CHAPTER 4

4. LITERATURE REVIEW AND CONCEPTUAL CONSTRUCTIONS UNDERLYING THE STUDY

The purpose of this chapter is to present the conceptual framework, including a review of the relevant literature, used to explain the socioeconomic, health and environmental determinants of children's nutrition. The chapter briefly explores the links between socio-historical, socio-political (structural), environmental, socio-economic and health factors, and child nutritional status. Chapter 5 fully explores the link between the socio-historical and socio-political context, which is the invisible central predictor variable that has a bearing on child malnutrition and child nutritional status in Central Asia, drawing on *structural violence theory* as conceptualized by Johan Galtung.

4.1 CONCEPTUAL FRAMEWORK FOR THE ANALYSIS OF CHILD UNDERNUTRITION

More than ten years after the 1996 Rome World Food Summit (WFS) the number of undernourished people in the world remains consistently high. In 2001-2003 FAO estimated that there were 854 million undernourished people worldwide: 820 million in the developing countries, 25 million in the transition countries (including the Central Asian Republics), and only 9 million in the industrialised countries. In the developing world, up to one out of three people die prematurely from malnutrition or preventable hunger-related diseases every year. Most countries have sufficient food to meet their people's requirements. Malnutrition, however, persists in almost all countries. This begs the question – why? (FAO, 1996 & 2005:1-4; UNICEF/WHO, 2006:1).

The most common form of malnutrition in developing countries is undernutrition, in terms of which food intake is inadequate to meet the energy requirements of the body. In developing countries, inadequate food intake is the usual cause of specific nutrition-related diseases, and is a major force behind increased rates of infection, infant mortality, reduced productivity, and

shortened life spans. Malnutrition, however, is not just a problem for the world's poor countries – it exists everywhere, thus signifying that it is not simply a question of access to food. The populations of developed countries, on the other hand, suffer primarily from overnutrition caused by eating too many calories derived from fat and refined sugar. Overnutrition is associated with a high prevalence of obesity and chronic diseases such as coronary heart disease, hypertension and diabetes (World Bank, 2006a:10, 49).

In most developing countries, the available food supplies at the national level doe not ensure that adequate food is available at the regional, household or individual level. Factors that may influence the ability of individuals to acquire and utilise nutrients include local food and water availability, food prices, the capacity of the country concerned to import food, incomes and purchasing power, political decisions, the workload and education level of women, local customs and food taboos, sanitary conditions, and health status. Thus, because social; environmental; political and economic factors contribute to malnutrition, solutions require more than simply the provision of food and nutrients (United Nations, 2006a:24).

4.1.1 Introduction

Human nutrition as a science was initially developed in order to advance the knowledge of biochemical metabolism and its clinical and physiological implications. It was during the early 1950s that the problem of malnutrition in the developing countries came to the attention of Western countries. Human nutritionists saw this as their problem to solve. In the 1970's scholars and observers began to acknowledge that human nutritionists alone could not solve the problem of malnutrition. It became a societal problem, requiring the attention and efforts of economists, political scientists, anthropologists, sociologists, and other social scientists (Jonsson, 1994).

A number of efforts have been made to develop conceptual frameworks addressing the causes of malnutrition in society. In the late 1980s, UNICEF developed and promoted a comprehensive conceptual framework in terms of which nutritional status was identified as an outcome of immediate, underlying

and basic causes (UNICEF/WHO, 1998:24). This framework has been widely used in the quest to understand the causes of child malnutrition in many developing countries. Sustainable and stable access to food, adequate maternal and childcare practices, access to basic health services, and a healthy environment were identified as the three most important conditions necessary for adequate dietary intake and the absence of disease. Access to resources is determined by political, cultural, religious, economic and social systems (Jonsson, 1995).

Notwithstanding, in the years following the view that malnutrition was caused by a lack of food dominated thinking about nutrition interventions. In the early 1970s, it was acknowledged that there were serious flaws in the food-based approach. Lack of food has been identified as a common cause of adult malnutrition. However, in young children it is seldom the only cause of undernutrition. In principle, addressing the immediate problems will only solve a nutritional problem in its immediate sense. However, sustainability is most unlikely if the underlying and basic structural causes are not addressed at the same time (FAO, 2005:1-4).

The causes of child undernutrition are complex, multidimensional and interrelated, ranging from factors as fundamental as political instability and slow economic growth to those as specific in their manifestations as respiratory infection and diarrhoeal disease. Poor nutrition often starts *in utero* and extends, particularly in the case of girls and women, well into adolescence and adult life. Undernutrition that occurs during childhood, adolescence and pregnancy has an added negative impact on the birth weight of infants.

Low birth weight (LBW) infants who have suffered intrauterine growth retardation (IUGR) as foetuses are born undernourished, and are at a far higher risk of dying in the neonatal period or later infancy. For example, each year about 11 million babies in South Asia and 3.6 million in sub-Saharan Africa are born with LBW (UNICEF/WHO, 2002:61). If they survive, they are unlikely to catch up significantly on this lost growth later, but are more likely to

experience a variety of developmental deficits than those children not exposed to poor nutrition. An LBW infant is thus more likely to be underweight or stunted in early life. The consequences of being born undernourished extend into adulthood, leading to a host of other debilitating factors later in life (UNICEF/WHO, 2002:61-62).

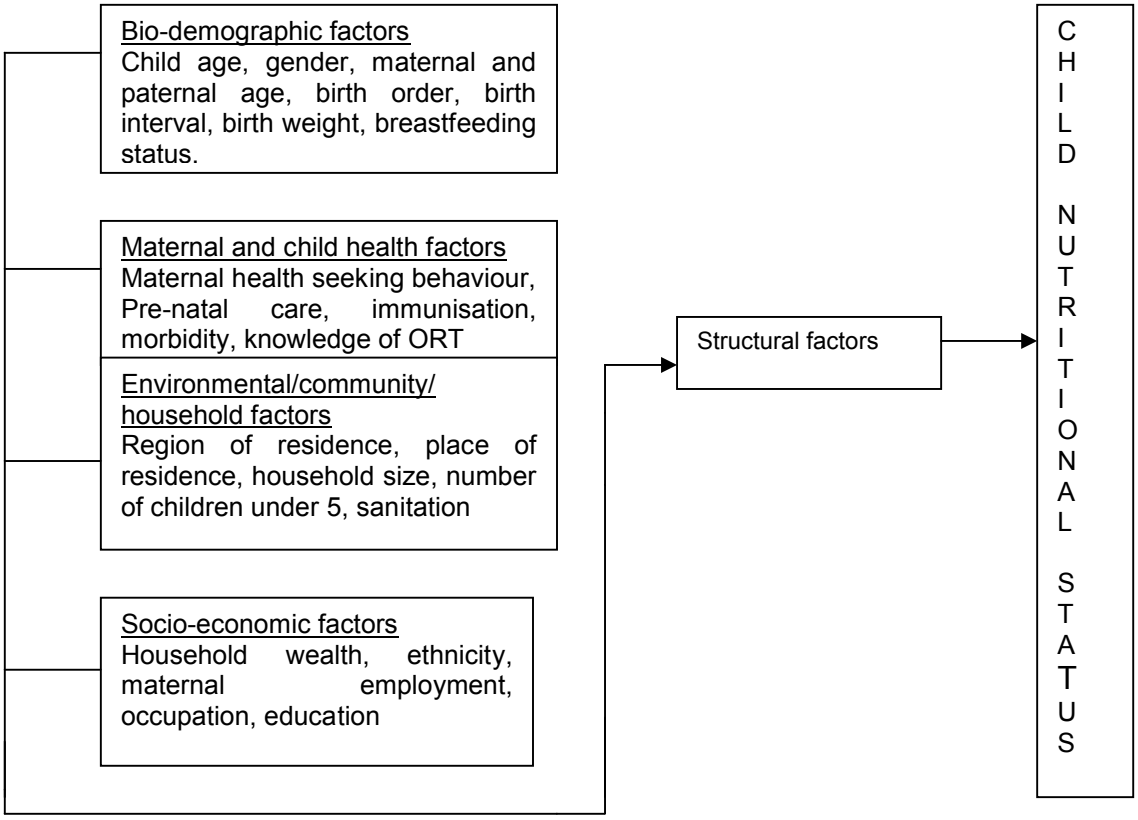
During infancy and early childhood, frequent or prolonged infections and inadequate intakes of nutrients, particularly energy, protein, Vitamin A, zinc and iron, exacerbate the effects of foetal growth retardation. Most growth faltering, which results in underweight and stunting, occurs within a relatively short period from before birth until about two to three years of age (UNICEF, 2002:79).

About 149 million children in developing countries are undernourished. More than half live in South Asia, whilst the absolute number (22 million) of undernourished children has increased in sub-Saharan Africa (UNICEF/WHO, 2002:1). A range of misconceptions persists in the study of undernutrition, for example, the perception that mild to moderate undernutrition does not increase the risk of death. Another misconception about the contribution of undernutrition to mortality is the common tendency to equate undernutrition with inadequate food intake. A third problem is that the method used to classify deaths, where the focus is usually on the proximate cause of death, for example, infectious disease, conceals the contribution of undernutrition to mortality. In order to ensure a better understanding of what causes such problems, it is necessary to consider systematically the operation of various determinants of undernutrition at different levels in society (UNICEF, 2002:16).

In this study, a conceptual framework, which would help shed light on Central Asia's child health characteristics, was sought. This framework was needed to facilitate the understanding of the context of child nutrition in Central Asia at a structural level, by taking into account the sociological as well as environmental variables that are relevant. The conceptual hypothesis derived from the model presented in Figure 4.1 is that socio-economic, socio-

environmental and health factors act through a range of proximate and non-proximate determinants to influence child nutrition. These factors may be grouped into five broad categories. The proximate determinants include bio-demographic, socio-environmental, socio-economic, and health factors, while the non-proximate are the socio-historical and socio-political or structural factors. This framework differs from some other frameworks in the degree of importance attributed to the *socio-historical and socio-political context.* This deliberately broad term refers to the spectrum of structural factors in society that are not possible to measure directly at the individual level.

Figure 4.1: Conceptual framework



'Context' therefore encompasses a broad set of socio-historical and socio-political aspects of a state system of which the impact on individuals tends to elude easy or simple quantification, but which exerts powerful, determinate and formative influences on the health opportunities of children and hence life chances. The most relevant contextual factors, that is, those factors that play the greatest role in generating social inequalities, may differ considerably from one country to another. Equally, certain interventions or policies are likely to be effective for a certain socio-historical and socio-political contexts and not for another. It is on these grounds that the role of socio-historical and socio-political factors in child undernutrition is being explored in this study.

The following subsection describes the relationship of proximate characteristics within the framework. The next subsection discusses the socio-historical and socio-political, structural or non-proximate factors.

4.1.2 Description of relationship of characteristics within the framework

Broadly speaking, the main argument underpinning this study is that children living under different socio-historical and socio-political conditions respond to and are affected differently by socio-economic, environmental, and health factors and that this produces a variety of outcomes in child malnutrition rates and problems.

4.1.2.1 Bio-demographical factors

Demographic indicators are very useful to promote a better understanding of certain aspects of malnutrition.

(a) Age of child

It has been observed in many developing countries that the nutritional status of children deteriorates rapidly during the first year of life (especially after the age of six months) and, in certain instances, increases significantly with age, but that this age group (below six months) also has lower rates of underweight children in general, probably because the children might be breastfed until they at least six months old. Age also reflects the typical deterioration of linear growth in children that is believed to occur between the ages of one and three

(Ndiaye, 2002). Underweight (weight-for-age) rates begin to increase substantially at the age at which children are no longer exclusively breastfed. Weaning (usually between 18-23 months old) increases exposure to infectious agents and increases the likelihood of diarrhoea that will detract from a child's weight gain (FANTA, 2003; Waters et al., 2004). Children at this age have already begun consuming other foods and may therefore be ingesting contaminated food or liquids. They are also becoming more mobile and may therefore be exposed to potential hazards in their surroundings. The weaning period is also a period during which immunity decreases, hence the importance of immunisation in order to boost the immunity levels of children under the age of three years.

(b) Gender of child

The interrelated issue of gender bias and gender differentials in child health and intra-household resource allocations has been reported in several studies (Stini, 1975; Stinson, 1985; Dettwyler, 1991; Leonard, 1991; Basu, 1993; Ray, 1997). Arguably gender indicates the importance which a household assigns to children when apportioning resources (Sahn & Stiffel, 2002), or may show linear growth between boys and girls (Agnihotri, 1999). This study examines the possible differences between boys and girls, and between children of different age groups with regard to their nutritional status.

Nearly half the nutrition studies have found that male children are less well nourished than females. This is true of almost all of the studies carried out in East and Southern Africa (Garrett & Ruel, 1999; Stiffel et al., 1999). Of the 35 papers covering countries in Africa, Latin America and Asia selected for inclusion in a meta-analysis to study the determinants of health and nutrition (Chamarbagwala et al., 2004) only one paper reported that being male was associated with better nutrition. In Indonesia, for example, boys were associated with a higher risk of malnutrition as compared to girls (Waters et al., 2004). Similar results were found in South India in children aged 5-7 years (Jeyaseelan & Lakshman, 1997), and in rural Nepal where boys consistently showed lower weight-for-age and height-for-age scores after controlling for other socioeconomic factors (Hotchkiss et al.,2002). These results are in

contrast to the popular belief that, in societies where males are the main decision makers in the household, or where parents have a strong preference for male offspring, male children are better nurtured than female children. In many of these societies, bearing a son ensures an increased status for the mother, and it is therefore impossible to believe that mothers would not be more biased toward their male offspring (Bhuiya et al., 1986).

Conversely, an analysis of data sets for Pakistan, Russia, Peru, Jamaica and South Africa revealed that no significant differences existed between the health and nutritional status of boys and girls in Russia, in contrast to the other countries in the study. Similarly, Fedorov and Sahn (2005) did not find any significant differences in the growth patterns of boys and girls in Russia. This contrasts with Pakistan and South Africa where boys do better than girls in short-term nutritional status, although this advantage disappears in the long run (Ray, 1998; Bomela, 1999).

Data from India indicates discrimination against girls in terms of infant feeding, healthcare and nutrition, and correlates malnutrition status with gender (Rao & Kanade, 1992; Kishor, 1993; Saito et al., 1997). Leonard et al., (2002) found that the declines in linear growth were more pronounced among girls of Evenki (ethnic group) origin in Siberia. This raises the question as to whether there may be differential treatment of boys and girls in certain parts of Russia given the stressful social and economic conditions in Russia. The greater impact on the girls may reflect gender bias in parental attention and/or resource allocation, as has been documented in parts of South Asia (e.g. Chen, 1980). Mishra and Retherford (2000) found that, despite widespread evidence of discrimination against girls in India, the proportions of stunted and underweight were identical for boys and girls. This is confirmed by several other studies conducted in developing countries where there is widespread gender discrimination that have also failed to detect a gender differential in child malnutrition. The reason for this unexpected result is unclear. Clearly careful further examination of gender bias in developing countries with regard to nutrition is required.

(c) Maternal and paternal age

Few studies have examined the effect of maternal age on child nutritional status. A comparative study using DHS data from 39 developing countries did not find a consistent pattern between stunting and maternal age. However, a study conducted in Bolivia found that the likelihood of stunting decreases with maternal age (Forste, 1998). The age of the mother has been found to be a strong predictor of child health. Higher levels of infant mortality are associated with both childbearing among adolescents and women over 35 years of age (Martin et al., 1983; Gubhaju, 1986; Tagoe-Darko, 1995).

The mother's age typically serves as proxy for experience in child caring. A lack of experience in childcare is often associated with very young mothers. Moreover, their physiology is likely to cause them to experience a higher level of malnutrition and mortality in terms of their children as compared to older mothers. While age may reflect biological factors, it also reflects socioeconomic considerations, including status in the household hierarchy. Household decision-making could influence the resources that the mother may receive for herself as well as for her child, with inadequate resources possibly leading to adverse nutritional consequences. This is more likely when the mother is very young (Smith & Haddad 2000). Wessel et al., (1996) found that if the mother were less than 20 years old this was likely to be a risk factor for low birth weight. In Russia, the mother's age did not have an effect on the growth patterns of children of less than six years of age. None of the literature reviewed for this section of the study indicated any evidence in support of the father's age having an effect on child nutritional status (Martin et al., 1983; Gubhaju, 1986; Tagoe-Darko, 1995; Wessel et al., 1996; Smith & Haddad, 2000).

(d) Birth order

Horton (1986) conducted a study in the Philippines on birth order and child nutritional status. In this study, he found that the birth order of a child has a significant impact on the nutritional status of the child. The health of a mother and her consequent ability to provide nutritional care for her child deteriorates with each addition to the family. Furthermore, recent research findings show

that stunting increases as birth order increases (Sommerfelt & Stewart, 1994; Forste, 1998; Aturupane, 2006). Child overcrowding in a household competing for inelastic resources might, for example, lead to maternal depletion syndrome. Exhaustion and other factors related to pregnancy and delivery might make it difficult for the mother to give undivided attention to each of her children. In a study conducted in India, Mishra and Retherford (2000) found that children with three or more older siblings are more likely to suffer chronic malnutrition than are children from smaller families. This is most probably because competition for food increases with family size.

(e) Birth interval

Birth intervals of less than two years are associated with increased childhood mortality rates (Gubhaju, 1986; Sullivan et al., 1994; Tagoe-Darko, 1995; Curtis & Steele 1996). Children spaced two or more years apart have a greater chance of being well cared for, of being breastfed for longer, and of being taller and heavier (Gubhaju, 1986; Bastien, 1992). Comparatively speaking, stunting is greater amongst children with a prior birth interval of less than 24 months than among children following longer birth intervals (Boerma et al., 1990; Sommerfelt & Stewart, 1994; Forste, 1998).

(f) Birth weight

The relationship between maternal health and nutrition, and low birth weight has been well documented. It has also been shown that low maternal socio-economic status (SES) is associated with an elevated risk of low birth weight in the baby compared to a high SES (Sanghvi et al., 2001: Radhakrishna & Ravi, 2004).

Women with low status (*women's power relative to men)* tend to have less control over household resources, less access to information and health services, poorer mental health, and lower self-esteem. These factors are thought to be closely linked to the women's own nutritional status and the quality of care they receive, and, thus in turn, to the children's growth weights and the quality of care they receive (Smith et al., 2004). Nutritional problems continue throughout the lifecycle. A baby faces a higher risk of disease and

premature death if the mother is malnourished, sick, or received inadequate prenatal and delivery care (Tinker & Ransom, 2002). The nutritional status of girls and women significantly affects first and foremost the development of the foetus, which depends on the mother for nourishment (Ramakrishnan et al., 1999). Maternal malnutrition leads to childhood malnutrition as underweight and/or anaemic mothers are more likely to give birth to low-birth weight infants (Adair, 1987; Scholl & Hediger, 1994). When malnourished female adolescents enter their adult years and fall pregnant they often fail to gain enough weight, which puts their babies at risk of low birth weight. Thus the cycle of malnutrition continues. Pongou et al., (2004) report that in Cameroon the size of the child at birth definitely affected the child's nutritional status. Children of low birth weight tended to have lower weight-for-age z-scores as compared to those of average or larger birth weight.

(g) Breast feeding

In many developing countries, prolonged breastfeeding without adequate supplementation of food after the age of 6 months, as well as poor weaning practices predisposing to many types of infections, may explain the lower nutritional status that very often occurs as the child grows. However, other studies conducted in developing countries report that 1-5 months of breastfeeding is a factor favouring the attainment of optimal nutritional status (Magnani et al., 1993; Pongou et al., 2004; Fotso, 2004).

A lengthy period of breastfeeding was found to have a spurious relationship with stunting and wasting during infancy. The positive effect on stunting may reflect the fact that the nutrients in breast milk are only sufficient for a child's growth for a certain number of months, after which other food supplements will be needed. Women who breastfeed for longer may be doing so because they may, as a result of poverty or inadequate nutritional knowledge, lack the resources to provide their children with adequate nutrition (Ukwuani & Suchindran, 2003; Sasisaka et al., 2006). Therefore, poverty rather than prolonged breastfeeding may be the cause of malnutrition. Alternatively, mothers of weaker children may wait longer to wean them, or the quality of complementary feeding may be lower for children who are still breastfeeding

(Madise et al., 1999). In Nicaragua, breastfeeding for more than 12 months was identified as a risk factor for underweight (Sasisaka et al., 2006). On the other hand, other reports emphasise that breastfeeding decreases infant mortality (WHO, 2000; UNICEF/WHO, 2004; Akmatov et al., 2006).

4.1.2.2 Maternal and child health factors

The promotion of child survival and child health has long been an important aim of the wide range of policies worldwide aimed at improving the overall health status of a population. Important advances have been made in making accessible the means to combat the most common diseases of childhood, and an increasing number of children are routinely immunised against diseases that are potential killers, such as measles. Major inroads have been made into reducing suffering and death from diarrhoeal diseases and acute respiratory infections. Furthermore, there is growing literature on health-seeking behaviours and the determinants of health services utilisation, especially in the context of developing countries.

(a) Mothers' health-seeking behaviour

The behaviour of the mother in seeking healthcare services, for either preventive or curative purposes, is an important factor in determining child survivorship through the child's health and nutritional status, as well as through her own health status (UNICEF/WHO, 1998; WHO, 1999).

The factors determining health behaviours may be seen in various contexts: physical, socio-economic, cultural and socio-political. Therefore, the utilisation of a healthcare system – public or private, formal or non-formal – depends on sociodemographic factors, social structures, levels of education, cultural beliefs and practices, gender discrimination, status of women, the nature of economic and political systems, environmental conditions, and the disease pattern and healthcare system itself.

The beneficial impact of the mother's education on child nutritional status is partially mediated by her positive behaviour in relation to modern healthcare. In many developing countries, however, even within the same educational

group, the attitude of the mother regarding modern health facilities and their adequate use may vary depending on other mediating factors. On the other hand, education may facilitate the use of available health facilities, where educated mothers benefit more from the available health services (Barrera, 1990). In this case, the relationship between maternal education and the use of health services and/or health-seeking behaviour may be complementary. Conversely, uneducated mothers living in a community of educated mothers may be positively influenced to increase their use of healthcare facilities, because educated mothers are more prone to endorse health-promoting behaviour (Fotso, 2004). The implication is that the presence of a high proportion of educated mothers in a community encourages uneducated mothers to increase visits to healthcare facilities for themselves and for their children (Desai & Alva, 1998). However, conversely, a lack of healthcare facilities may limit a mother's ability to seek care for herself and her child before, at and after delivery.

Assessing the socioeconomic and environmental factors for child nutritional status in Cameroon, Pongou et al. (2004) found that maternal health-seeking behaviour (MHSB), specifically prenatal attendance, was positively associated with child nutritional status. The universal indicator variables for MHSB are prenatal visits, a tetanus injection, medical assistance at delivery, knowledge of ORT, and possession of a health card for the child. This result, however, implies that prenatal attendance only, which is one component of MHSB, has a positive impact on child health in Cameroon.

Thind and Cruz (2003) studied the determinants of children's health services utilisation in the Philippines. Their results indicate that maternal education and the number of illnesses a child experiences determine the decision to seek care. Once the decision to seek care has been made, the choice between a public or private provider is affected by the family's economic status and the size of the household. Goldman and Heuveline (2000) in their study on health-seeking behaviour for child illness in Guatemala found that modern medical care plays a major role in the treatment of infectious illnesses among children in rural Guatemala, with visits to pharmacists, doctors and the staff at

government health facilities occurring much more frequently than visits to curers and other traditional practitioners. In general, families are much more likely to seek a health provider when a child experiences fever and gastrointestinal symptoms, as compared with respiratory and other symptoms, and when a mother perceives the illness to be serious. The estimates also indicate that infants, low parity children, and children assessed as having generally been in good health are more likely to visit providers than other children. However, the particular associations often vary according to the type of provider.

Sasisaka et al. (2006) found that in Nicaragua, living considerable distances from the nearest health facility did not deter the mothers from seeking healthcare. In Pakistan, it was found that living four kilometres from a health facility militated against the use of a medical service (NoorAli et al., 1999). In addition, a survey in Zambia noted that nearly 50 percent of people living less than five kilometres from a health provider chose to seek healthcare, while only 17 percent of those who lived at a distance of more than 40 kilometres received medical care.

Balabanova et al., (2004) conducted a study in the FSU to examine patterns and determinants of healthcare utilisation. They found that unaffordability, probably due to an impoverished status and environment, rather than lack of health knowledge was a common factor in five of the eight countries they studied. A decrease in the provision of health services and a decline in the ability or willingness of mothers to bring their children to health centres were found to be factors in the deterioration in young African children (4-23 months) in two districts of Congo (Martin-Prével et al., 2000). Regional differences with respect to access to healthcare services were observed in a study conducted in rural Nepal. Utilisation of healthcare services differed significantly (Hotchkiss et al., 2002) depending on the ecological zone (mountains, hills) where the mother lived and whether there was a road.

Using data from Senegal, Linnemayr and Alderman (2006) found that the presence of a health facility had a positive and statistically significant impact

on child nutritional status. The use of a traditional healer or an unqualified doctor was found to be significantly associated with child mortality in a study conducted in Karachi between 1993-1994 (D'Souza, 2003).

(b) Prenatal care

Several types of preventive and curative services are most likely to influence child growth. With respect to preventive services, prenatal care may influence maternal nutrition and weight gain in pregnancy as well as parenting skills. Better parenting skills may lead both to improved dietary intake as well as to a decreased incidence, severity and duration of illness (Hotchkiss et al., 2002). Access and provider characteristics of healthcare services in developing countries have been found to have an effect on their utilisation, especially by pregnant women, women in labour and mothers with young children (Alderman & Lavy, 1996; Acharya & Cleland, 2000).

Chamarbagwala et al., (2004) found that infants and children of mothers who had received antenatal care, either by a medical doctor or a nurse, and who had received professional assistance during delivery, had a higher likelihood of survival. Good health of the mother during pregnancy had a positive significant effect on the nutritional status of children in India (Devi & Geervani, 2004).

(c) Immunisation

During the 1980s, considerable efforts were made by countries and international organisations to improve the coverage of immunisation. In almost all countries, an improvement of immunisation coverage continued during the 1990s. As a result, in many countries, including developing countries, immunisation is almost universal (Minujin & Delamonica, 2004). In India, Devi and Geervani (1994) found that, although the immunisation given to a child was not significantly associated with chronic nutrition, it emerged as a significant factor for current nutritional status. Gebreselassie (2005), in a study conducted in Ethiopia, found that the education of the mother was strongly correlated with an increased chance of immunisation and a reduced chance of child illness.

(d) Knowledge of oral rehydration therapy (ORT)

Studies linking health knowledge and child health outcomes are limited and the empirical relationship between knowledge and health behaviour is inconclusive. Some research has shown that higher levels of education are associated with specific types of health knowledge, including proper use of oral rehydration therapy to treat diarrhoea and an understanding of infections as a cause of disease (Bhuiya et al., 1990; Boerma et al., 1990). Rates of ORT (increased fluids plus continued feeding) for children with diarrhoea tend to be somewhat lower in poorer countries (UNICEF/WHO, 2001:24). Although the effectiveness of oral rehydration therapy has been proved, only about 20 percent of children with diarrhoeal episodes worldwide currently receive it appropriately.

Furthermore, knowledge and use of appropriate home treatments to manage diarrhoea successfully may be declining. Adherence to recommendations for children is poor because oral rehydration therapy does not reduce the duration of diarrhoea, and this often leads to the use of antibiotics and other treatments of no proven value (Jones et al., 2003).

(e) Morbidity status of child

The prevalence and severity of disease may be influenced by a wide range of underlying social and economic factors (Mosley & Chen, 1984). One factor likely to be important in influencing disease, and as a result nutritional status, is the health status of the mother and the child. Adequate and accessible maternal and child healthcare services, paternal education, paternal occupation, and nutrition and health information may be significant factors in preventing child malnutrition (Behrman, 1995).

Malnutrition and infectious diseases among preschool children feature prominently among the major public health concerns in developing countries (UNICEF/WHO, 1998:30; WHO, 1999:55; Kuate-Defo, 2001). Nutrition and health are closely related. For example, waterborne diseases, such as diarrhoea, affect the assimilation of food and lead to malnutrition, which in turn lowers resistance to disease, particularly infectious disease. The relationship

between morbidity and malnutrition may weaken the child's immune system, making the child more susceptible to infection. The implication is that child illness should be considered endogenous. The causes of malnutrition and morbidity are diverse, multisectoral, and interrelated, and entail biological, social, cultural, political and economic factors. Their influences operate at various levels, such as child, family, household, community and nation.

Empirically, a large body of research has documented an inverse relationship between socioeconomic status (SES) and a variety of health outcomes. Unfortunately, the literature on these topics is built mainly on evidence from industrialised countries (Alvarez-Dardet, 2000). In developing countries research on these issues has focused mainly on mortality, (Sanghvi et al., 2001; Fedorov & Sahn, 2005; Akmatov et al., 2006) and there has been comparatively very little research regarding the relationship between morbidity and malnutrition (Martin-Prével et al., 2000; D'Souza, 2003; Caulfield et al., 2006).

Fotso and Kuate-Defo (2005) found that variations in child health among communities may be clearly accounted for by contextual factors over and above likely compositional effects, even though differences between communities in the risks of childhood malnutrition and morbidity are found to originate mainly from differences in familial characteristics. The health status of children is usually assessed according to the incidence of infectious diseases, levels of child mortality, immunisation status and the nutritional status of the children aged below 5 years at the time of the survey.

The highest rates of diarrhoea occur among malnourished children (Black et al., 2003). Dehydration is the most direct effect of diarrhoea, accounting for the majority of deaths. The advent and widespread adoption of oral rehydration therapy has greatly reduced the mortality related to diarrhoea (UNICEF/WHO, 2004:23). Children who suffer from repeated episodes of diarrhoea or acute respiratory infection (ARI) are more likely to suffer from malnutrition. This is partly because of reduced appetite, and less fluids and foods being offered during episodes of diarrhoea and other illness. Diarrhoea

and ARI have been found to have an effect on malnutrition in a number of studies (Mull & Mull, 1988; Hudelson, 1993; D'Souza, 2003; Sahn, 1994). For example, Sah (2004) found in Nepal that diarrhoea had an impact on the nutritional status of the children. This finding showed an increased risk of children who had suffered from diarrhoea in the prior year being underweight or stunted than those who had not suffered from diarrhoea. Some micronutrient deficiencies, including anaemia, have been found to be closely linked to child undernutrition. Lack of iron in the diet is the main cause of anaemia. In children, it is more pronounced in undernourished children. Between 1990 and 1993 the consumption of fruits, vegetables and meats decreased significantly in many parts of Central Asia, thereby reducing iron intake (Scrimshaw, 2001:7).

Three illnesses that are of major concern in this region are diseases from which mothers suffered during pregnancy e.g. anaemia; and ARI. Both are directly related to deteriorating sanitary and housing conditions, decreased maternal nutrition, and the worsening provision of public health services. These illnesses are also of major importance for infant and child mortality in Central Asia (Bauer et al., 1998). The morbidity status measured in terms of malnutrition and infections is closely related to poor living conditions, including lack of water, heating and the growing problems of malnutrition.

4.1.2.3 Environmental/community/household factors

Environmental hygiene is a major determinant of health. The role played by the community environment and domestic hygiene in child malnutrition and child mortality has been well documented world-wide, especially in developing countries. However, based on the assumption that factors in the child's immediate environment are likely to have the greatest impact on growth most studies on the nutritional status of children have tended to focus mainly on child-specific and household level determinants. Yet, community environmental hygiene which is, for instance, determined by the main type of sanitation to be found in a particular area, may, independently of individual or household characteristics, have an impact on child nutritional status. Poor environmental conditions, including limited access to clean water and

sanitation, are very often characterised by bacterial and microbial proliferation causing infectious diseases, which, in turn, negatively affect child nutritional status. A child living in a wealthy household located in a poor neighbourhood with households with unsafe hygienic conditions is at greater risk of malnutrition than a child with similar characteristics but who lives in a quality environment. Conversely, a child living in a poor household within a high quality environment may benefit from the healthy conditions of his environment (Magnani et al., 1993; Fotso & Kuate-Defo 2005; Pongou et al., 2004).

Likewise, in areas with, for instance, no access to potable water rich and poor people experience the same degree of exposure to unclean water and the resultant consequences to health. Such poor environmental circumstances expose children to diseases such as diarrhoea or respiratory infections, both of which increase the likelihood of malnutrition (Pongou et al., 2004). Household level variables include a variety of goods and services, which affect child nutrition through the proximate determinants. These include water supply, good sanitation, household size, number of children under the age of five, province and place of residence.

(a) Province of residence

The inefficient use and pollution of water resources (see Chapter 2, p33) through industrial and agricultural runoffs, and, in certain places, radioactivity through nuclear testing, air pollution, release of toxic chemicals together with land degradation and improper agricultural practises are directly responsible for many childhood diseases in the Central Asian region, especially in Kazakhstan (Falkingham et al., 1997).

For example, the areas around the Aral Sea experience unfavourable climatic conditions (see Chapter 2, p28) and therefore there is either low or no production of food and cash crops. Strong regional disparities in respect of child nutritional status have been found in studies conducted in developing countries, including countries in Asia, Africa and Latin America. Larrea and Freire (2002) found higher stunting levels in children living in the highlands

(hilly high altitude locations) in Peru, Bolivia and Ecuador. Serious declines in nutrition have been found in children living near the Aral Sea, therefore the area of residence and nutritional status of children will be examined (Bauer et al., 1998; Falkingham et al., 2000). In India, Som et al., (2006) found that regional differences in child malnutrition were not the same. The effect of various socioeconomic, demographic and cultural factors on malnutrition has been observed with some minor variations depending on the specific circumstances in the various regions. Similar results were found in South Africa (Bomela, 1999).

(b) Place of Residence

Geographic location variables provide an interesting insight into the pattern of child health in Central Asia. In a study conducted in Russia on socioeconomic determinants of child health, Fedorov and Sahn (2005) found the following interesting results. Contrary to what has been commonly found in many developing countries children in rural areas do not appear to be less healthy than urban children. A mitigating circumstance would be that rural children are more physically active, eat more home-grown food, have cleaner air and a generally less stressful environment. In addition, children living in regions with harsh climatic conditions (Western and Eastern Siberia and the Far East) are not less healthy than children living in the European part of Russia. On the contrary, children living in the politically unstable Northern Caucasus regions are shorter than their peers living in other regions of Russia. This may be explained by their proximity to the war-ravaged Chechnya region. This is a clear example of structural violence affecting children through war, which leads to poverty and hunger and subsequently to high mortality, especially child mortality.

Many studies on child nutrition have found higher malnutrition rates in rural rather than in urban areas (United Nations, 1998; Som et al., 2006; Sasisaka et al., 2006). The urban-rural differentials in child health in developing countries may stem from the sociocultural, economic and environmental disparities existing between the areas. Low income households, uneducated mothers and poor environmental conditions are concentrated in rural areas,

predisposing children living in those areas to greater exposure to multiple risk factors for developing infectious diseases and malnutrition. In terms of health infrastructures, urban areas are also more equipped, providing urban mothers with easier access to medical care for their children. A shortage of food is also more likely in rural settings, and may help to explain urban-rural inequalities. Although in Central Asia most people in rural areas work in agriculture they use antiquated techniques and practise subsistence farming. As production is seasonal people are very often exposed to periodic food shortages and, consequently, to an imbalanced diet. These urban-rural differences are likely to create certain inequalities in child nutritional status in most socio-cultural and economic categories. In addition, given the national differences in respect of economic development in the Central Asian states, the income differences unquestionably vary across and within the states (Falkingham et al., 1997).

(c) Household size

Household composition may affect the way in which household resources are distributed among household members. Household size, gender of the head of the household and the number of children under the age of five years are important in measuring intra-household resource allocation. The issue of the impact of household size and household composition on a child's health and nutrition has not received the attention it merits. Very few studies have focused on the influence of these variables on child nutritional status. Although a number of studies have not found significant relationships between gender of the head of the household and child nutritional status it has been found that in Ethiopia children living in a female headed household were more likely to be malnourished, whereas household size did not have any significant effect (Silva, 2005).

(d) Number of children under the age of five

The household conditions in which infants are born and reared are very important for their health and survival. Aggregation of a relatively large number of children, especially when they are below six years of age, creates conditions necessary for the propagation and transmission of micro organisms, which lead indirectly to malnutrition. The number of children under

five years of age in a household in Ethiopia increased the probability of a child being stunted by 2.5 percent (Silva, 2005). Similarly, in the Congo, the mean weight-for height index decreased when there was more than one child aged below six years in the household (Delpeuch et al., 2000).

(e) Sanitation and water supply

Lack of good sanitation and access to clean drinking water has been found to be associated with a greater incidence of disease and higher levels of malnutrition. Several studies conducted in certain developing countries found good water and sanitation to be associated with improved nutritional status in children (Bomela, 1999; Christiaensen & Alderman, 2004; Silva, 2005; Sasisaka et al., 2006). Using data from Ghana, Lavy et al., (1996) suggest that an improvement in the water and sanitation infrastructure in rural areas would probably lead to substantial gains in child health.

The lack of ready access to a safe water supply and proper sanitation, the unhygienic handling of food together with unhygienic conditions in and around homes that cause most childhood diseases have significant implications for the spread of infectious diseases. Furthermore, when food is handled in unhygienic conditions in an unhealthy environment children are prone to infection, which in turn leads to poor growth and malnutrition. A study conducted by Boerma, et al. (1990) found that the prevalence of diarrhoea was lower in regions where there was piped drinking water and access to toilet facilities.

In studies conducted in various developing countries Merchant et al., (2003), Daniels et al., (1991), Huttly (1990), Ricci and Becker (1996) and Magnani et al. (1993), found a strong correlation between good water and sanitation and improved nutritional status. Using data from Cameroon, Pongou et al. (2004) found that the household sources of drinking water, sanitation, and cooking fuel were significantly associated with child nutritional status. Children whose households had access to piped water revealed better nutritional status compared to those whose households used public tap or surface water. Furthermore, they found that cleaner fuels were associated with better

anthropometric indicators. This was consistent with results from South India by Jeyaseelan and Lakshman (1997).

4.1.2.4 Socio-economic factors

The socio-economic variables considered in this framework include the employment status, occupation, education, religion, and ethnicity of both parents as well as the economic level of the household measured through ownership of various assets. Basically these individual variables measure individual productivity. In this study household ownership of various assets e.g. radio, bicycle, motorcycle, television, refrigerator, car, floor material, telephone and land will approximate income and assets.

(a) Household wealth

No income or expenditure data has been collected in the DHS surveys. Filmer and Pritchett (1989) suggested the use of a wealth index to serve as a proxy for the household's long-run wealth or economic status. The wealth index is typically constructed from information regarding housing characteristics and the possession of household durable goods. Silva (2005) found that in Ethiopia household wealth was an important determinant of a child's nutritional status. In India children from households with better economic conditions have better nutritional status in the West Bengal state, which is more highly developed economically than the east Bengal state (Som et al., 2006). In Senegal, Linnemayr and Alderman (2006) found that the wealth index has a statistically significant impact on child nutrition when controlling for household size, which had a negative and significant impact. This result is in line with the findings of Haddad and Ahmed (2003) on the relationship between household expenditures and nutritional status.

In a study of five African countries, Fotso (2004) reported household wealth to be the most powerful predictor of child malnutrition. In Cameroon economic status had a positive effect on child nutritional status. Economic status is associated with improved child nutritional status because high economic status mothers are able to afford supplementary foods (Pongou et al., 2004).

(b) Ethnicity

In Central Asia and in some countries in Africa and South America, ethnicity has been found to be a predictor variable for child nutrition. Children of ethnic Kazakhs, Uzbeks and Kyrgyz have been found to have higher levels of malnutrition than children from other ethnic groups (UZDHS, 1996; KRDHS, 1997; KDHS, 1999). Ethnic affiliation affects child nutrition through its influence on a household's economic conditions, the cultural status of the mother, the geographical setting, and the extent to which health care services are utilised. The effect of stunting reached 58 percent among indigenous children in Ecuador compared to 24 percent for non-indigenous children (Larrea & Kawachi, 2005). In Nepal, Sah (2004) found a higher proportion of underweight and stunted children for Dalit than non-Dalit children under the age of three. Conversely, Hotchkiss et al., (2002) and Strickland and Tuffrey (1997) found that Mongoloid children had higher weight and height measurements than non-Mongoloid children. In Russia, Fedorov and Sahn (2005) did not find any significant difference in the nutrition status of Evenki and non-Evenki children.

(c) Maternal employment

Although considerable research has been done on the relationship between maternal employment and breastfeeding, only a small number of studies have explored the effects of maternal employment on other child nutrition outcomes, although research concerning the implications of women's work for child nutritional status has gained popularity during the last five decades (Leslie, 1989).

Research focusing on maternal employment has increased partly due to the changing economies in developing countries – from family-oriented to modern technology types of businesses. This transition, which also includes an increase in the number of educated women, has created better opportunities for employment outside the home for women, resulting in greater participation in the labour force (Schultz, 1990). A literature review conducted by Johnson et al., in 1993 concluded that although the study in this field is limited maternal

employment does not have negative consequences for preschool children's dietary intakes.

The employment status of mothers has potential implications for virtually all aspects of children's growth and development, and nutrition outcomes are no exception. The quality of children's diets and their subsequent physical health may depend to a significant degree on whether and to what extent their mothers work outside the home. On the one hand, employed mothers may have less time available to supervise their children's activities and to prepare their meals, including breastfeeding. On the other hand, the additional income they bring into the household may help to ensure a stable supply of high quality food, as well as the treatment of childhood diseases (Leslie, 1989).

A point, not always made explicit, is that if women take on a productive role, particularly one outside the home, the welfare of the children may suffer, especially during infancy. The effect of women's work may also depend on the age of the child. Childcare and breastfeeding are advocated during the first 4-6 months of infant life. After this period solids are introduced and formulated milks replace breast milk. It is during this period that mothers either go back to work or begin to look for work, because there is a greater need for income. Therefore, the negative effect of employment may be greater during infancy, while the positive effect of increased income may be greater during childhood (Ukwuani & Suchindran, 2003).

The relation between women's work and child welfare has been investigated from two different points of view. One view is concerned primarily with women's productive roles. This view tends to either downplay women's childcare responsibilities or to assume that adequate substitute childcare is available. Proponents of this view are also likely to assume that children will benefit from the women's increased earnings and from the greater control by women over the use of resources that women's work may bring. The second view is typical of policymakers and researchers concerned with child health, nutrition and development, and they assume that women should primarily devote themselves to their reproductive and childcare roles (Leslie 1989).

There is mixed evidence regarding the association between the mother's employment status and child nutritional status. The literature on the effects of women's employment on child nutritional status and health outcomes reveals that there is not a simple correlation between the two (e.g. Leslie, 1989). A few recent studies have found significant negative associations of work for earnings and child nutritional status. In an evaluation of almost 2,000 rural mothers in India, Abbi et al., (1991) found that children of mothers who worked in agricultural labour on their own farms for 5 to 6 hours per day were significantly more malnourished than those whose mothers went out to work and left their children under someone else's care, regardless of whom the alternate caregiver was. Work carried out in Iran by Rabiee and Geissler (1992) on the impact of maternal workload on child nutrition indicated that the extent of the mother's fieldwork did not seem to have any profound or conclusive effect on the children's nutritional status. Lamontagne et al., (1998) examined the relationships among women's employment, childcare strategies, and the nutritional status of children of 12-18 months of age in Nicaragua.

The findings indicate that children of employed mothers fared better in weight/height than those whose mothers were not employed, with and without controlling for socioeconomic status and maternal education, paternal financial support, child care adequacy, and gender and age of the child. Children with inadequate alternate childcare (care by a preteen or care at the workplace) had lower height for age, even when controlling for the same variables. Toyama et al., (2001) examined the association between mother's employment and child nutritional status in Indonesia. The findings indicate that the children of nonworking mothers had significantly higher height-for-age Z-scores than those of working mothers.

When mother's work was divided into 'formal' and 'informal' the height-for-age and weight-for-age Z-scores of children of the 'informal' worker group were significantly lower than those of the nonworking mother and the formal worker group. Data from Kuwait (Ezzat & Fawzia, 1996) show that the mother's employment did not have an effect on the prevalence of stunting, which was comparable in the children of employed mothers or housewives. On the other

hand, the prevalence of wasting was low among children of employed mothers compared to those of unemployed mothers.

(d) Occupation

A mother's occupational status is expected to have an effect on the health status of her children. It is assumed that those mothers in professional or technical skilled employment are likely to earn better salaries/wages and have more access to material resources. Moreover, a salaried mother might be in a position to devote her income to her own needs and those of her children (Delpeuch et al., 2000). Yet, mothers who work outside the home are likely to spend long hours away from their children, and this could result in neglect, exposing the children to frequent infections.

In 1985 the United Nations reported that the negative relationship between maternal employment and child survival was maintained even after controlling for possible confounding factors, such as maternal education, urban-rural residence, marital status and parental occupation. However, the report warns that the findings should be viewed cautiously as the line of causation is far from clear. Encouraging labour force participation on the part of women without addressing the issue of low earnings of women in the labour market is not likely to result in improvement in child health (United Nations, 1999:39).

In many societies the father's unemployment is likely to be involuntary, usually due to fragile overall economic conditions. Therefore, the father's employment is an endogenous explanatory variable to the health and welfare of children in a household. The mother's employment is in a number of traditional societies is exogenous to the health and welfare of the children. A mother may stay at home taking care of the children until such time that they begin school. The father's employment status had an effect on the height of children in Russia. It was found that children of employed fathers were taller than children of unemployed fathers (Fedorov & Sahn, 2005).

The availability of the mother's time for childcare is very important in child nutrition. In traditional societies such as some Central Asian societies,

childcare time often competes with time needed for income generating work. In poor families a mother's outside work may result in child neglect or care by a sibling or hired caretaker.

(e) Education

Parental characteristics are important determinants of anthropometric status. The value of parental education in respect of child health and child nutrition is well documented. This is particularly true in the case of the mother's education as was confirmed in studies conducted in several developing countries, including the Philippines, Pakistan, Ghana and Jamaica (Barrera, 1990; Alderman & Garcia, 1994; Lavy et al., 1996; Handa, 1999).

According to Glewwe (1999) the role of parental education in determining children's health and nutritional status is two-fold. Firstly, better education should translate into higher incomes, depending on the state of the economy, the state of power relations within a country, or the extent of social inequality in the society. In studies where income is not included as a separate variable, this effect should exert a positive effect on the coefficients of parental education variables. Even when income is included in the estimated equation, more parental schooling could be beneficial for child health and nutrition. Better educated parents are likely to be able to make better use of available information on child nutrition and health, partly because education may increase the parents' preference for child quality over quantity (a decision which, according to Becker (1960), may also reflect increased opportunity cost of the mother's time). It is most likely that the successful completion of primary schooling or functional literacy is sufficient in this context, and postprimary school education might only add limited benefits, although this depends on the quality of schooling (Glewwe, 1995 & 1999).

Glewwe (1999) informs us that the mother's education is often found to be positively correlated with child health and nutrition in developing countries, yet the causal mechanisms are poorly understood. Three possible mechanisms are:

"(1) formal education directly teaches health knowledge to future mothers;

(2) literacy and numeracy skills acquired in school assist future mothers to diagnose and treat child health problems; and
(3) exposure to modern society through formal schooling makes women more receptive to modern medical treatments."

Of particular interest in the analysis of education is the differential impact maternal and paternal schooling might have. Since it is mainly mothers who care for children, while men are presumably working outside of the household, the mother's ability to access information and make use of existing healthcare facilities is likely to be of greater importance. Female education should thus be directly relevant, whereas paternal education should affect child health and nutritional status mainly through its income generating properties (Glewwe, 1999).

Caldwell (1979), in his explanation of education as a factor in mortality decline, indicated that the mother's education was a stronger determinant of child survivorship than other characteristics more closely related to household economics, especially in developing countries. Evidence exists that a number of studies have supported this finding, showing that the magnitude and significance of the effect of maternal education exceeds the income effect (Behrman & Wolfe, 1987a&b; Barrera, 1990; Thomas et al., 1987; Cleland & Van Ginneken, 1988). A positive relation between maternal education and child nutrition has been also demonstrated in many studies, including those of Webb and Block (2004), Alderman and Garcia (1994) and Frongillo et al., (1997).

In a study conducted in India it was found that stunting decreased with increasing levels of the mother's education (Mishra & Retherford, 2000). Similarly, the majority of studies conducted elsewhere in Asia indicate a positive relation between maternal education and child nutrition. Education is also assumed to provide the mother with the capacity to break with traditional practices and taboos regarding breastfeeding and weaning practices, as well as dietary intake. Education is therefore expected to impact on child health and, consequently, child nutritional health by enhancing the mother's

understanding and perception of disease, and by allowing her to take advantage of healthcare facilities in the treatment process (Ware, 1984), as well as by helping her to break with traditional health (Azevedo et al., 1991) and food practices common to uneducated women.

A decrease in the proportion of severely malnourished children with an increase in the mother's education was observed both before and after monsoon flooding in a study conducted in rural Bangladesh (Choudhury & Bhuiya, 1993). Linnemayr and Alderman (2006), in a study conducted in Senegal, found a positive impact of female primary level education on nutrition. Research conducted in some Eastern European countries also indicates that women's education contributes to the reduction of child malnutrition. Indeed, in Albania, children of mothers with less than a secondary school education are more likely to be underweight and underdeveloped than children of mothers with secondary school or higher educational levels (UNICEF/WHO, 2005). Fedorov and Sahn (2005) found that, in Russia, the education of the mother has a very strong impact on the child's health. They found that an additional year of secondary education for the mother on average increases a child's height by 1.1 centimetres.

Reed et al., (1996) found that child nutritional status showed a general improvement when mothers had three to four years of education, but declined when mothers had received higher education. This decline could be attributed to the fact that children of most educated mothers are usually cared for by other people because their mothers tend to be in employment. Moreover, a number of the caregivers are either semi-literate or illiterate. Therefore, even if the mother's nutritional knowledge is of an acceptable or high standard the caregiver might not be able to follow instructions as given. Additional evidence from other countries also suggests that the association between the mother's education and child health and/or nutritional status of children is far from conclusive.

Using DHS data for 22 countries, Desai and Alva (1998), examined the effect of maternal education on three indicators of child health, namely, infant

mortality, child height-for-age and immunisation status. Their findings indicate that the effect of maternal education on child nutritional status is weakened after controlling for household socio-economic variables (such as husband's education and access to piped water) and area of residence. After incorporating the above variables the effect remains statistically significant in only a few countries. Desai and Alva argue that education acts as a proxy for the socioeconomic status and geographic area of residence of the family. Most notably, if the proportion of educated mothers is high within the community, uneducated mothers may increase visits to health facilities at the community level for their children, as well as for themselves, through the spillover effect from educated mothers.

Chamarbagwala et al. (2004) put forward the fact that it is learning outcomes that matter rather than simply attending school. If schooling is of a poor quality then it may have no beneficial effects. In many developing countries the quality of education is very poor due to either inadequate or non-existent educational resources. Using data from Morocco, Glewwe (1999), conversely argued that it is the mother's health knowledge that matters – controlling for that removes the effect of maternal education. He contended that little health knowledge is taught in Moroccan schools. This applies to a number of schools in developing countries, where health knowledge is acquired outside of the classroom. If education does not provide such knowledge it will not be significant. Alternatively, if this information is provided outside the education system and understood by the less educated then the effect of education will be removed.

Bairagi (1980) and Solon (1985) found that, while education had a positive effect within the richer segments of their study populations, it had no effect on the poorer segments. Doan (1988) showed that it is only the status of children in the middle-income group that improved with maternal education; no benefit was apparent in the poorest and wealthiest quartiles. Reed et al. (1996) found that the association between maternal education and child weight differed significantly across socio-economic environments. It is not surprising that studies have uncovered interactive effects between socio-economic

conditions and maternal education, neither is the apparent lack of consistency contradictory. If insufficient resources are available to a woman it is unlikely that education would make much difference.

Micklewright and Ismail (2001), using European University Institute (EUI) EUI/Essex Survey data from Uzbekistan, found no evidence of a lower weight for age or weight for height when mothers did not complete lower secondary education. Evidence from Brazil indicates that a significant interaction between maternal education and community health services exists. The result shows that education and community health services are substitutes for nutritional status in Brazil (Thomas et al., 1990). On the other hand, Behrman and Wolfe (1987), using data from Nicaragua, report that maternal education was not a statistically significant determinant of child height after controlling for unobserved family background and genetic endowment.

Haddad and Ahmed (2003) using household survey data from 12 countries, including Kyrgyzstan, found that parental education had positive and significant determinants of anthropometric status in just over a third of all cases, although this varied by country. This lack of significance is surprising given the conventional knowledge that parental education plays a significant role in child nutrition. On the other hand, this mirrors the findings of Sahn et al. (1999) for DHS for nine African countries. The variation in the significance of parental education and child nutritional status could be due to the different levels of economic and social development in the countries studied. Increasingly, focus on studying the synergy between maternal education and child health/nutritional status has shifted to the influence of other socio-economic characteristics, including household headships, environmental and domestic hygiene, food security care, ethnic/racial differences, and geographic differences, to name but a few.

In Central Asia, where education is universal (98% of all citizens in the three republics had completed secondary school by the time the surveys took place) (see Chapter 2), maternal education is likely to play a key role in child growth by providing the mother or childminder with knowledge about adequate food

composition, and by good use of modern healthcare, both of which are favourable to adequate child development. The rapid eradication of illiteracy through vast investments in primary and secondary education was one of the more remarkable achievements of the former Soviet system. This is clearly indicated in the high educational attainment levels found in women from the three countries which were the subject of this study. The proportion of female students in certain levels of education, such as higher education, has been above that of male students. This situation may be changing. Until very recently there were no indications that female education was given less priority than education for males in Central Asia. The economic crisis and the growing influence of conservative religious movements may be inhibiting the education of females (Falkingham et al., 2000).

4.2 THE THEORY OF STATE VIOLENCE AGAINST CHILDREN

The previous section contained a review of the literature on the nature of socio-economic, health and environmental inequalities that promote child malnutrition status in many developing countries, including those of Central Asia. This study proposes that these inequalities underlie the child malnutrition differences found in the Central Asian region. Furthermore, these inequalities lead us to the proposition that there are entirely different processes through which a variable, for example, a province of residence within a country, will influence the nutritional status of children and therefore have different degrees of impact. The emphasis is on the impact that the geography/province/country of residence has on child nutritional status through socio-political, socio-economic, health and environmental phenomena that are essentially structural in nature.

From the evidence of the socio-economic differentials and inequalities within this region which this study has advanced it may be postulated that children living in different provinces of a country respond to and are affected differently by the geographical, socio-political and socio-economic contexts in which they live. This in turn produces different patterns of child malnutrition. Consequently this study further proposes that the province within a country in

which children are born and reared defines their quality of life and, ultimately, their life chances.

On the basis of this broad generalisation one major theory that strongly influences nutrition outcomes will be used to explain existing gaps and differentials in child malnutrition in Central Asia, especially in Kazakhstan, Uzbekistan and Kyrgyzstan. This theory examines the effects that massive social, political and economic transformations have on the health and welfare of people – especially on those of young children. These transformations are embedded in the institutional organisation and construction of our social world. They are, by definition, exogenous social forces that are beyond the control of ordinary people, and are both structural as well as violent in nature. This broad theory is referred to as structural violence theory. The theory is not exhaustive, but serves to constitute the facts that form the foundation upon which the theory guiding this study is built. Structural violence is presented within a transactional relationship of sociopolitical, socioeconomic, socio-environmental and health factors. The proposed model is constructed with a view to the relationship between these factors and child health, specifically child malnutrition. Moreover, it is argued that the effects of structural violence on these factors are magnified when taking into account child nutritional status.

4.2.1 Theories of structural violence

Sociologists and social scientists in general have always been interested in the nature and logic of war and peace. The notion of structural violence is pervasive and powerful in society (Creighton & Shaw, 1987) and features in courses such as the Sociology of Peace and of Violence, of Poverty etc.

The term structural violence as coined by Johan Galtung and by liberation theologians during the 1960s forms the basis of this argument. The term describes social structures – economic, political, legal, religious and cultural – that prevent individuals, groups, and societies from reaching their full potential. In referring to structural violence, Galtung is referring to a type of violence separate from personal or direct individual violence where there “is

an actor that commits the violence". It is also static, and Galtung has argued that it may actually show a certain stability in contrast to the upheaval and visibility of personal violence (Galtung, 1969).

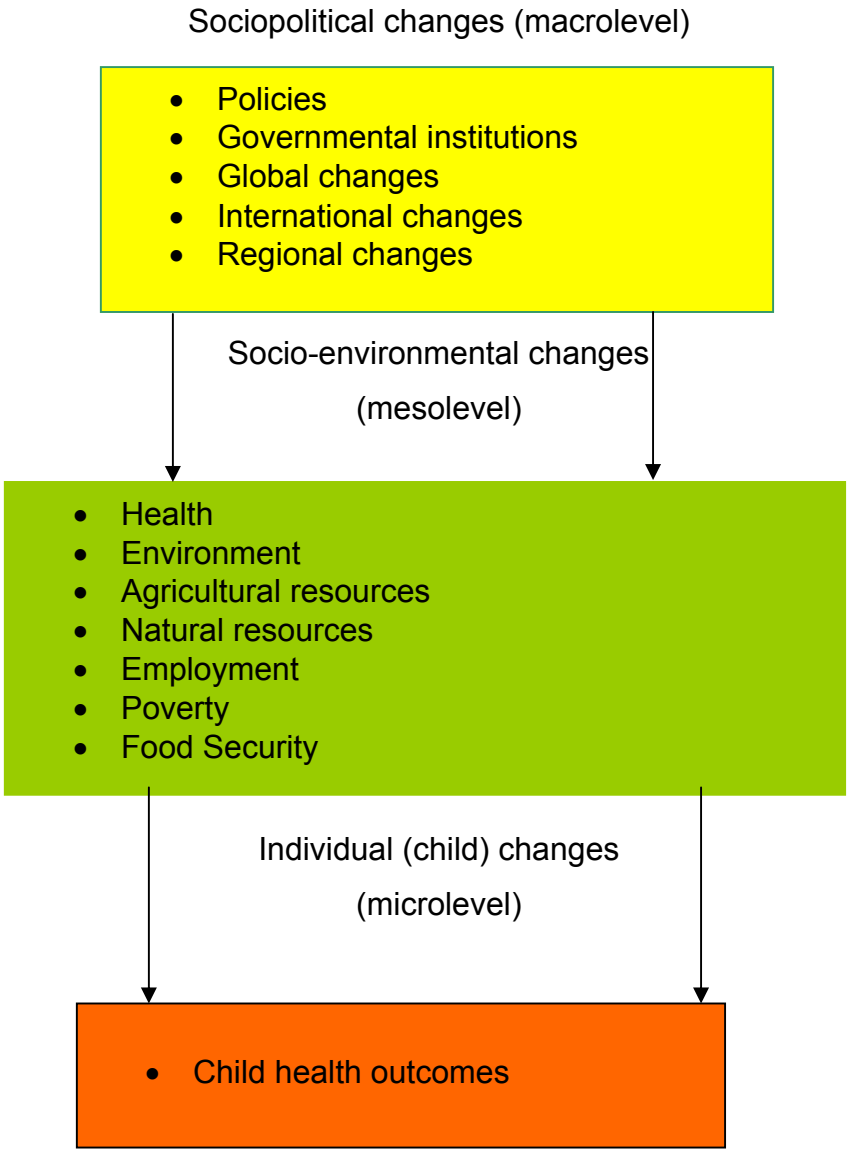
Structural violence is often embedded in longstanding "ubiquitous social structures, normalised by stable institutions and regular experience" (Gilligan 1997). The concept of structural violence is linked very closely to social injustice and the social machinery of oppression (Farmer, 2004). The mechanisms by which structural violence operates are found in the state and its bureaucratic institutions, as well as in the capitalist private sector.

Structural violence may also be defined as the 'frozen direct violence' of past conquest and /or repression, such as colonialism, slavery or economic exploitation (Farmer, 2004). By using a natural paradigm that adapts Bronfenbrenner's (Bronfenbrenner,1977) model structural violence is conceptualised as rooted within the structure of society (see Figure 4.2) and consisting of three hierarchical interconnected levels, 1) the socio-political (macro-system) level, hypothesised to be the most comprehensive level, refers to state institutions and policies that organise society, together with the influence of international, regional and global changes; 2) the socio-environmental (meso-system) which is the intermediate level refers to those 'social institutions', such as health, education, environment, employment, agriculture, natural resources, food security and poverty, which endorse the ideology of the macro system and; 3) the psychological (micro-system) level which refers to the relevant individuals who have contact with the actor. In the model used here the individual is the child under the age of five years who, through his or her parents (the actors), is exposed to those violent messages which foster oppression and culminate in undernourishment.

In order to indicate the convoluted effect of structural violence in Post-Soviet Central Asia on child health the study will expand on Bronfenbrenner's model in the section below. Reference to the changes that take place at each of the levels - structural, social and individual (see Fig 4.2) – is unpacked. Christie (1998) expanded on Bronfenbrenner's three level model when he postulated

that structural violence generates its penalties through the state, its social institutions, and through the collective psyche. Furthermore, structural violence and its effects impact disproportionately on marginalised populations (Christie, 1998) and is typically manifested in differential rates of mortality, morbidity, malnutrition, poverty and incarceration rates among such groups (Dohrenwend et al., 1989). This study argues that the current health crises in the former Soviet Union's Central Asian states provide an opportunity to explicate this form of violence and its effects.

Figure 4.2: Tripartite model of structural violence



Adapted from Bronfenbrenner's Model (1977)

Kent (2000) describes violence as an action which indirectly harms others through the social system, in the pursuit of the perpetrator's own interests. He states that violence may take different forms and may be categorised in different ways. For example, acts of violence may be distinguished according to the types of perpetrators and victims. People are able to hurt others by using many different kinds of capacities (means, powers, forces, instruments etc.) It may be argued that there are four basic kinds of violence – physical, economic, political and cultural. Physical violence comprises direct violence, while economic, political, and cultural violence are forms of structural or indirect violence.

Keshavjee (2000) defines structural violence as "increased morbidity and mortality resulting from forms of social organisation that frequently lead to groups of individuals being marginalised along social axes, often those of economic, racial and gender inequality". In respect of direct violence there is a specific event, an identifiable victim, and an identifiable perpetrator. In contrast, structural violence is not visible in specific events. Its effects are most clearly visible at the societal and individual level, as systematic shortfalls in the quality of life of certain groups of people, especially children.

The approach depicted in Figure 4.2 above to understanding violence suggests that hierarchical relations within and between societies benefit those at on top while oppressing, exploiting and dominating those who occupy the lower layers of society. As in the case of direct violence structural violence also kills people, but does so slowly by depriving them of basic necessities and adequate institutional arrangements. In physical violence there is physical damage to the human body which occurs in a distinct time-bound event, and individual victims and perpetrators may be identified. In the case of structural violence, however, people suffer harm indirectly, often through a slow and steady process, with no clearly identifiable perpetrators. It is not possible to photograph structural violence – it may be known only through its complex effects. Most victims of homelessness or chronic malnutrition, for example, are victims of structural violence (Kent, 2000).

The common thread in all forms of violence is the meeting of one party's needs at the expense of the needs of others. Violence entails the use of ***power***. The associations may be direct and immediate, for example, when a thug hijacks a car, or the associations may be structural, for example, when government leaders decide to purchase weapons instead of vaccines. Max Weber famously defines power as the 'probability of persons or groups of persons carrying out their will even when opposed by others' (Gerth & Mills, 1958:180; Kalberg, 2005). It is clear from the above definition that Weber believed that those in a position of authority are able to exert their power over those who are powerless, irrespective of their will. In such circumstances the powerless are forced to sacrifice their interests (Marshall, 1998:519). Foucault argues further that, in structural violence, "power relations are ubiquitous and are exercised from infinite points "(James et al., 2003).

This project shows that it is not possible to understand the excessive malnutrition of children in individual and clinical terms only – it must also be understood in socio-political and socio-economic terms. The sociopolitical system is most influential in creating, maintaining and sanctioning structural violence. According to James et al., (2003), structural violence at this level is epitomised by the state's direct and indirect exercise of power. The central planning system of the state that characterised the FSU and led to the abysmal conditions in which the former nation states find themselves today is an example of the consequences of political choices. The widespread malnutrition of children in this region results from far reaching deliberate policies, without due consideration of the long-term impact of these policies. Briefly, the policies that were introduced and implemented by the FSU did not adversely impact only on the lives of the people of the FSU at that time, but the legacy of these policies lives on more that ten years after the dissolution of the FSU (Bauer et al., 1998; Falkingham, 2000).

It is particularly children, women and young people who bear the brunt of the economic and political transition that these nation states are currently experiencing, and this is evidenced by the poor health and nutrition status of mothers and their children (Falkingham, 2000).

4.3 SUMMARY

This chapter reviewed studies dealing with developing countries, especially Asian countries, as well as from the FSU republics, to develop a conceptual framework (Figure 4.1) for examining child nutritional status. The paucity of data from the FSU makes it difficult to provide a complete picture of the nutritional status of children under the age of five in these countries. The framework contains proximate and non-proximate factors. The proximate factors that were discussed include socioeconomic, environmental, and health factors, and their influence on child nutritional status. The influence of the non-proximate factors, which are the structural factors that act through the proximate factors, were also discussed. A review of literature on structural violence was also conducted. A simple theoretical model (Figure 4.2) was constructed using Bronfenbrenner's Model of structural violence.