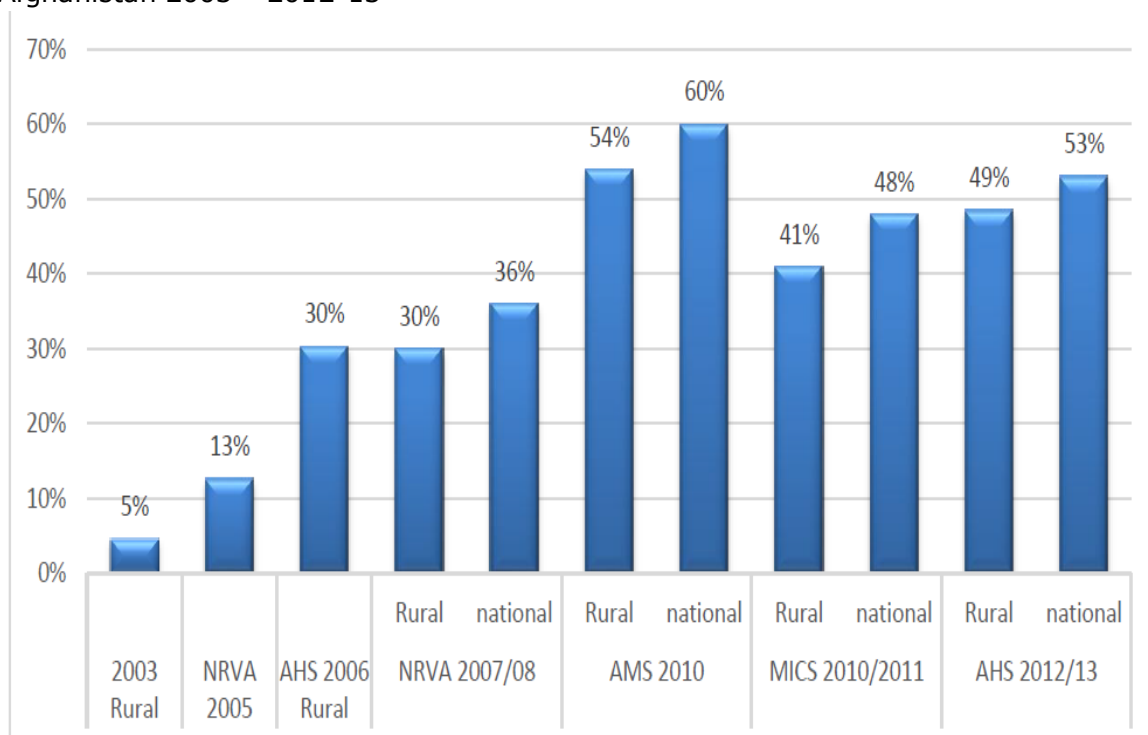
Based on Afghanistan civil service law, women are entitled to 90 days maternity leave and can take 1/3 of it before and 2/3 of the leave after delivery (IARCSC, 2005). The lack of nursing facilities affects the exclusive breastfeeding rate and may cause early start of complementary feeding or bottle feeding.

CSO and UNICEF found (2013) found that the use of antenatal care in Afghanistan is very low. Less than half (48%) of women visited skilled

¹ OR= Odd Ratio

health personnel (doctor, nurse or midwife) and received at least one antenatal visit during pregnancy in 2010/11. The recent HMIS report for the year 2012/13 (Figure 12) shows only 5% improvement i.e. about 53% of pregnant women received at least one antenatal visit (MoPH, 2013). This means some 47% of pregnant women are not receiving this care.

Figure 12: Percentage of pregnant women with at least one antenatal visit, Afghanistan 2003-- 2012-13



Source: MoPH, 2013

According to Yimer (2000), the prevalence of stunting among children that their mothers had five or more antenatal visits was 32.9% compared to 47.3% whose mothers had no antenatal visit.

About 34% of deliveries in Afghanistan take place with assistance of skilled birth attendants. Ten years earlier this was only 6%. Still every two hours one mother dies during childbirth (Dalil, 2013).

Roncoroni (2012) found that about 56% of KIS surveyed women did not get any information before their first delivery and the remaining 44% get only little information (mostly by mother-in-law) about the hygiene (to be clean and keep clean the place where the baby will born) and endure the pain.

When women are aware about life-threatening obstetrical complications they seek appropriate health care. The Afghanistan mortality survey 2010

reports that only 32% of women during first antenatal care got information about pregnancy complications (APHI et al., 2011). Even when the care is available women may not access and receive health care services due to limited decision making power, and not having control over resources (Ahmad et al. 2010).

3.3.3. Health Care Services

3.3.3.1 Access to Basic Health Care Services

The basic and essential element of health system of Afghanistan is consisting of basic package of health services (BPHS) and essential package of hospital services (EPHS):

3.3.3.1.1 Basic Package of Health Services (BPHS)

BPHS started in 2003 with the aim of providing and making available core quality and cost effective healthcare services in equitable manner through entire primary healthcare services to all Afghan people including those who are living in rural and remote areas (MoPH, 2005a). Through the years emerging health priorities extra services and new types of health facilities were added. BPSH consist of seven core elements; maternal and newborn health, child health and immunization, public nutrition, communicable diseases treatment and control, mental health, disability services, and regular supply of essential drugs (MoPH, 2010b).

BPHS provides the basic health services through specific health facilities (HFs), as summarized in Table 7.

Table 7: Type, staff, service and population served by BPHS HFs

Type of HF	Staff	Services	Coverage/Catchment area
Health Post (HP)	Ideally one male and one female community health worker (CHW)	Basic health services	1000-1500 people at the community level
Health Sub-Center (HSC)	Community midwife and a male nurse	To increase access to health services for those who are living in remote, underserved and challenging geographical areas and to bridge the service gaps between HPs and other level of BPHS	About 3000-7000 population
Mobile Health Team (MHT)	Male doctor or nurse, community midwife or nurse and vaccinator with a driver	The idea of establishing a limited number of MHTs in each province emerged to ensure provision of basic health services in hard-to-access areas where small pockets of population are living. Considering the shortage of trained health workers specifically females and avoiding under-utilization of fixed HFs	visit the areas based on a schedule considering the security, remoteness and health need of the people
Basic Health Center (BHC)	A male nurse, a community midwife and two vaccinators	The BHC delivers primary outpatient care, maternal and newborn care and immunization. The BHC serves as a referral point for treatment of severe malnutrition as well.	a total population of 15000-30000 depending to geographical location and population density
Comprehensive Health Center (CHC)	The technical staff of each CHC consisting of both male and female doctors, two midwives, two nurses (male and female), two vaccinators, pharmacy and laboratory technicians, and a psychosocial counselor (male or female).	The CHC provides a wider range of healthcare services than BHC with a limited space of inpatient care including treatment and referring of severe malnutrition	for about 30000-60000 people
District Hospital (DH)	The DH staffed with doctors (male and female), a surgeons, an anesthetist, a pediatrician, midwives, vaccinators, a pharmacist, a dentist, laboratory, X-ray and dental technicians, two physiotherapists (male and female) and mental health focal point (psychosocial counselor/supervisor).	The DH provides broader and comprehensive outpatient and inpatient care including treatment of severe malnutrition	serves to about 100 000 to 300 000 population

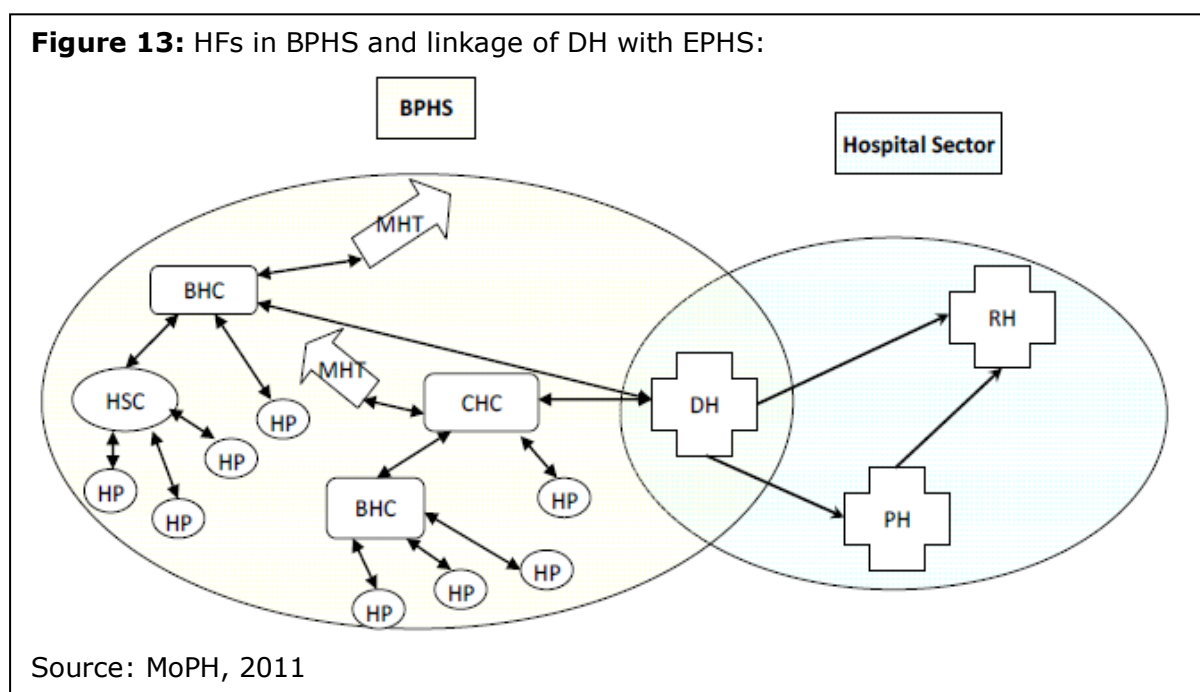
Source: MoPH, 2010b

Note: an extra layer at the name of Family Health Action (FHA) Groups to assist female CHWs currently functional in some provinces of Afghanistan and the assessment of FHA groups showed their positive role on linking families with CHWs and enhanced knowledge of mothers about child health care, danger sign of pregnancy and FP (HSSP, 2012).

3.3.3.1.2 Essential Package of Hospital Services (EPHS)

After the establishment of BPHS, MoPH developed the Essential Package of Hospital Services (EPHS) to improve and promote referral and integration of BPHS, to provide a guide for staffing and necessary equipment, material and drugs and to standardize the services at district, provincial and regional hospitals.

Hospitals play a significant role in health system of Afghanistan in reducing maternal and child mortality rates. Further than the BPHS, the EPHS provides a complete and comprehensive healthcare services through three categories of hospitals namely **district, provincial and regional hospitals**, as well as specialized and tertiary hospitals at Kabul (MoPH, 2005b). Figure 13 shows the linkage of BPHS with EPHS.



3.3.3.2. Nutrition Programs

Since 2002, 47 therapeutic feeding units (TFU) as part of hospitals and selected district hospital were established in 32 provinces. The coverage remained limited and defaulter rates were high due to length of treatment in TFU. In 2007 community-based management of acute malnutrition (CMAM) with partnership of BPHS NGOs was piloted in 9 provinces. For the management of moderate acute malnutrition and follow-up of treated SAM patients, in early 2009 a supplementary feeding program (SFP) component was added to the CMAM pilot. Though the coverage of this program compared to TFUs alone is significantly higher, some serious

challenges remain: weak functional community network, work load of CHW, insecurity and rare infant and young child feeding (IYCF) counseling with treatment of SAM patients which makes them vulnerable to relapse (MoPH, 2010a).

Promotion of breastfeeding and behavior change communication for complementary feeding is part of BPHS and EPHS and other policy documents. However, the number of qualified counselors to provide quality counseling is insufficient.

Baby friendly hospital initiative (BFHI) and code of marketing of breast milk substitutes (BMS) are introduced. Though, monitoring and evaluation (M&E) data are not available. M&E activities are currently weak and poorly managed (MoPH, 2010a).

Micronutrients supplementation such as vitamin A supplementation is given to children as part of NIDs. During pregnancy and lactation the vitamin A needs is increased and it is recommended that mothers take postpartum vitamin A supplementation. AMS 2010 found that only 19% of women received a postpartum dose of vitamin A (APHI et al., 2011). Coverage is low, because majority of deliveries take place at home (MoPH, 2010a).

Iron and folic acid supplementation for pregnant and lactating women is part of BPHS and EPHS. Coverage of ANC is only about 36% (Levitt et al., 2011).

Currently the coverage of 'universal salt iodization program' is estimated at 50%. Twenty-five factories produce iodized salt and fortification is providing by UNICEF and Micronutrient Initiative (MI). Though the import of salt was banned by government, there is no capacity in salt iodization factories to clean the salt from dirt and mud. Due to the dark color of locally produced salt people prefer the smuggled salt (Levitt et al., 2011).

Flour fortification piloted between 2000 and 2005 and is implemented in 2008 in eight flour factories. However, there is no national flour fortification standard, no capacity to control the quality of domestic and imported flour and no system to monitor the coverage and use of fortified flour (Levitt et al., 2011).

Zinc supplementation with oral rehydration salt (ORS) for treatment of diarrhea is included in the revised BPHS and its implementation started in 20/34 provinces. There is no data available for prevalence of zinc

deficiencies (Levitt et al., 2011; personal communication with Afghanistan MI Director, July 2013).

The WFP is providing an additional food supplementation program in food insecure areas. The programs such as food for work and food for education; provide food for vulnerable population (personal communication with Afghanistan MI Director, July 2013).

3.3.3.3. Challenges

The challenges of BPHS and EPHS, which are the essential elements of health system of Afghanistan, are inadequate implementing strategy, lack of essential medical supply and weak and inadequate referral system among different level of BPHS and between BPHS and EPHS (MoPH, 2010).

At the national level several departments of MoPH are working on the improvement of maternal and child health. Each has their own policies and strategies and own management structure. The separate strategies and specific strategic objective may overlap, support or contradict each other. Table 8 presents an overview of these structures.

Table 8: Overview of management structure nutrition related programs

BPHS and EPHS are managed by the Grant and Contract Management Unit (**GCMU**);

The **health promotion department**, which is responsible for development of information, education and communication (IEC) materials and to assure their availabilities in HFs, is under the stewardship of **APHI**;

The **reproductive health department** with its distinct policy and strategy is under the umbrella of deputy minister of the curative office (personal communication with MoPH authorities, June 2013).

The **Public Nutrition Department (PND)** with its specific policy and strategy has a poor position in the MoPH chart (Levitt et al., 2011) and needs to coordinate and work with different departments of MoPH, as well as with other ministries and stakeholders to improve the nutrition status of Afghan women and children.

3.3.3.4. Factors Involved in access and utilization of health care services

The ICON-Institute (2009) reports that about 85% population in Afghanistan can reach a HF within one hour by using any mean of transport. Singh et al (2012) found that despite the high coverage of

BPSH in Afghanistan, the service utilization in rural areas, and particularly among poor people, is low due to different following reasons:

- Awareness of people about health care facilities is low [despite radio coverage of 83% and TV coverage of 37% mainly in major cities (Altai, 2005)];
- Health care providers have a poor and disrespectful attitude and behavior with their clients (Singh et al., 2012). The Afghanistan BSC survey for the year 2008 found the low (48%) patient counseling index, i.e. less attention of health providers to patients (JHU and IIHMR, 2008);
- Clients have a poor perception on quality of medicines (despite that only 4% of supplied medicines in public health facilities under BPHS were substandard (MoPH, JHU and IIHMR, 2007). The poor perception of the community is most probably due to weak communication between health providers and clients to explain that same-colored medicines advice for different symptoms (Singh et al., 2012).
- Women have little autonomy. They need permission from head of household or should be escorted with men or other family members. Particularly from male members to seek health care services. Cultural and traditional practices; seek care from traditional healers (*Mullah and Hakim*) (Singh et al., 2012);
- Some staff demand direct payment due to shortage of medicine, particularly after delivery. Some doctors have associations with private drugs sellers and demand extra payment, which is shared (Singh et al., 2012);
- Physical accessibility prevents the poor people using the HF due to large distance and high transportation cost (Singh et al., 2012). JHU and IIHMR (2006) found that increasing the distance from two hours to ≥ 3 -4 hours, reduce the use of ANC and skilled birth attendants to up to four times;
- Condition and functioning of HFs. Even those who are living close to the HF, cannot access healthcare due to shortage of staff [the Afghanistan public health sector has 5.6 doctors, nurses and midwives (combined) per 10000 populations (MoPH, 2012)]. Contributing factors: particularly shortage of female staff (female medical doctor, nurse, midwife, female vaccinator); because of cultural and religious beliefs the community does not want that male doctors care for their women; unavailability of staff during emergency at night; long waiting time; heating problem of HFs

during the winter; lack of basic privacy during care and treatment like same waiting place for women and men (Singh et al., 2012).

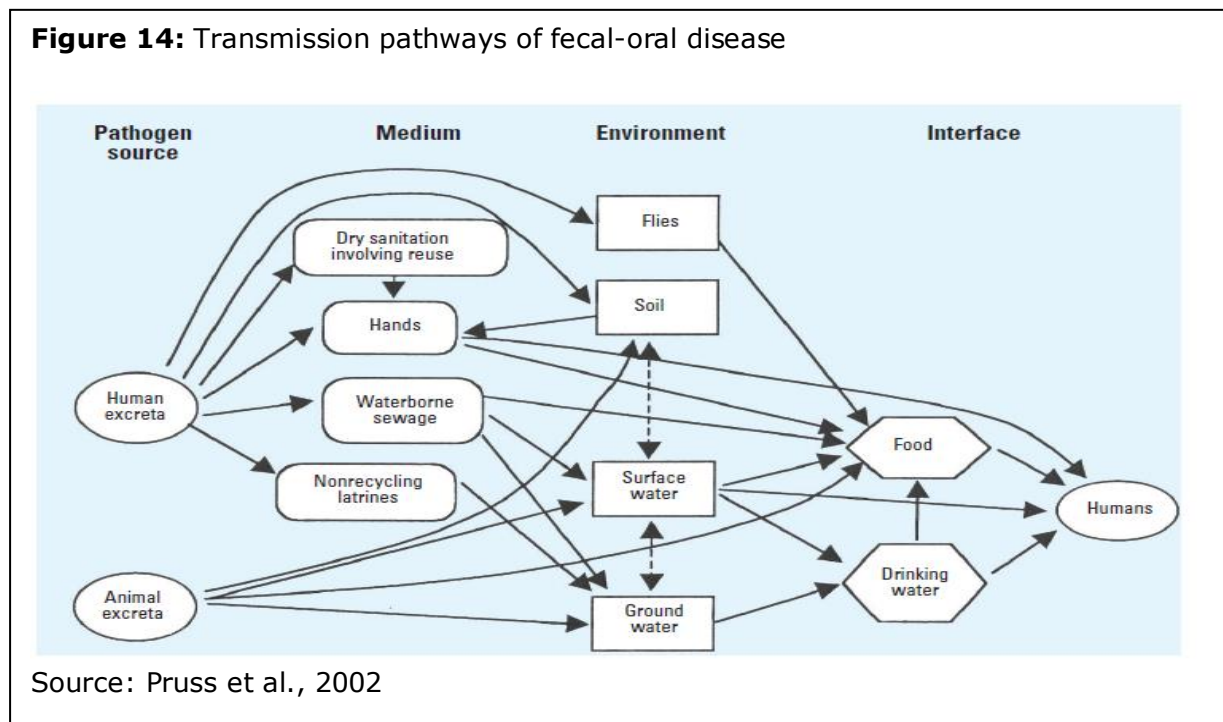
These factors are influencing access and utilization of healthcare services and affect negatively on health and nutrition status of women and children.

3.3.4. Public Health Care Services

3.3.4.1. Water, Sanitation and Hygiene

Unsafe environment conditions, basically water, sanitation and hygiene, cause about 50% of child malnutrition. The role of poor water, sanitation and hygiene which may have direct impact on nutrition status of children is summarized in annex 2.

Poor water, sanitation and hygiene through different correlated transmission pathways (Figure 14) are causing the diseases; specifically the fecal-oral diseases (Pruss et al., 2002).



Based on a multiple country study, having five or more episodes of diarrhea in the first two years of life could be attributable to about 25% of stunting in children aged 24 months (Humphrey, 2009).

A small study on construction or revision of latrines in Kabul (Meddings et al., 2004) revealed that revision of latrines was cost effective and comparatively reduced the morbidity of diarrheal diseases particularly

among under-fives. Though, some confounding factors such as socioeconomic status were not controlled in this study.

Ziegelbauer et al (2012) found in a meta-analysis that there is strong association with open defecation and soil-transmitted helminthes. In Afghanistan the prevalence of soil-transmitted helminthes in several regions are between 20-50% and in some areas around Kabul is more than 50%. Despite the attempt of deworming programs a high proportion of Afghan children are suffering from the consequences of repeated infestations (Naumann, 2013).

The ICON-Institute (2009) found that access of Afghanistan population to safe drinking water and improved sanitation is 27% and 5% respectively with a large differences (Table 9) among urban, rural and Kuchi population.

Table 9: Percentage of the total population with access to safe drinking water and improved sanitation

Residence	Access to safe drinking water (%)	Access to improved sanitation (%)
Urban	58	21
Rural	20	1
Kuchi	16	0
Total	27	5

Source: ICON-Institute, 2009

Hand-washing practices with water and soap are effective in reducing the incidence of diarrhea. The CSO and UNICEF survey (2013) found that overall 60% of households are practicing hand-washing, ranging from 83% in urban areas to 55% in rural areas.

These figures indicate that despite some improvement in access of Afghanistan population to safe drinking water and improved sanitation, there is still a huge gap to be filled for the prevention of disease.

3.4. BASIC CAUSES

The economics, social and political conditions that govern the distribution of the insufficient available resources at the country or community level are the basic causes of malnutrition (Somanathan and Mahmud, 2008).

3.4.1. Economic Factors

Despite some economic improvement after 2001, Afghanistan has the lowest living standard in the world (UNDP, 2013) (Table 10).

When the income level of a person falls from US\$1.25 per day, the minimum level to meet the basic needs of someone, he/she is considered poor. This measure presents the poor living condition of the population

that can affect child’s growth, health and long term development of child (UNICEF, 2012c).

According to ICON-Institute (2009) an estimated 36% of total populations of Afghanistan are not able to meet their basic needs.

The increases in food and fuel prices which are felt worldwide may have substantial impact on nutrition status particularly in poorest household, as they adopted to eat less food and less diversity (UNICEF, 2011).

Table 10: Afghanistan HDI* indicators for 2012 relative to selected countries and groups						
	HDI Value	HDI rank	Life Expectancy at birth	Expected years of Schooling	Mean years of schooling	GNI** per capita (PPP*** US\$)
Afghanistan	0.374	175	49.1	8.1	3.1	1000
Nepal	0.463	157	69.1	8.9	3.2	1137
Pakistan	0.515	146	65.7	7.3	4.9	2566
South Asia	0.558	--	66.2	10.2	4.7	3343
Low HDI	0.466	--	59.1	8.5	4.2	1633
*HDI: Human Development Index; **GNI: Gross National Income; ***PPP: purchasing power parity						
Source: UNDP, 2013						

The low economic condition of the family encourages the parents to early marriage of their daughters to be relieved of the financial burden and receiving bride price payment (CSO and UNICEF, 2013). In Afghanistan, generally 15% of women aged 15-49 years in 2010-11 were married before the age of 15 years (CSO, UNICEF, 2013).

ICON-Institute (2009) found that approximately 50% of Afghanistan poor households have eight children under the age of 15 years. Several child nutrition comparative studies showed that the level of child malnutrition will be lower in households with higher level of economic status. Urban household with better access to economic resources are probably more able to provide adequate care for children and less likely to be food insecure (Siddiqi, Haque and Goni, 2011).

The CSO and UNICEF (2013) survey data show that 19% of women aged 15-49 years and 21% of under-fives were in poorest quintile in Afghanistan.

The chronic conflict and political instability in Afghanistan are the root causes of poor economic condition of families and wide spread poverty.

3.4.2. Sociocultural Factors

3.4.2.1. Gender Inequalities

Heavy workloads and domestic responsibility make women vulnerable to malnutrition. Women often have less access to sufficient healthy food and eat smaller portion sizes due to cultural practices (UNICEF, 2012b).

To ensure the healthy fetal growth and development, the nutrition and health of adolescents and mothers are important. World-wide about 800 000 neonatal deaths in the first month of life and about 20% of stunting in under-fives is due to fetal growth restriction. The risk of developing stunting by age 24 months is significantly increased (about 20%) in newborn babies who had fetal growth restriction (Black et al., 2013).

The findings of a qualitative research on gender barriers to improved maternal health by Health Service Support Project-HSSP (2011) in Afghanistan show that women must obtain permission from their husbands or head of household to seek healthcare services or to spend money. Young and newly married women must be escorted by a male family member for seeking health care services. In rural areas, poor economic condition of the family, poor condition of the roads, long distance to HFs and transportation cost affect women access to healthcare services. Women access to healthcare services further aggravated by the poor status of these services, such as, unavailability of 24 hours maternal services and shortage of female staff.

ICON-Institute (2009) found that 98% of Afghanistan households are male-headed and they are the main decision makers in almost in all domains of life. Recently, the Afghanistan parliament disqualified the law on prevention of violence against women, child marriage and forced marriage which was already approved in 2009 by Afghanistan president (Loyn, 2013).

3.4.2.2. Food Restriction

In Afghanistan some myths and cultural beliefs about eating food during pregnancy, lactation and illness negatively affect nutritional status of women and under-fives. There is no specific diet for women during pregnancy; however they are advised to eat less the days close to delivery to avoid difficulties in pushing the baby through delivery canal. Additionally they are given butter to have a soft abdomen. After delivery when the physiologic jaundice appears on face of child, mothers avoid eating oily food.

During lactation women are eating less/no spicy food to not irritate the baby. When child fall ill of diarrhea, mothers discontinue/reduce the frequency of breastfeeding (personal observation), which may increase the severity of diarrhea and increase the risk of malnutrition.

3.4.3. Political and Security Situation

Conflict affects the countries' economic characteristics; income, growth and dependence to essential goods exports (UNICEF, 2012c). Since 2001 Afghanistan has been receiving military and non-military international support to stop the conflict and make the country politically stable. However, the state has failed to transform the country to political stability (Federal Research Division, 2008). According to Federal Research Division (2008) not the entire country is under the control of the Afghan government; some parts of the country are under the control of Taliban, warlords and tribes.

The year 2012, counted 6131 civilian casualties (2179 deaths and 3952 injuries), an increment by 9% compared to 2011. A total 864 casualties of women (301 deaths and 563 injuries) were documented in 2012, a 20% increase compared to 2011. Children are also not secured from the conflict, i.e. 1302 casualties (488 killed and 814 injured) are recorded (UNAMA and OHCHR, 2013).

The burden of insecurity is multiple. Insecurity affects the injured cases socially, psychologically and financially (lost income and increased health expenditures) but also affects the non-injured. For instance people will not easily go out for the daily work in the field and in the market or for seeking health care. On 04 of July 2013, two women and five children died due to food deprivation in Azra district of Logar province because of all the roads to the district were blocked by Taliban (TOLONews, 2013). Furthermore, in insecure areas the HF may not open and if it is opened it may not provide the adequate services due to shortage of staff and supplies. These situations explain how insecurity contributes to household poverty, inadequate dietary intake and increase in diseases.

Security, good governance, rule of law and human rights are addressed as the main goals of Afghanistan National Development Strategy (ANDS) 2008-2013. Several challenges remain before the goals are achieved (Islamic Republic of Afghanistan, 2008). Weak and underdeveloped capacity of government, existing of parallel structure of NGOs, weak implementation of the law, weak public sector, high level of corruption, gender inequality, poor accessibility to public services, increasing political

instability and conflicts are among the factors that impede the achievement of the these goals (Islamic Republic of Afghanistan, 2008).

The MDGs are integrated in the ANDS, and health and nutrition is the pillar number five of this strategy (Islamic Republic of Afghanistan, 2008). Government and donor commitment is essential in term of resource allocation and prioritization for achieving these goals.

Political instability and insecurity have increased the internal and international migration, thereby further reducing the consumption of quality and variety of food by families (Kantor, 2010). According to UNHCR (2013), about 425 000 Afghans in mid-2012 were internally displaced and another 2.7 million Afghans are living as refugees in neighboring countries.

CHAPTER 4: BEST PRACTICES/LESSONS LEARNED FROM OTHER COUNTRIES

Chapter 3 described the level and trends of malnutrition in Afghanistan and analyzed the immediate, underlying and basic causes of malnutrition. Because of the variety of causes it is obvious that the solution of nutrition problem is multi-sectorial and requires many interventions in health, education, agriculture, economic and security sectors.

Bhutta et al. (2013) have listed the evidence based nutrition interventions to reduce undernutrition in under-fives.

This chapter offers several successful examples and best practices from other developing countries in the region, which show that and how it is possible to improve the nutrition situation despite harsh conditions. This broad range of approaches and implementation strategies can serve as guidance for improving the nutrition interventions in Afghanistan.

4.1. PROMOTION OF BREASTFEEDING AND SUPPORTIVE STRATEGIES

Counseling and education interventions such as IMCI and CHWs' training have shown to have a positive impact on breastfeeding frequency and practices according to studies in Bangladesh (Arifeen et al., 2009) and in Pakistan (Zaman, Ashraf and Marines, 2008).

An adequate length of maternity leave postpartum improves breastfeeding practices. In Sri Lanka a mother's returning to work was negatively associated with exclusive breastfeeding practices. Mothers over the age of 30 were especially likely to do so (Sorensen, 1998). In Thailand it was found that mothers who returned to work three months after delivery were 4.15 (CI²; 1.15-14.94) times more likely to breastfed their infants than the mothers who returned to work within three months (Aikawa et al., 2012).

Governmental commitment and following international policies and guidelines promote exclusive breastfeeding. For instance in Thailand implementing a project with objective 'empower all women to exclusively breastfeed their babies for 4-6 months and to continue breastfeeding for two years and beyond with adequate complementary food' and

² CI= Confidence Interval

establishment of the policy on following the WHO/UNICEF ten steps of successful breastfeeding, developing code of marketing (annexes 3 and 4) of food for infants and young children and forming mother support group for continuation of breastfeeding, increased exclusive breastfeeding at four months from 1.3% in 1993 to 20.7% in 2005 (Hangchaovanich and Voramongkol, 2006).

4.2. APPROPRIATE COMPLEMENTARY FEEDING PRACTICES

Promoting girls/women's education can be an important intervention to promote improved complementary feeding practices. Numerous studies have indicated a strong association between good practices and mothers' education (Brown et al., 1992; Weisstaub et al., 2008; Bhutta et al., 2013; Liaqat et al., 2007). For example; in Bangladesh given education on complementary feeding to mothers without provision of actual food, is effective in child weight gain (Brown et al., 1992).

4.3. IMPROVING FOOD ACCESS

Interventions to support farmers such as seed distribution with capacity building activities in Nepal (Sulaiman and Andini, 2013); to empower women for homestead food production in Bangladesh and Nepal (Ruel et al., 2013); to promote women's right to make decision and control over resources in eight developing countries³ (Psaki et al., 2012); and support education programs like provision of fresh meal to primary school girls in Pakistan (Pappas et al., 2008) have shown significant effect on access to food, dietary diversity and reducing child malnutrition.

4.4. MICRONUTRIENT SUPPLEMENTATION

Distribution and intake of micronutrients by women and children in reducing LBW, child morbidity and mortality, and reducing anemia in children and women proved with numerous studies (Bhutta et al., 2009; Christian et al., 2009; Levitt et al., 2011; Sun et al., 2011; Bhutta et al., 2013; Gillespie et al., 2013). In China marketing and selling of multi-nutrient powders to caregiver of children aged 6-24 months reduced the risk of anemia by 87% (Sun et al., 2013).

³ Eight countries: Bangladesh, Brazil, India, Nepal, Pakistan, Peru, South Africa and Tanzania.

4.5. EDUCATION FOR WOMEN

Education for women has a crucial role in appropriate child feeding practices, reducing child malnutrition and teenage pregnancy, improving cognitive and language development in children aged older and younger than 12 months, increasing the dietary diversity, uptake of ANC and family planning and seeking care for child according to studies in Bangladesh (Gulden et al, 1993; Aboud et al., 2013; Semba et al., 2008; Rashid, Smith and Rahman, 2011), in India (Simkhada et al., 2007) and in Thailand (Limwattanon, Tangcharoensathien and Prakongsai, 2010). For example in Bangladesh, households having at least one female with primary education increased the dietary diversity by 4.8% and with secondary education by 5.8% (Rashid, Smith and Rahman, 2011).

CHAPTER 5: DISCUSSION, CONCLUSION AND RECOMMENDATIONS

5.1. DISCUSSION

This section discusses for each of the different causes of malnutrition the existing nutrition policies and their implementation and identifies challenges and opportunities to improve the nutrition status of under-fives in Afghanistan.

Immediate Causes

Morbidities

Incidences of ARI, diarrhea, pneumonia and gastro-intestinal worms among under-fives are high in Afghanistan. To better manage these cases, IMCI is being implemented through BPSH HFs; vitamin A is distributed to children 6-59 months during NIDs; routine vaccination covers children up to 23 months; zinc supplementation is used in the management of diarrheal disease. The challenge remains in implementing and introducing all the programs throughout the country (MoPH, 2008).

There are no specific activities for behavior change communication (BCC) to improve knowledge of caregiver about home management of ARI and diarrhea, hygiene and hand-washing. Growth monitoring is implemented with poor or no counseling session. More than one-third of children are not receiving ORS or any home fluid during diarrheal disease despite widespread availability of ORS.

The water, sanitation and hygiene (WASH) policy 2010-2014 is introduced by ministry of rural and rehabilitation and development (MRRD) to improve access of rural population to safe water and hygienic sanitation (MRRD, 2010). The implementation is not visible in a large-scale and still even a considerable number of HFs and schools have no water and sanitary latrine.

Dietary Intake

Exclusive breastfeeding for six months contributes significantly to the nutrition status of under-fives. Unfavorable practices like discarding the colostrum, late initiation of breastfeeding and early start of complementary feeding with inadequately nutritious food are common practices in most parts of the country particularly in rural areas. The data showed that the early initiation of breastfeeding among women delivered in public HFs is higher, but only 34% of deliveries take place in the

presence of a skilled birth attendant. BFHI principles need to be implemented also in private facilities.

Feeling of having no adequate milk and pain during breastfeeding may be due to inappropriate positioning particularly among young primipara women, and beliefs of grandmothers that breast milk is not good enough for the child are contributing in discontinuation of breastfeeding and early start of complementary feeding.

Complementary feeding covers the very vulnerable period of child growth from 6 to 18-24 months of age. Poor hygienic feeding practices with inadequately nutritious food, low frequency of feeding and sharing plate of younger children with other family members are inappropriate child feeding practices.

MoPH has developed some documents to regulate the private health sector (MoPH, 2012) and introduced the code of marketing of breast-milk substitutes (MBS). As a result there is no longer formula milk advertisement on TV, but there is no information and system to monitor the performance and quality of services in the private health sector. Billboards can be seen in the cities, and formula milk is available without any restriction in shops and markets throughout the country (personal observation, April, 2013). Bottle feeding of infants in urban areas and among educated mothers are comparatively high.

Interventions for Immediate Causes

1. At The Household Level

Health and nutrition awareness and individual counseling sessions to mothers and also to the households' decision makers like grandmothers and husbands; will improve practices regarding exclusive breastfeeding, complementary feeding (children should not be fed by watery soup), hygiene and home management of ARI and diarrhea. Home visits by trained CHWs and FHA groups can play an important role in this respect, as Pakistan has shown (Zaman, Ashraf and Marines, 2008).

2. At The Community Level

BCC is one of the main strategies for improvement of community nutrition to improve the complementary feeding methods, increase the acceptance of food supplements and consumption of fortified foods (Sheikholeslam et al., 2004). These require that CHWs and FHA groups should be trained on nutrition counseling, talks and demonstrations and provide them with

adequate supplies to further educate the target audience like malnourished or at-risk individuals and households and those who influence them; community groups and religious leaders. They may need to change their knowledge, behavior and attitudes.

Provision of safe water and construction of latrines alone will not be sufficient to improve hygiene and reduce open defecation. There is a need to consult women to select the appropriate location for digging wells. Village influencers should be oriented on high burden of diseases like diarrhea and worm infestation to actively contribute in translation of their knowledge to action as well as contribute in maintenance of wells and construction of latrines, which will also reduce the cost.

To promote hand-washing practices (after defecation, disposal of child feces and before preparing and handling food), a BCC strategy focusing improved hygiene practices needs to be developed and the role of members of the provincial and district health management team including head of HF should be determined to implement and monitor the strategy. It is reported that existing IEC material is stocked at provincial, district or HF level without being used (personal observation, May 2011).

3. At The National Level

Developing a feasible plan with coordination of private sectors, NGOs and UN agencies and relevant ministries and stakeholders is required to:

- provide all HFs (both public and private) with updated IMCI and nutrition guidelines;
- Integrate nutrition actions in relevant job descriptions and supervisory checklist
- Provide additional nutrition training, for instance train at least two healthcare providers from each HF on nutrition counseling;

Integration of breastfeeding counseling with IMCI in Bangladesh is a good example that improved exclusive breastfeeding and reduced prevalence of stunting in children aged 24-59 months.

The Thailand code of marketing can be modeled for implementation of MBS. Radio can be used as an effective mean to enhance women awareness on exclusive breastfeeding and timely start of complementary feeding because there is a high ownership of radio in the country and there is no restriction for women to ON and listen to the radio. PND relation with health promotion department should be further improved to develop and broadcast radio messages and also TV spots.

Nutrition protocols should be made available to all relevant stakeholders, including in the private sector, for instance by publishing in local newspaper and journals to inform private practitioners and pharmacists to use it in their routine practices. Some 60% sick children seek care from private sector in both rural and urban areas (GHTAP, 2009).

The length of maternity leave needs to be extended for more than three months to increase the duration of exclusive breastfeeding. The significance of this intervention proved in Thailand.

Underlying Causes

Food Access

Both quantity and quality of food substantially contribute in nutrition status of women and children. It was found that low income of more than one-third of the population, continuous increment of food price, large family size and low status of women that eating less and last, and war and insecurity are the main reasons for access to inadequate food and low dietary diversity among urban and rural people particularly in rural and also those who are living in high level of mountains in the country.

Suitable partnerships need to be built between the healthcare sector and other relevant stakeholders to address these issues.

Care for Children and Women

Knowledge and behavior of mothers are important to seek care for their children and for themselves, receive and follow the advice of healthcare providers. Low status of women, low awareness from severity of diseases like pneumonia, lack of knowledge on home management of diarrheal diseases as leading cause of malnutrition, inability to pay the transportation cost to seek care, and low immunization coverage increase the risk of malnutrition in under-fives in the country. For instance; in the southern region of Afghanistan, where the women literacy is low, the incidence of SAM is comparatively high. This is consistent with findings in Bangladesh that the prevalence of stunting and severity of malnutrition is high among children with uneducated mothers and among children with low immunization coverage (Choudhury et al., 2000).

The high rate of child marriage and teenage pregnancy is a key determinant of poor nutrition of women and children and intergenerational cycle of growth failure.

ANC significantly contributes in preventing child malnutrition. Those mothers who did not have any ANC; the risk of stunting is comparatively higher among their children. The reason for low ANC coverage in Afghanistan are found shortage of female healthcare providers (specifically midwives), lack of awareness, inappropriate behavior of healthcare providers, inability to pay the transportation cost and geographical distance, and need permission from husband or head of household. This is in line with studies conducted in developing countries.

Women's Education

Women's education is crucial for the health and nutrition status of mothers and their children. Very low literacy rate of women particularly in rural areas significantly contributes to high prevalence of child malnutrition, low health service utilization and overall to the health and nutrition status of women and children in the country. The role of female educated member of family in improving the dietary intake and its diversity is proved in Bangladesh. Evidence show prevalence of stunting, underweight and wasting among children of illiterate mothers are comparatively high.

Health Care Services and Nutrition Programs

It was found that shortage of staff; poor and disrespectful attitude and behavior of healthcare providers with their clients; not friendly condition of HFs, weak referral system among BPSH and EPHS HFs and weak and poor monitoring and evaluation (M&E) activities are the main reasons contributing in low utilization of healthcare service.

The coverage of micronutrient supplementation through health system is very low. Despite wide availability of domestically produced iodized salt, its use is low. There is no data collection mechanism to provide accurate and update information about micronutrient deficiencies in women and children.

The PND with its poor position in the MoPH chart needs to coordinate and work with different departments of MoPH, as well as with other ministries and stakeholders.

Interventions for Underlying Causes

1. At The Household Level

Improving the nutrition status of the mother in the first thousand days of child life (from conception to 2 years) can reduce the prevalence of

stunting, wasting and improved child survival. Homestead food production and home gardening should be supported by ministry of agriculture, irrigation and livestock (MAIL) and FAO. These will improve maternal and child intake of target foods and increase dietary diversity. The positive effect of such interventions proved in Nepal and Bangladesh. Healthy lifestyle should be promoted through enhancing awareness of women and men and reducing domestic violence and gender discrimination.

2. At The Community Level

To improve maternal, newborn and child health and nutrition a community based service package shall comprise basic antenatal, natal and postnatal care, breastfeeding counseling, community mobilization to support and promote preparedness of birth and newborn care. An appropriate BCC strategy should involve health workers, local media (after briefing by health workers) and lay individuals and can be implemented locally in homes, villages or any defined community groups. For example these combinations of interventions improved facility births by 28% and doubled the rate of initiation of breastfeeding within one hour. Breastfeeding at 1-4 months of age has increased by 27% with early skin-to-skin care in healthy neonates (Bhutta et al., 2013).

PND coordination with GCMU and community base health care (CBHC) department needs to be improved to implement these interventions through CHWs, MHT and HSC of BPHS implementing NGOs at the community level. It is necessary to strengthen the monitoring and evaluation system of these services. In order to sell these interventions at the community, the result and similar successful experiences should be shared with the community.

Community awareness activities should be developed and organized based on nutrition problem of target groups, for instance prevention of anemia for young women and prevention of harvest and stored food from pests and rats to men.

SAM: To prevent and improve management of SAM, MoPH can get benefit from a recent study conducted in Malawi. The cost effective intervention, showed faster recovery and significant improvement in weight gain of SAM children compared to placebo group through addition of antibiotic (either Amoxicillin or Cefdinir) with ready to use therapeutic feeding (RUTF) for seven days for management of uncomplicated or outpatient management of SAM (Trehan et al., 2013).

As the rate of home deliveries is high particularly in rural areas, MoPH should register the traditional birth attendants and provide them with basic knowledge of maternal and childcare, optimal feeding practices and supply of essential kits to increase for instance the uptake of iron and vitamin A supplementation.

Salt test kit should be added in CHWs kit to regularly test for iodization of the salt consumes in the CHWs' catchment areas.

The community-based promotion and delivery of seven nutrition-specific interventions namely promotion of breastfeeding, appropriate complementary feeding, multiple micronutrient supplementation during pregnancy, Vitamin A and preventive zinc supplementation and treatment of diarrhea with zinc and management of SAM that showed the greatest effect in poorest quintiles in Pakistan (Bhutta et al., 2013).

3. At The National Level

A comprehensive policy and strategic implementation plan with coordination of stakeholders are required to:

- control the price of food and non-food items through provision of low cost loans and tax exemption to private sector;
- build the capacity of Afghan Norm and Standard Authority (ANSA) by developing national food standard to control the quality of domestically and imported food productions;
- provide food, targeting insecure population and provide more job employment;
- expand the micronutrient supplementation programs throughout the country and increase its coverage through health system and establishment of new fortification factories

Since people in Afghanistan use the hospitals also for primary healthcare services, there is a need to train doctors and nurses of public and private hospitals on standard management of SAM and prevention of malnutrition. In case of insufficient fund provide them with hard and soft (audio, video) copies of guidelines to improve the quality of treatment and reduce the child mortality which is frequently occur in the hospitals due to inadequate nutrition of sick child.

Early marriage: Addressing the early marriage is not in the scope of MoPH; however, MoPH can play the advocacy role and coordinate with

ministry of Haj and Islamic Affairs (MoHIA) through developing an appropriate strategy such as, delaying the age of first pregnancy and increasing the space between child births that the depleted nutrition level of mother be replenished.

Repeated adolescent pregnancy can be reduced with teaching parenting skills through home visitation and provide education and vocational or job support through programs for adolescent mothers (Bhutta et al., 2013). A partnership approach considering health and nutrition of families with MAIL, ministry of labor, social affairs, martyrs and disabled (MoLSAMD), ministry of commerce (MOC) and MRRD is necessary. This approach will provide more job opportunities to young mothers (like sewing and embroidering) through MRRD national solidarity program (NSP) which is covered more than 76% of rural communities (MRRD, 2013).

Shortage of staff: Afghanistan has an extreme shortage of female healthcare providers. To fill this gap, WHO (2006) recommends to increase the role of traditional birth attendants, with appropriate training and supervision, to provide supportive care during the period of antenatal and postpartum and on timely referral.

The MoPH goal to improve the health and nutrition status in general and specifically of women and children and in under-served areas (MoPH, 2012) requires a coordination body consisting of MoPH, MoE, ministry of higher education (MoHE), MoHIA, ministry of women affairs (MoWA), MAIL, MRRD, MoLSAMD, MOC and ministry of finance (MoF) and police. The coordination body needs to develop a multi-sectorial approach with focus on communities' preference, in order to improve women status, girls schooling and higher education.

Education: For the short term literacy courses with community involvement particularly in rural areas will improve the nutrition situation. For instance in rural Iran literacy program for rural women planned as an intervention to reduce child malnutrition and resulted 10% increase in number of literate women. This intervention was thought to have an important contribution in reduction of child malnutrition (Sheikholeslam et al., 2004).

In the long term, it is essential that women get beyond primary and secondary education. Nutrition education should be added in school curricula before girls reach to adolescent age to not only improve the health and nutrition situation, but also their status in the society, particularly in the context of Afghanistan that communities prefer women

treatment by female healthcare providers. Implementing this approach requires an appropriate strategy that includes among others:

- communicating with parliament and provincial councils members, community leaders, and head of districts to get financial and political support
- establishing community schools with at least two classrooms in two shifts (for high coverage) in each village;
- Increasing the number of higher educational institutes (HEI) at provincial level;
- Giving quota to female student to be absorbed by HEI;
- Involving religious leaders to advocate for women education during Juma (Friday) pray and other rituals, and also during NSP counseling sessions; and
- Providing good security for women's education.

Additionally, nutrition education should be part of medical and agriculture faculty programs.

Considering the role of press in generating people awareness and communicating public concern of malnutrition based on technical consensus rather than political consideration, selected journalist should be trained. For example the cost of providing half of all critical micronutrients by fortifying a staple food has estimated less than one dollar per person per year (Weisstaub et al., 2008). The importance needs to be communicated to policy makers as well as the community.

Limitation of this study: limited availability of data in some areas due to little research about health and nutrition of under-fives in Afghanistan is the main limitation of this study. Nevertheless, the use of the UNICEF framework served as a guide to reveal the factors playing significant role in child malnutrition, factors that may have been overlooked if the framework was not used. Despite the limited available data in some areas this study was able to determine and analyze the key contributing factors in malnutrition in under-fives. A literature review in the Netherland about the situation in Afghanistan is not ideal and confirmation of findings and views is recommended.

5.2. CONCLUSION

Malnutrition in under-fives is a major public health problem and significantly contributes in high mortality of children in Afghanistan. The prevalence of stunting, wasting and underweight is high and the causes of malnutrition in children are multiple and complex. A range of activities and multi-sectorial programs including health and nutrition education, improving quality of healthcare services, provision of safe drinking water and sanitation, agriculture and micronutrients interventions, special attention to gender issues and vulnerable groups (young children and pregnant women) will be essential to address malnutrition in under-fives in Afghanistan in an effective and sustainable way.

To promote exclusive breastfeeding, appropriate complementary feeding and uptake of healthcare services and hygiene and sanitation, coordination of inter and intra-ministerial and other stakeholders, e.g. private sector, UN agencies and NGOs can be implemented.

Meanwhile, inadequate access to quantity and quality of food and micronutrient deficiencies can be improved through investment on system strengthening (quality and price control mechanism and data collection system), supplementation and fortification of micronutrients, proper storage of domestic products and livestock, identification and provision of food to those living in vulnerable areas, and promotion of homestead food and home gardening.

Women education and their status at the household, community and society needs to be improved through provision of opportunity for schooling and higher education, reducing gender discrimination and elimination of violence against women with support of MoHIA, MoE, civil society and political commitment to reduce malnutrition among children and women as a sustainable approach with long term effect.

Short and long term actions at the household, community and national levels are required to change the current nutrition status of children and improve the health outcomes.

5.3. RECOMMENDATIONS

Following recommendations may help MoPH and other relevant stakeholders' policy and decision makers to improve the nutrition situation in Afghanistan:

- MoPH needs to review the policies and strategies addressing maternal and child nutrition and health challenges in order to:

- build a system for sustainable community engagement and community based programs for maternal and child nutrition and health;
- develop a strategy for community mobilization and community actions for maternal and child nutrition and health to organize specific activities and interventions
- ensure regular and continued support for the community through involvement of community and religious leaders, NGOs, healthcare providers and districts' heads;
- MoPH should promote the role and position of PND through building its capacity to train on nutrition issues and control over nutrition programs and projects both at national and provincial levels;
- The role of CHWs should be promoted in nutrition activities through revision of their job description and non-monetary incentive (regular and continued training and supervision, recognition, involvement in community based planning of nutrition activities and provision of regular supply kits);
- Access of population to information about nutrition, needs to be improved through radio programs, local newspapers, and by delivering the messages through CHWs, healthcare providers, school students and teachers, and agriculture extension workers;
- Monitoring and evaluation system needs to be strengthened through establishing a unified data collection mechanism to regularly collect the information about nutrition status of women and children from both public and private sectors, as well as through community monitoring to include vulnerable groups and households in nutrition and health programs;
- Women's education and improving their status needs to be prioritized by MoE and MoWA through sustained coordination with civil society, MRRD, MoPH and involvement of MoHIA and police;
- Qualitative studies should be conducted to understand the effect and sustainability of interventions in order to advocate for fund raising and developing appropriate implementation plan.

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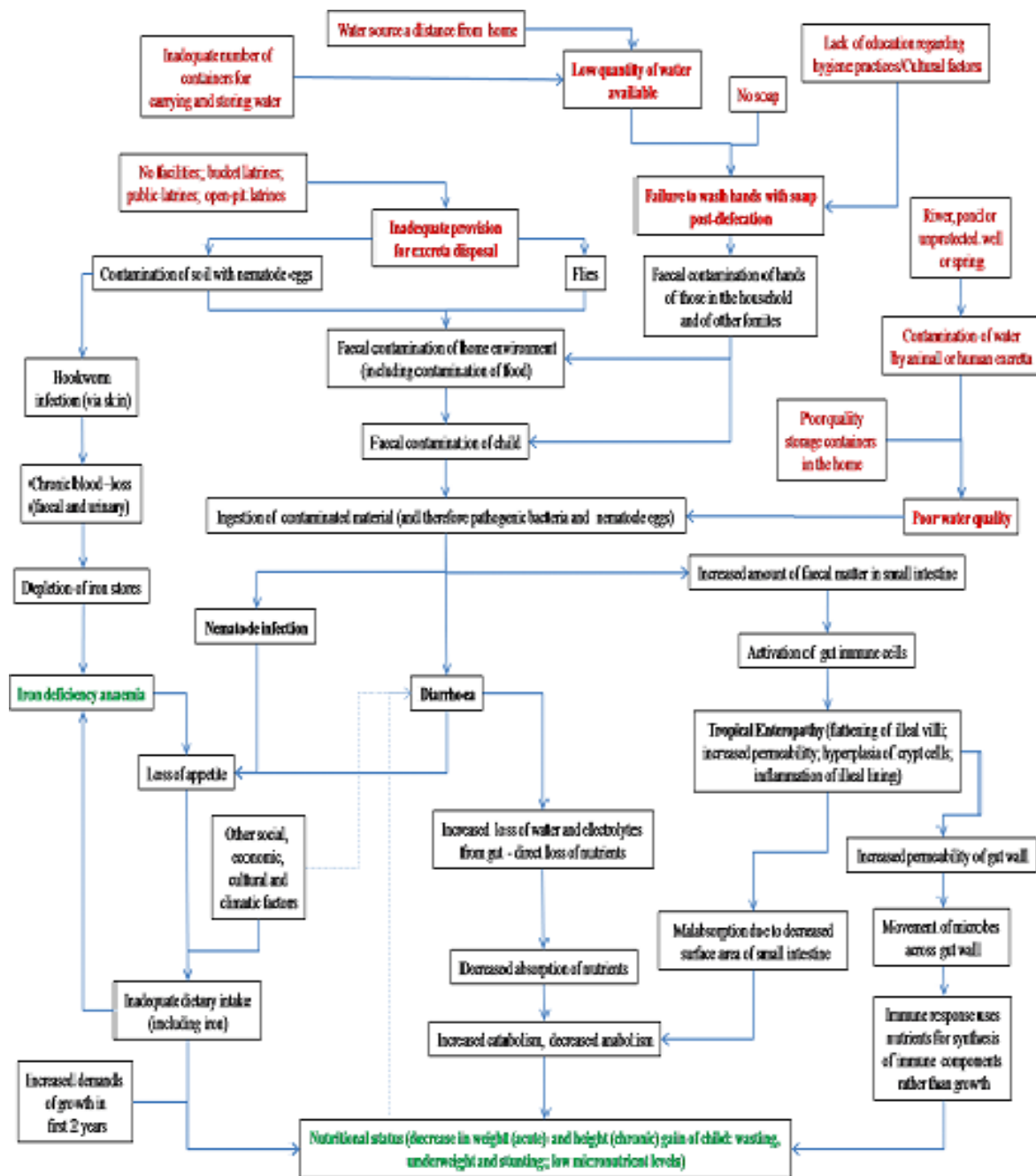
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ANNEXES

Annex 1: Percentage of vaccinated children aged 12-23 months in Afghanistan 2010-2011

Sex	BCG	Polio			DPT*			Measles	None	All	
		At Birth	1	2	3	1	2				3
Male	64.4	49.0	71.1	62.8	48.8	58.0	52.8	41.6	56.4	24.3	30.9
Female	63.9	47.2	71.7	62.3	47.2	56.9	51.0	38.9	54.5	23.7	29.2
Residence											
Urban	79.2	64.1	81.1	69.5	58.4	72.3	63.5	53.2	70.0	12.4	37.0
Rural	61.0	44.7	69.4	61.1	45.8	54.3	49.4	37.5	52.4	26.5	28.5
Mother's education											
None	62.4	46.1	70.4	61.7	46.6	55.6	50.2	38.3	53.5	25.1	28.7
Primary	78.1	65.5	79.2	68.8	60.5	72.2	64.3	54.9	73.6	15.8	41.9
Secondary+	85.9	69.9	83.8	72.1	63.2	78.5	71.9	64.0	75.2	11.2	44.0
Total	64.2	48.1	71.4	62.5	46.2	48.0	57.5	40.2	55.5	24.0	30.0
*(Diphtheria, pertussis, tetanus, hepatitis B and Haemophilus influenza (Pentavalent). Source: Central Statistics Organization (CSO) and United Nations Children's Fund (UNICEF), 2013, 'Afghanistan Multiple Indicator Cluster Survey 2010-2011, Final Report', Kabul, Afghanistan: CSO and UNICEF											

Annex 2: The impact of WASH on child nutrition



Source: Dangour AD, Waatson L, Cumming O, Boisson S, Velleman Y, Cavill S, Allen E, Uauy R, 2011, 'Interventions to improve water quality and supply, sanitation and hygiene and their effects on the nutritional status of children Protocol' The Cochrane collaboration: John Wiley and Sons Ltd

Annex 3: WHO/UNICEF ten steps to successful breastfeeding

1. Availability of breastfeeding policy at all HFs.
2. Train health care staff in how to implement this policy.
3. Provide information about the benefit and management of breastfeeding to all pregnant women.
4. Support and assist mothers to start breastfeeding within a half-hour of birth.
5. Show and instruct mothers how to breastfeed and maintain lactation even when they separated from their infants
6. Inform mothers that except medical indication, no food or drink other than breast milk should be given to the newborn infants
7. Allow mothers and infants to remain together-24 hours a day
8. Encourage breastfeeding based on demand of the baby
9. Give no artificial teats or pacifiers (also called dummies or soothers) to breastfeeding infants.
10. Foster the establishment of breastfeeding support groups and refer mother to them

Source: WHO, 1989, 'Protecting, promoting and supporting breast-feeding: the special role of maternity services', *A Joint WHO/UNICEF Statement*, Geneva: WHO

Annex 4: Summary of code of marking of breast-milk substitutes

1. No advertising or other forms of promotion to the public.
2. No free samples to mothers (direct or indirect).
3. No promotion of products within the healthcare facilities.
4. No company sales representatives to advise mothers.
5. Information and education materials on infant feeding may only be provided upon government approval. All information to mothers, for instance on labels must stress the benefits of breastfeeding and cost and hazard of artificial feeding
6. No gift to health workers.
7. Product information for health professionals must be scientific and factual matters.
8. No pictures of infants or other pictures or text idealizing the use of infant formula on labels.
9. No promotion of unsuitable products, such as sweetened condensed milk.
10. Manufacturers and distributors are responsible to monitor their marketing practices according to the principle and aims of the Code and to take steps to ensure that their conduct conforms at every level.

Source: (Hangchaovanich & Voramongkol, 2006), adopted from (WHO, 1981, 'International Code of Marketing of Breast-milk Substitutes', Geneva; WHO)