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A NATION'S HEALTH IS A NATION'S WEALTH

A STUDY ABOUT THE IMPACT OF CARE ON NUTRITIONAL GROWTH OF CHILDREN UNDER  
THE AGE OF FIVE IN ATTAPEU PROVINCE, LAO PDR

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## **EXCLUSIVE SUMMARY**

The Nutritional status of a child reflects their overall health situation. Care behavior during the first five years of children's life, and actions and decisions that caregivers make for them, define how they grow and how a country progresses. Parents are children's first gatekeepers and caregivers in regard to their health and nutritional status; therefore, the nutritional growth and development of a child is highly connected to family resources, the caregiver-child relationship and the caregiver's knowledge and beliefs about caregiving. There is a major pathway through which care may influence child's nutritional growth and development. Both psychosocial and physical care are strongly connected to the nutritional growth of a child in relation to the caregiver's everyday practices. Factors that may influence physical and psychosocial care are recognized in this study as the nature of caregiver-child relationships, both caregiver and child characteristics, their support system and resource constraints.

Key words: Care, Caregiver, Children, Care behavior, Nutrition, Malnutrition

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## LIST OF DEFINITIONS

**Malnutrition:** “A malnourished person finds that their body has difficulty maintaining normal functions such as growth and resisting disease. Physical work becomes problematic and even learning abilities can be diminished. For women, pregnancy becomes risky and they cannot be sure of producing nourishing breast milk” (WFP, 2014).

**Low birth weight:** Less than 2,500 grams infant.

**Stunting:** “Moderate and severe - below minus two standard deviations from median height for age of reference population” (UNICEF, 2014).

**Underweight:** “Moderate and severe - below minus two standard deviations from median weight for age of reference population; severe - below minus three standard deviations from median weight for age of reference population” (UNICEF, 2014).

**Wasting:** “Moderate and severe - below minus two standard deviations from median weight for height of reference population” (UNICEF, 2014).

**Undernutrition:** “Undernutrition is defined as the outcome of insufficient food intake and repeated infectious diseases. It includes being underweight for one’s age, too short for one’s age (stunted), dangerously thin for one’s height (wasted) and deficient in vitamins and minerals (micronutrient malnutrition)” (UNICEF, 2014).

**Care:** “Care is the provision in the household and the community of time, attention, and support to meet the physical, mental and social needs of the growing child and other household members” (Engle, Menon & Haddad, 1997).

**Caregiver:** In this thesis the word “caregiver” is used rather than “mother” or “father”. However, most of the caregivers were the mothers, where this research has been conducted. I refer to caregiver as the one who provides care and looks after children under the age of five.

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## **CHAPTER 1. INTRODUCTION**

### **1.1. RESEARCH PROBLEM**

Nutrition and health are important aspects of human life and well-being. In many developing countries, children suffer from being unable to obtain their basic right to health. Many of them die because of poor nutrition, low quality or lack of health-care facilities, communicable disease, absence of water and sanitation, and inadequate parental knowledge and education about care giving practices. For children who survive, there is still other risk that threatens their lives and makes it difficult for them to meet their developmental potential (WHO, 2011).

Malnutrition, as a consequence of poor health and nutritional practices, continues to be the biggest risk factor for illness and death (Müller & Krawinkel, 2005) and about one in every three children under the age of five in developing countries are malnourished (World hunger, 2013, Mahghoub et al., 2006). Some of the most substantial causes of the malnutrition are food insecurity, inadequate maternal and child practice and poor health services (Smith et al. 2002). WFP (2014) defines a malnourished person as *“the one who finds that his/her body has difficulty doing normal things such as growing and resisting disease. Physical work becomes problematic and even learning ability can be diminished.”* Malnutrition makes a child vulnerable to diseases and limits their actions in comparison to a healthy child. Studies show that malnutrition affects cognitive and non-cognitive growth, morbidity, productivity and physical work outcome (Mahghoub et al., 2006, Pelletier and Frongillo, 2002). Differences in physical and cognitive skills appear before children start attending school and over time become more marked during the life cycle.

The nutritional status of a child reflects their overall health situation. Care behavior during the first five years of children’s life, and actions and decisions that caregivers make for them, define how they grow and how a country progress in the future (UNDAF, An Analysis of Lao PDR, 2012-2015). Parents are children’s first gatekeepers and caregivers in regard to their health and nutritional status; therefore, the nutritional growth and development of a child is intrinsically connected to family resources, caregivers-child relationship and caregivers’ knowledge and beliefs about care behavior. The care provided by caregivers in the early years of a child could also have long-term consequences on the child’s socioeconomic success as an adult and healthy human capital (Carneiro and Heckman, 2004, Fryer and

Levitt, 2004, Johnson and Schoeni, 2007).

In recent years, many researchers have recognized the importance of care behavior on a child's nutritional growth, and especially for those who grow up with poverty and resource constraints (Sims et al., 1972, Haddad et al., 1997). Receiving adequate care enables children to meet their basic physical and psychosocial needs (Engle and Ricciuti, 1995); consequently, the care behavior is even more important when dealing with an undernourished child (Engle et al. 1997, begin et al. 1999).

In this study care behavior includes both *physical* and *psychosocial* aspects of a child's life. *Physical* needs include nutritional practices, housing, hygiene, water and sanitation, clothing and health. Conversely, *psychosocial* care is more focused on the caregiver's responsiveness, involvement with the child's development, affection and nurturing of autonomy (Engle and Ricciuti, 1995, begin et al. 1999).

Additionally, the focus of this thesis is on Lao PDR, because the country has the highest prevalence of malnutrition among children under the age of five in South-East Asia (FAO, 2012, WHO, 2013). An in-depth study took place in Attapue province, where the problems regarding nutrition and health status of children under the age of five are acute. This research attempts to identify the impact of caregivers' characteristics on physical care. Moreover, the influence of psychosocial care on the nutritional growth and development of children under the age of five will be examined.

## **1.2. AIM OF THE STUDY AND RESEARCH QUESTIONS**

The overall aim of the study is to recognize the caregivers' characteristics and the importance of their care behavior in the process of child nutritional growth and development. The paper presents an overview of the role of caregivers in promoting the child's nutritional status while taking into consideration the availability of the resources and support systems. Moreover, one of the major concerns of this paper is to examine whether the increase in quality of psychological and physical care could decrease the effects of malnutrition among children under the age of five in Attapeu province, where people live with extremely limited resources, and limited access to education.



Accordingly, the research questions for this study are:

- In what ways do caregivers' characteristics affect physical care? And how do the effects influence nutritional practices of children under the age of five in Attapeu province?
- What are the factors than influence caregivers' characteristics while providing psychosocial care for children under the age of five in Attapeu province?

With the overall aim of demonstrating the essential role of physical and psychosocial care and the impact of them on malnutrition, the research will focus on the current nutritional situation of children under the age of five in Attapeu province. Furthermore, the study seeks to understand what the perception of care among caregivers is in Attapeu's households, and how and in what ways they take care of their children.

### **1.3. STRUCTURE OF THE PAPER**

The first chapter of this study provides a general overview of the research topic and the aim of the study. Chapter 2 begins with a short background about Lao PDR, and discusses the underlying causes of poverty and how they contribute to the overall health situation of people in Lao PDR. The second part of Chapter 2 is an introduction to the site of the study and briefly discusses the current health issues of the province regarding malnutrition. Chapter 3 presents the literature review of the thesis; in particular, I will discuss Sen's (1999) capabilities theory and also the importance of healthy human capital as an economic point of view. In addition to this, the impact of malnutrition on school enrollment, income, and economic growth will be explored. Chapter 4 presents the theoretical framework of the research. A conceptual model by Engle and Ricciuti (1995) will guide the paper throughout the analysis and a detailed overview of their theoretical framework will be discussed in this chapter. Moreover, the term "maternal technology" is introduced in order to break down the physical care into its main components, and, additionally, the relevancy of psychosocial care and nutrition will be explained. Chapter 5 includes the methods and approaches used in the process of data collection, a worldview of the thesis, the sample size and groups, and ultimately, the limitations of the study. In Chapter 6, both research questions will be answered by utilizing the findings and the analysis will be based on the Engle and Ricciuti (1995) conceptual model. The first part of this chapter answers the first research question on "In what ways do caregivers' characteristics affect physical care? And how do the effects

influence nutritional practices of children under the age of five in Attapeu province? The question will be answered by analyzing the components of maternal technology, caregivers' characteristics and the influence of them on the nutritional status of children under the age of five in the site of the study. The next part of the chapter will discuss the second research question: "What are the factors that influence caregivers' characteristics while providing psychosocial care for children under the age of five in Attapeu province?". The question will be answered based on the findings from direct observation and interviews. And lastly, Chapter 7 of the thesis includes the conclusion of the research.

## **CHAPTER 2. BACKGROUND**

### **2.1. WHY IS IT IMPORTANT TO STUDY MALNUTRITION IN LAO PDR?**

The Lao People's Democratic Republic (Lao PDR) is a small landlocked country in South-East Asia with a population of six million people. According to the UNDP Human Development Index (2009), Lao PDR ranked 133rd out of 182 nations as one of the least developed and a low-income food deficit country's in the world.

Lao PDR's human development has greatly progressed in the past 20 years, but despite this great improvement, Lao PDR still remains one of the poorest countries in South-East Asia. About three quarters of the population live in rural areas with an income of less than 2 USD per day. The life of this group is highly dependent upon agricultural activities and natural resources (UNDP, 2011). The key causes of poverty in the country are strongly linked to the agricultural elements. The limited access to land and water, poor irrigation system and land allocation practices have lead people to use common or unfertile lands for growing plants. However, the yield from plantations on unfertile lands is not enough for the farmer's annual consumption, and this forces people to scour the forest and rivers for food (NGPES, 2004). The situation for people in the rural areas has worsened since the government of Lao PDR decided to increase land accessibility for domestic and foreign investors in plantation, mining and hydropower projects. The limitation has not only exacerbated the poverty among rural areas, but also affected the nutritional status of the population. Food security and nutrition are closely linked together (Ibid). It is estimated that 87 percent of Lao PDR households are food secure. However, when the high risk of natural disasters such as drought, floods and typhoons, and lack of access to land and food resources are taken into account, approximately

only one in three rural households in Lao PDR have availability to food resource (WFP, 2007, UNDAF, Lao PDR analysis report 2012-2015). In addition to this, poor infrastructure, low productivity, lack of capital or funds for development projects, lack of access to health facilities and poor quality of health providers are also factors that affect the livelihood of rural people in Lao PDR (NGPES, 2004).

The overall health status of people in Lao PDR remains low by regional standards. However, what concerns many international organizations is the poor health and nutritional status of the children under the age of five. The poor nutritional status of children in Lao PDR has become an important aspect for the government and many other international organizations, which work with nutrition and food security during the recent decades. FAO (2013; 1) reported “*Every second a child in rural Lao PDR is chronically malnourished.*” It is important to take into consideration the fact that nutritional practices are not just about food intake, but rather a chain of different practices, such as frequency of food intake, breastfeeding, hygiene practices, food preparation and health seeking behavior. However, while we must consider all the practices mentioned above, by themselves, they are not enough when dealing with nutritional issues in Lao PDR. A wide range of ethnic and linguistic diversity, different traditions and beliefs, social and cultural norms, the literacy rate and caregiver knowledge toward care behavior also have a great impact on the nutritional practices of people in Lao PDR (UNHCR, 2007). Despite the rapid economic growth in the country during the recent years, children under the age of five still suffer from a high level of malnutrition. The result of a nationally representative survey of nutritional status of children in Lao PDR shows that the prevalence of malnutrition is high among children under the age of five. The findings shows that stunting<sup>1</sup>, among children under the age of five is 44.2 percent, while the prevalence of wasting<sup>2</sup> and underweight<sup>3</sup> is 5.9 and 26.6 percent (LSIS, 2012). The poor quality of health care (e.g. equipment and medication), high cost of health services, low coverage of health care facilities, inexperienced health workers, poor infrastructure and transportation systems are among the factors that have a negative impact on health seekers’

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<sup>1</sup> Moderate and severe - Moderate and severe - below minus two standard deviations from median height for age of reference population (UNICEF, 2014).

<sup>2</sup> Moderate and severe - below minus two standard deviations from median weight for height of reference population (UNICEF, 2014).

<sup>3</sup> Moderate and severe - below minus two standard deviations from median weight for age of reference population; severe - below minus three standard deviations from median weight for age of reference population (UNICEF, 2014).

behaviors in Lao PDR (Perks C. et al, 2006, UNDP, 2010 & WHO, 2004). Lack of access lead caregivers to take care of their own children with only limited knowledge and information about nutritional practices.

## 2.2. SITE OF THE STUDY

This study will look at the care behavior, caregivers-child relationship and nutritional status of children under the age of 5 in Attapeu province, Lao PDR.

Attapeu province is located in the south of Lao PDR and shares borders with Vietnam and Cambodia. The Province is surrounded by Annimite Mountains from the east and the Mekong Plains from the west. Attapeu contains thirteen ethnic groups and each has their own distinctive language, culture, beliefs and traditions (MWPB, 2006).



Source: [www.maps.com](http://www.maps.com)

Attapeu is one of poorest provinces in Lao PDR (2005 Census, Poverty Reduction Fund and WWF) and in 2001, the UNDP National Vulnerability Report, ranked two thirds of the province as the most vulnerable areas in the country. Flooding is one of the biggest problems in Attapeu and often results in the loss of crops for farmers. The problem has a significant effect on people's livelihoods, especially when around over 96 percent of the households work on their own land, and the yield is mainly used for the household consumption (MWPB, 2006).

Natural disasters make the province even more vulnerable, as in 2009 Typhoon Ketsana, which severely damaged food sources in the province. The result was a very high rate of acute malnutrition among children and adults. In highland areas of the province, with less access to fertile land for agricultural activity, more than 40 percent of children under the age of five are malnourished, and almost half of them are dealing with severe malnutrition. The poor nutritional status of children makes them more vulnerable to diseases such as diarrhea, malaria and acute respiratory infections. In addition to children, the situation has had a negative impact on pregnant women, and has resulted in complications during childbirth, pregnancy-related death, and been detrimental to the nutritional health and well being of the neo-natal (Gillbos & Hansana, 2011).

### **CHAPTER 3. LITERATURE REVIEW**

*This chapter explores the linkage between children's undernutrition and its consequences on human capital and capability in developing countries. Additionally, the potential long-term implications of malnutrition on education, schooling and economic growth will be addressed.*

Human capital is mainly established in early life, and can be influenced by very early experiences of a child and his/her environmental factors. Since, most of physical, psychological and cognitive growth happens during childhood, poor nutritional practices at this age can negatively affect the formation of human capital (Bleakley, 2010).

Traditionally, the level of education and the health status of a population measured human capital's growth and development. In 1996, Sweetland suggested that economic growth could also benefit from its investment in people as individuals and on a society level.

Schultz (1961) highlighted that economists have recognized the importance of productive human capital in the wealth of a nation. Some of the components, which are generally

considered in this investment, are education and the health and nutritional status of a population. In order to achieve a sustainable rural or urban livelihood, a healthy human capital is an essential tool. Tadora and Smith (2006) highlight what separates developing countries from developed countries is the lower level of productivity and lower level of human capital. Later on, they discuss how the health and educational status of people can increase the productivity of human capital, meaning that a population with good nutritional status is more likely to be healthy, able to learn more and be productive (UNICEF, 2005). Studies show healthier workers are more productive, have more strength and creativity and are more mentally and physically prepared for their jobs (Howitt, 2005). It means that when the health among a population improves, the output of the country can also improve with any given combination of different variables - such as skills, physical capital, knowledge and technology (Howitt, 2005).

Human capital can also be defined as the outcome of an individual's skills and capabilities. Sen's (1999) capabilities approach has been utilized in recent decades as a new theoretical framework, which includes the individual's well-being, freedom, development and rights. The capability approach focuses on the moral significance of an individual's capability of having the kind of life that a person values or/and has reasons to value and desire. Tadora & Smith (2006) demonstrate that these capabilities enable a person act in certain ways and help individuals to find a way out of poverty. A person with poor nutritional and health status is not able to be as productive as a healthy one, and, therefore, does not command the same income as a healthy worker. Sen (1999) also discussed how capability could enhance the freedom and opportunities of an individual's life. He later stated income differentiations among people are closely linked to deprivation of individual capability and explained, "*low income can be a major reason for illiteracy and ill health as well as hunger and undernourishment and conversely, better education and health help in the earning of higher incomes*" (page 19).

Consequently, it is interesting to observe how nutritional practices in childhood can improve the human capital and human capability in adulthood. In doing this, the paper presents a review of previous studies on the long-term effect of malnutrition on school enrollment, income, and economic growth.

Many Economists believe that development happens when a country has a sustainable and

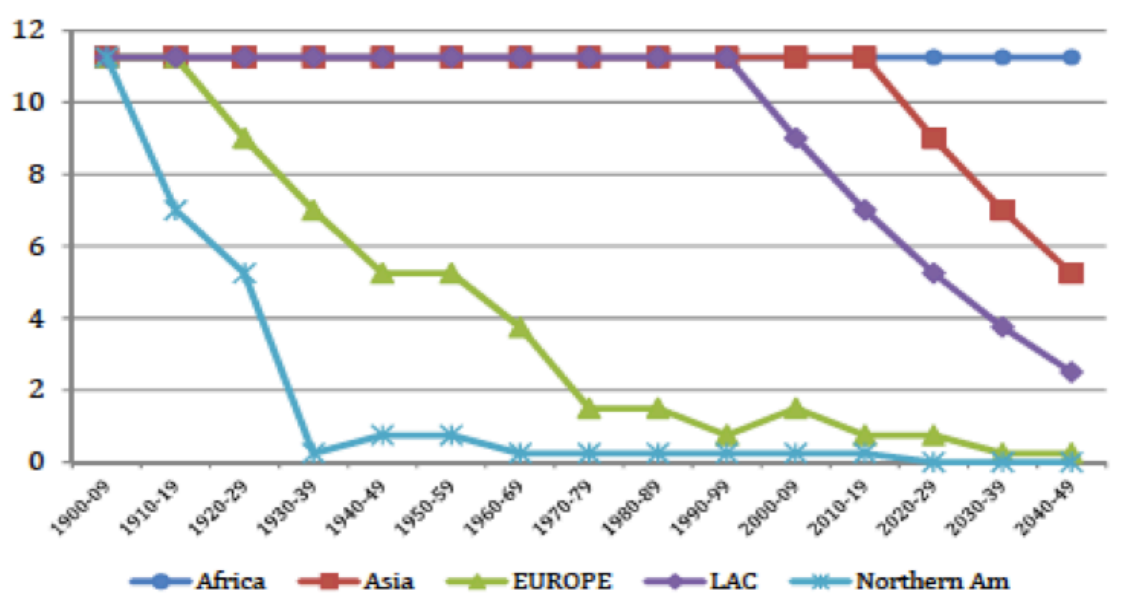
inclusive economic growth (Schultz, 1961, Scoones, 1998, Sweetland, 1996). One way to achieve sustainable economic growth in developing countries is to build an economic foundation and invest in people in order to obtain permanent results and poverty reduction. Therefore, it can be noted that investment in education and human capital are valuable sources to enhance economic growth (Ibid).

The positive impact of education on economic growth has come to the attention of many economists during recent decades (Behrman 1996, Zon and Muysken, 2001, Aubery, 2012). Conversely, studies of the developmental origins of child malnutrition in mostly developing countries with low and middle-level of income suggest that undernutrition can detrimentally effect school enrollment and educational performance (Leslie and Jamison 1990, Behrman, 1996, Victoria et al., 2008). The studies explain “*Undernutrition can affect cognitive development by causing structural damage to the brain and by impairing infant motor development and exploratory behavior* (Victoria et al. 2008: 343)”. Better health and nutritional status can result in better schooling at a younger age, less repeating of school years and ultimately better performance in different grades. Several studies show that poor nutrition has a great impact on enrollment. A well-nourished child gets sick less frequently than a malnourished child, which leads to better school attendance and the ability to learn more, and, as an adult, is more likely to be employed, get a better job and have higher wage. The effects of malnutrition, stunting and wasting increase as a child grows older. The consequences of the malnutrition influence the intellectual ability and work capacity of a person as an adult, which leads to lower working hours and economic difficulties for the individual and for their family (Allen & Gillespie, 2001, Caulfield 2006). Behrman (1997) described how cognitive achievements occur when all the variables such as individual, families and community are functioning properly. Individual level contains the health of the child, ability to learn, motivation, and genetic factors. In contrast, family level is more focused on the income level of the household, parental education and occupation, the amount of time that parents spent with the child and the quantity and quality of food intake and care behavior. Lastly, the community’s effect on school achievement is more based on the macro level, and it is comprised of the availability of the resources such as food, water and sanitation, health facilities and the effectiveness of school management.

Several studies show that, not only is the level of health relatively low in developing countries, but also that the nature of the diseases and health issues differ from those of developed countries. People in developing countries suffer from a high rate of malnutrition and infectious diseases. Strauss and Thomas (1998: 767) stated “*Adults in poorer economies are more likely to be afflicted with health problems, some of which stem from early childhood, and the functional consequences of ill health are likely to be felt throughout the life cycle*”. In low-income countries, the nature of the jobs means that they are mostly dependent on the strength and physical capacity of the worker, which requires a good health condition. Therefore, “*the labor market consequences of poor health are more serious for people who suffer from severe health problem and to be working in jobs for which strength has a payoff* (Strauss & Thomas, 1998: 767).”

Furthermore, it is recognized that poor nutrition could also affect the economic growth of a country. Economic growth happens when real output of a country increases over time” (Haddad, 2013). The real output, in economic terms, measured by the Gross Domestic Product (GDP) within a country. The Oxford Dictionary defines GDP as “*the total value of goods and services that produced by the citizens of a country over a year.*” A study conducted by the Institute of Development Studies (IDS) shows a strong correlation between poor nutrition and GDP loss between 1900-2010.

Figure 2: Estimated percentage of GDP loss due to poor nutrition, 1900-2010, and projections to 2050





Source: Haddad L., 2013. Institute for Development studies (IDS). Children's Investment Fund Foundation (CIFF)

The figure is based on the estimated relationship between wages and stature from different meticulous micro and macro studies (Haddad, 2013). Basically, it shows that improvements in nutrition reduce the loss of GDP, and, as shown in the figure, the process will take a long time to improve in Africa and Asia, where the rate of malnutrition is noticeably higher than other continents. The figure suggests that 2019 will be the year for Asia to start benefiting from improved nutrition in regard to economic growth. One reason for this figure is that it will take time for the children and infants, who have been rescued from malnutrition, to grow and become productive adult and human capital in the job market.

## **CHAPTER 4. THEORETICAL FRAMEWORK**

*This chapter will present the theoretical framework of the study. The chosen theories will discuss both physical and psychosocial aspects of care and also the importance of caregivers' characteristics, caregivers-child relationships and their influence on child nutritional status. The framework will discuss in detail the care behaviors; as shown by extended model of Engle and Ricciuti (1995) in Figure 1. The model will be used in the analysis of the empirical data to answer the research questions. At the beginning of the chapter, I start with discussing the maternal technology to explain the physical aspects of the care, and subsequently move on to the relevance of psychosocial care and also nutrition will be discussed. Additionally, a detailed description of Engle and Ricciuti (1995) model, and all the causes that may influence the nutritional growth of a child, will be explained. The last part of this chapter will discuss the relevance of the theory and research questions.*

### **4.1. MATERNAL TECHNOLOGY AND THE RELEVANCE OF PSYCHOSOCIAL CARE**

Recent empirical findings and scientific researches highlight that the healthy growth and development of the young children is derived from the very early interaction and relationship between caregivers and child. Child survival is not only dependent on food intake, but it is also related to care behavior. Care behavior contains different practices, which could improve nutritional status of young children - especially the undernourished ones (Begin et al. 1998,

Engle & Ricciuti, 1995, Smith et al. 2003).

Zeitlin (et al. 1990) discuss the term “Maternal Technology” as an important component of the malnutrition problem. “*Maternal Technology contains traditions and beliefs relating to food preparation, feeding methods, child care during illness, water and sanitation practices and personal hygiene* (Zeitlin et al. 1990; 1).” Apart from caregiver’s educational level and living conditions, these series of action differ from one parent to another. The care provided by them defines the quality of health care that a child receives, the amount and quality of food a child eats and the emotional support that caregivers provide in daily life and during illnesses (Richter, 2004, WHO, 2004).

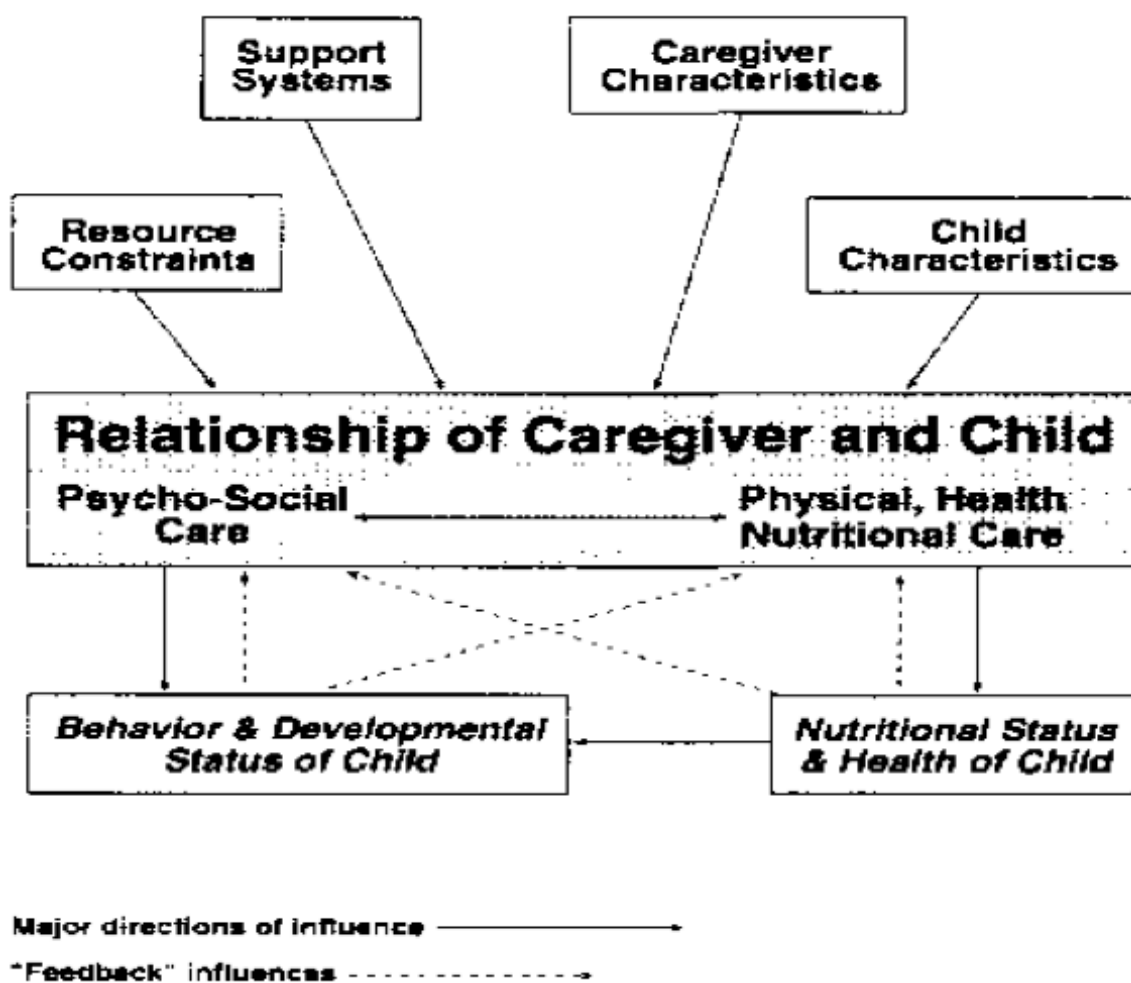
Moreover, it can be observed that a child’s healthy growth and development depend upon adequate physical care. This physical need is related to nutrition, health practices, shelter, clothing, sanitation and protection from disease and danger. However, besides physical care, a child’s *psychological and socio-emotional* needs also have to be met. Engle and Ricciuti (1995; 3) noted, “*The child’s early mental, motor, and social development is significantly influenced by variations in their early experiences*”. They further pointed out some of the variables, such as availability of care, primary responsibility for the child’s health and well-being, loving caregivers with whom the child can develop trust and a stable relationship, and also caregivers who can provide opportunities for the child to learn, play, beloved and be involved in the social life and cultural context of the child’s society. Psychosocial care will be measured in this thesis based on three categories proposed by Engle et al. (1997): (1) direct observation of caregiver-child interaction, (2) caregiver’s autonomy, and (3) caregiver’s self esteem and life satisfaction.

## **4.2. CONCEPTUAL FRAMEWORK-CARE AND NUTRITION**

The conceptual model (Figure 1.) by Engle and Ricciuti (1995: 4) outlined that there is “*a major pathway through which care may influence the child’s growth and development.*” They suggest that *Psychosocial and Physical care* are strongly connected when it comes to caregivers’ everyday practices and that these two factors should be studied simultaneously. Engle and Ricciuti (1995) continued to draw attention to the caregivers-child relationship, meaning that the quality of care that a child receives is highly dependent on the nature of the relationship that the two sides have established. They define it in terms of certain and unique behaviors that have been developed between caregiver and child over time. Furthermore, the

model defines the specific care behavior and resources needed by caregiver, and also explains how child characteristics can play an important role in the type and quality of the care that he or she receives. Some of the main components that form the care are education, knowledge and belief, physical and nutritional status, mental health, control of resources, social support, autonomy and time availability (Begin et al. 1999, Engle & Ricciuti, 1995, Engle et al. 1997).

Figure 1. The Conceptual Model of Engle, P. L. & Ricciuti, H. N. (1995)



Source: Engle, P. & Ricciuti, H. (1995) Psychosocial aspects of care and nutrition

It is essential to understand the nature of the caregiver-child relationship and consider the factors that may have influenced the interaction between them. Engle and Ricciuti (1995)

categorize it with focusing on main causes of influence, as shown in Figure 1:

- 1- The nature of caregiver-child relationship
- 2- The characteristics of the child; considering age, developmental level and gender
- 3- The characteristics of caregiver; considering education, knowledge, tradition and beliefs, physical and mental health and life satisfaction.
- 4- Characteristics of the Support System and Social Support
- 5- Resource constraints; considering disease prevention, limited income.

#### **4.2.1 THE NATURE OF CAREGIVER-CHILD RELATIONSHIP**

Traditional theories and research on social learning and human development suggest that the process of learning in the concept of caregiver-child relationship is a one-way relationship. The behavioral theories were based on the assumption that it is only the caregivers, who could influence the child's behavior and growth, and the infants or young children are dependent on their caregivers in the process of caring, learning and socializing (Gewirtz, 1972; Gewirtz & Boyd, 1977).

However, in recent years, researchers and social scientist have come to the conclusion that there is a mutual interaction in the caregivers-child relationship. Gewirtz (1961) presented a model in which the action of either caregiver or the child could influence the response of the other. Two main categories have been presented in the model to examine the impact of the child on caregivers. The first category included variables such as *age, gender, socioeconomic status and developmental level*; whereas the other category described the *individual differences* in every infant's behavior.

Infant's *gender* is mostly related to the way that caregivers interact with them (e.g. masculinity or femininity, phrases that they use, how they talk or smile to them). The *age* when children are able (e.g. verbally and movement) to express feelings and need and *development level* is related to caregiver's interaction with child (Gewirtz & Boyd, 1977, Beckwith, 1971). Moreover, individual differences develop through child's personal behavior, which leads to the creation of a unique relationship between caregiver and child that can differ from one child to another within a family (Gewirtz & Boyd, 1977, Gewirtz & Boyd 1976).

Additionally, Engle and Ricciuti (1995) also observed that the most significant variable in the psychosocial care in the process of child growth and development is the relationship between

caregiver and child. The nature of the relationship is influenced by both caregiver and child characteristics, but over the time it could merge into an incomparable pattern of behavior. A malnourished child is often less responsive to his or her caregiver and caregivers could ascribe this to the fact that he or she needs less attention, and, consequently, devote their time to other activities or to their other children. The time allocation in the caregiver-child relationship is important, especially when it comes to the health and nutritional needs of a child in the early years of their life. A good relationship during breastfeeding, or while feeding a child, builds a solid foundation for the child's growth and development (Engle and Ricciuti, 1995).

Furthermore, it has been asserted that positive engagement of the caregivers, both verbal and non-verbal, sufficient interaction between child and caregiver, nontraditional beliefs and environmental factors created by caregivers can also lead to a stronger connection between them (Huston, 2005).

#### **4.2.2 THE CHARACTERISTICS OF THE CHILD**

In the early life of child or infant, caregiver-child interaction is normally measured in terms of the basic needs of a child in regards to health, care and food. Engle and Ricciuti (1995) discuss that the characteristics of a child are often associated with nutritional behavior. They noted some of these behavior characteristics as “*sucking ability, appetite and hunger, temperament, and energy and motor skill to self-feed during critical early years* (page 5).” Difference in children's characteristics could also affect the way that their caregivers may value them. For example, a child with severe malnutrition has less appetite and virility, which makes it more difficult for caregivers to take care of the child. Caregivers with less knowledge and information about nutrition could stop feeding the child frequently or lose interest in taking effective care of the infant (Engle and Ricciuti, 1995).

#### **4.2.3. THE CHARACTERISTICS OF CAREGIVER**

Many studies have underlined the importance of the time that caregiver devotes to their child. Evidence shows, however, that, while time is an important variable of care, it is not the only factor when it comes to adequate caregiving. As Engle and Ricciuti (1995) discuss, in addition to time, there are also several other aspects that could affect the quality of development and growth of a child. Caregiver's education, beliefs and knowledge are usually

associated with the quality of the care that they provide. Engle (et al., 1997) discussed maternal education could positively affect the care behavior in different ways, such as better caregiver-child interaction, better use of health care system or other services, and better feeding practices (e.g. breast feeding, complementary food and the quality and quantity of feeding).

In addition, attitudes, autonomy and self-esteem, and the physical and mental health of the caregiver are also among other characteristics that may influence the quality of the care (Engle et al. 1997, Begin et al. 1997). These variables are highly connected with the nutritional status of children under the age of five because very young children are dependent on caregivers providing adequate food and care during different developmental levels (e.g. prenatal, infant, early years of child life).

#### **4.2.4. CHARACTERISTICS OF THE SUPPORT SYSTEM AND SOCIAL SUPPORT**

*“The support provided to the primary caregivers can include explicit child care assistance or information or emotional support provided to the caregivers”* (Haddad et al. 1997: 23). Care received from different sources can enhance the ability of caregiver to perform better care. Moreover, Engle and Ricciuti’s (1995) framework suggests, the support system will refer to three kinds of support: informational, physical and emotional.

The *Information Support* refers to the availability of the informational resources for caregivers. It could be the information about breast feeding, complementary food or the importance of health-seeking behavior. The *Physical Support* is defined as family support and help when taking care of a child. The *Emotional Support* conveys the attitudes of the family members toward the caregiver (Engel and Ricciuti, 1995, Engle, 1992). Father is particularly important as a source of emotional and physical supports. The additional help provided by father can reduce the workload of mother and results in more time availability of mother in providing better childcare.

Lastly, the *Social Support* refers to the help that caregiver can receive through family and the community. Social support contains different types of support, such as emotional, knowledge and information, and also assistance in order to decrease the difficulties and workload, which lead to a better quality of care provided by caregiver (Engle, 1989, Engle and Ricciuti, 1995).

#### **4.2.5 RESOURCE CONSTRAINS**

Evidence shows limited resources can negatively affect the process of caregiving. *“The poorer the conditions of the environment for health maintenance and disease prevention, the more limited or more unstable food supply, the more the health and development of the child will depend on the caring behaviors of the caregiver and family”* (Engle & Ricciuti, 1995: 18). The nutritional growth and development of a child corresponds the quality of the care that he or she receives. Living in a poor condition and low-income level can raise the risk of limited family resources such as food supply, clothing, hygiene, sanitation and health seeking behavior. Availability of time is also counted as an important indicator in the process of childcare. The time that caregiver spends with a child determines the quality of care that the child receives (Ibid).

#### **4.3 RELATING THEORY AND RESEARCH**

Many books have been written, and several studies have been conducted, about the causes of child malnutrition and the importance of eradicating it. But an often neglected factor in the researches is that the role of caregivers is underestimated when determining a child’s nutritional health and practices (Smith et al., 2003). However, in recent decades, the significance of this component has come to the attention of many social scientists. Among different models and theories, the one that is presented in this paper is a very popular one and has been used in different research to show the importance of both physical and psychosocial care.

I also found the theoretical framework and the model presented by Engel and Ricciuti (1995) relevant for this study, since it includes different aspects of the care practices, which can be influenced by caregivers, as well by environmental factors such as resources and support systems. Furthermore, the structure is useful for this thesis because it could cover both aspects of the research questions. The model includes different boxes that are interrelated, and, if all of the boxes work in conjunction, the result would be an improvement in nutritional health of a malnourished child, and it ultimately could nurture the healthy growth and development of the child and future human capital.

As for this study, the first research question, “In what ways do caregivers’ characteristics affect physical care? And how do the effects influence nutritional practices of children under the age of five in Attapeu province?” will be answered by studying caregivers’ characteristics

in providing care for children with regard to the component of maternal technology. Moreover, the support system, including the role of the community, informational support and health centers will be incorporated in analyzing the empirical data.

The second research question “What are the factors than influence caregivers’ characteristics while providing psychosocial care for children under the age of five in Attapeu province?” will be answered by considering caregivers’ characteristics and the nature of the caregiver-child relationship. To be able to understand the situation more clearly, the influence of the resources on care behavior will be also used in the analysis.

## **CHAPTER 5. METHODOLOGY**

*The methodology and the approaches that will be taken in order to analyze the findings will be presented in this chapter. To clarify a study, the researcher needs to think through different aspects of a study. A particular design and philosophical worldview to guide the researcher through the process are necessary when conducting research (Creswell, 2009). The research design, philosophical worldview, study sample, methods and limitations will be discussed at greater length, in this chapter.*

### **5.1. RESEARCH DESIGN**

For this study, a mixed method approach has been used. Both qualitative and quantitative approaches have been considered for the paper in order to get a better understanding of the problem. Creswell (2009) defines a mixed method approach as a combination of field methods, such as observation and interviews, with traditional surveys. Combining both qualitative and quantitative approach reduces or neutralizes the biases cause by using just one the methods (Ibid).

*Concurrent Mixed Methods* will be used for this research. The design includes both qualitative and quantitative data to provide a comprehensive analysis of the research problem (Creswell, 2009), and it also allows us to incorporate different form of data. This means that the researcher has the freedom to use more of one method than the other (Ibid).

With that said, the qualitative method provides the majority of evidence for this paper and a survey (quantitative data) will be an additional tool to explain the overall result.

A more qualitative approach is preferred for this paper since the aim of the study is to



understand some aspects of social and human life and also to generate the worldviews of the participants as data for the analysis (Patton and Cochran, 2002). A qualitative research seeks to define the meaning of a social problem and aims to develop a concept in which experiences, problems and views of participants are taken into consideration in order to understand the causes of the social phenomena (Al-Busaidi, 2008).

This study has used social constructivism as its worldview. Creswell (2009: 9) defines social constructivism as an assumption that “*every individual seeks understanding of the world in which they live and work.*” He further explains that every individual interprets different and multiple subjective views of their experiences. Each of these views could vary from one to another, and the job of the researcher is to look through this complexity as a whole. The aim of this worldview is to rely on the participants’ points of view about the situation that the researcher is studying. The researcher chooses to carefully observe what participants have to say or do in daily life. Sometimes these subjective views are negotiated socially, meaning that, despite the fact that these points of views are coming from an individual, they are originally established through social interaction and cultural norms that exist in their lives (Ibid).

The researcher has to understand that participants’ interpretation of the phenomenon is formed by their personal, cultural and historical experiences. Therefore, the job of the researcher is to interpret these meanings and views in a scientific way (Creswell, 2009, Bryman, 2008).

Furthermore, in this study review of secondary data both qualitative and quantitative research is used. The secondary data is collected from previous studies and research, available surveys and national and international reports. Additionally, the previous report and survey conducted by my host organization, Health Poverty Action, were a great help in the process of this research.

## **5.2. STUDY SAMPLE**

The data and information for this study were collected in Attapeu, Lao PDR. The province of Attapeu was chosen because past research has shown that Attapeu has one of the highest prevalence of malnourished children in Lao PDR with 32 percent underweight children and 39.7 stunted and 10.6 wasted children (LSIS, 2012). The population studied was selected

from three districts of Sanxay, Phouvong and Sanamxay, which together contain 11 ethnic groups (See Table 1).

Ragin and Amoroso (2010) assert that it is vital for any research to select a sufficiently representative sample to avoid, as they call it, “Sample Selection Bias”. To avoid this, the sample for this paper was selected from both lowland areas, which have more fertile lands and upland, and mountainous area, where the majority of indigenous and disadvantaged people live. In total, 75 households were chosen for this study, which included 25 households per district. All households with a minimum of two children and at least one under the age 5 were eligible. A survey was conducted for this study in order to include direct and indirect aspects of care regarding health and nutritional practices of children under the age of five in Attapeu. It is necessary to mention that the sample for this study was collected from a project that my host organization, Health Poverty Action, was implementing in the site of the study. The original project included 380 households in the three mentioned districts, and I was able to be part of the project and chose 75 of them for my own research. Moreover, I used the same survey as my host organization was used to collect information from target groups. I am aware that this could treat the validity of the result presented in this study. Respondents could manipulated their answers for the purpose of getting more benefits from the projects and the time limitation did not allow me to go back and asked the same questions as an independent researcher.

Moreover, all the participants of this study were aware that their participation was voluntary, and they could leave the study the moment they felt uncomfortable, or if they felt their participation had negative consequences on their livelihood. In addition to this, they were informed that their privacy, anonymity and confidentiality would be ensured. They were also aware that what they answer in the interviews or the survey would be considered as valuable data, and there would be no harm to them or to their society. There is no embarrassment in the way they take care of their children, and it is important they share valid information with the researcher (Swanepoel, 2003).

Data and information from caregivers and households were collected from semi-structured interviews, direct observation and a Survey.

In all the interviews a health worker from local health center, one person from Health Poverty Action, the organization that I interned with, and one person from district health department were present.

The questionnaire included both open-ended and closed questions. In the survey, the questions were divided for head of the households and the caregivers.

Nearly all the heads of household (95 percent) were men, and the median number of the people living in one house was 6, of which half of them were women in all three districts. The literacy rate was low in all three districts and only 12 percent of the participants had primary education, with 6 percent having secondary education.

Furthermore, the number of children under the age five was 1.7 in Sanxay, 1.5 in Phouvong and 1.6 in Sanamxay (Table 1).

**Table 1. Household Characteristics**

| Variable  | Sanxay= 25      | Phouvong=25     | Sanamxay=25     | Total=75        |
|---|-----------------|-----------------|-----------------|-----------------|
| Head of the households;<br>Sex: M/F                       |                 |                 |                 |                 |
| Men   | 92%             | 92%             | 96%             | 95%             |
| Women   | 8%              | 8%              | 4%              | 5%              |
| Average No. of people living in one house, median (range) | 6 (2 – 22)      | 6 (2 – 15)      | 6 (1 – 18)      | 6 (1 – 22)      |
| Median No. of the Women in household                      | 3 (1 – 11)      | 3 (1 – 10)      | 3 (1 – 11)      | 3 (1 – 11)      |
| Median No. of Children under the age of 5 in household    | 1.7 (1.6 – 1.8) | 1.5 (1.4 – 1.6) | 1.6 (1.4 – 1.7) | 1.5 (1.4 – 1.8) |
| Median No. of the Girls under the age of 5 in household   | 1.3 (1.2 – 1.4) | 1.1 (1.0 – 1.2) | 1.3 (1.2 – 1.4) | 1.2 (1.1 – 1.4) |
| Main occupation   |                 |                 |                 |                 |
| Government staff  | 4%              | 4%              | 4%              | 4%              |
| Trader/businessman  | 0               | 1%              | 0               | 1%              |
| Laborer/employee  | 0               | 4%              | 0               | 1%              |
| Farmer  | 95%             | 94%             | 95%             | 95%             |

The majority of men (95 percent) were rice farmers, and agricultural activities are carried out

for most of the year. The remaining (5 percent) was government employees and traders. As for the women, they were mostly involved in spinning and fabric production, fetching water, looking for food in the forest for daily use and helping men in the harvest season. Households are highly dependent on rice, and the rest of their food resources mainly came from the forest, river and their own gardens. Overall, the main food basket of families contained rice, vegetables, bamboo shoots and fish. Only 32 percent of the households had enough rice to eat for the whole year, for the other 68, the overall mean of months with enough rice to eat was 6. Furthermore, in almost every household, the responsibility of taking care of the children was with women.

### **5.3. METHOD**

#### **5.3.1. DIRECT OBSERVATION**

Direct observation is one the most practical methods to fully understand the complexity of the research problem (Patton and Cochran, 2002). The caregiver-child relationship is mostly based on the interaction between the caregivers, who provide the care, and children, who receive the care. There is no textbook or structure provided for the caregiver in the research area to show them how to take care of their children, and all the actions are based on the characteristics of the caregiver and the child. This method can help to understand the difference between what participants say and what they actually do. Patton and Cochran (2002) explain that direct observation is a useful tool in studying participants and can sometimes lead the researcher to discover behavior that the participants themselves are not aware of it. Therefore, to study the interaction between caregivers and children a method presented by Lewis et al. (1974) has been used for this study. The method analyzes the flow of five possible phases of transitions between caregivers and a child by regular observation;

- When both caregiver and child behave (interaction toward each other),
- When neither of them behaves (no interaction between them),
- When child tries to interact with his or her caregiver,
- When only the caregiver tries to interact with the child
- When caregiver interacts with someone else and child tries to interact with caregiver.

For this study, I tried to include all five possible phases of observation and the findings will be available in the next chapter.

Furthermore, observation before interviews helps to get information and a good

understanding of the research area, which is useful when designing the interviews (Patton and Cochran, 2002).

### **5.3.2 SEMI STRUCTURE INTERVIEWS**

The nature of semi-structured interviews is based on a flexible topic guide that lets the researcher conduct the interviews with frequently open-ended questions. The flexible structure of this type of interview enables the researcher to change the subject or enter into a new area when talking to the participants (Al-Busaidi, 2008). The process provides the opportunity for the participants to talk about their concerns, experiences and views that the researcher did not include in the questions. Therefore, More information and data can be found and elaborate in the analysis of the study (Al-Busaidi, 2008, Pope et al. 2002).

Al-Busaidi (2008; 9) asserts that semi-structured interviews are useful when “*the purpose of the research is to gain information on the perspectives, understandings and meanings constructed by people regarding the events and experiences of their lives*”. This kind of interview seems to be appropriate for this study since the nature of the research is about caregiver-child relationships. It is important to get access to the interpersonal aspects of the care provided by the caregivers. Participants (e.g. caregivers) have the liberty to share their views, experiences and concerns, which can provide a deeper understanding of the research problem.

### **5.3.3 SURVEY**

A survey is a good tool for this research because it helps to collect data and information from a broad spectrum of households. It is an efficient method when time is limited and, at the same time, allows the researcher to include different varieties of question (Williams and Vogt, 2011).

## **5.4. LIMITATION**

Since the research has been conducted in Lao PDR, it is important to pay attention to the cultural context of the country. Cultural variations, traditions and beliefs, and also ethnic diversity are likely to be more of a concern in Lao PDR than the actual care behavior regarding nutritional practices. During the data collection, I came to the conclusion that care behavior could vary even between neighbors depending on their ethnicity and traditions.

Individual differences within a cultural context of Lao PDR can affect the way that caregivers are providing care for the children. This variation makes it difficult to measure the constraints and construct of the care (Haddad et al. 1997).

However, there are different tools that can be used to measure the care. As previously mentioned, one of the tools, which has been used for this research was a closed question survey. Put simply, participants were asked to answer questions such as how they prepared food, did they wash their hand before preparing food for the children or do they drink boiled water for daily use, etc. The answers can provide sufficient information for physical care that will be used in the analysis of the study. However, what is more of a concern is the psychological and socio-emotional care. The quality of the care that caregivers provide for the children is highly connected to the health and nutritional status of the caregivers themselves. Mental health, self-esteem, autonomy and good health of caregiver are the important aspects, which could affect the care behavior, and it is also hard to measure without knowing the lifestyle, traditions and beliefs. Therefore, assessing the quality of care and the mental and physical health stages of the caregiver requires lengthy and extensive observation. The short amount of time that I spent in the field could not precisely define the construct and constraint of the care that they provide. This study is limited by only few observations and interviews and a survey that I conducted in Attapue province, Lao PDR. It is suggested that further investigation and research should be conducted in the site of the study in order to get more information about the health and nutritional status of the caregivers. Furthermore, the result of such a study would be more accurate if more researchers work in the study simultaneously, more observation and in-depth interviews could be done.

Furthermore, the subject of care, and especially the importance of the caregiver's role in the process of nutritional growth and development of children under the age of five is a relatively new area for many social scientists. Research on the direct linkage between the nutrition status of young child and caregiving is limited and only few studies have been conducted worldwide that examine the interrelationship between care and malnutrition. No research on this matter has been conducted in Lao PDR, and, therefore, I find it interesting and important to study the care and role of caregiver's behavior in early interaction with malnourished children in the country.

## **CHAPTER 6. DISCUSSION**

*This chapter will answer both research questions. It will begin by answering the first research question using qualitative and quantitative data to describe the impact of caregiver's characteristics on physical care. Furthermore, the chapter will continue to answer research question number two by including the findings from direct observation and interviews to explain how psychosocial care can influence malnutrition among children under the age of five in Attapeu province.*

### **6.1. THE IMPACT OF CAREGIVER'S CHARACTERISTICS ON PHYSICAL CARE**

The first research question about "In what ways do caregivers' characteristics affect physical care? And how do the effects influence nutritional practices of children under the age of five in Attapeu province?" will be discussed in this section. The findings from survey and interviews and the characteristics of caregiver and child and the importance of support system will be incorporate in order to answer the first research question.

#### **6.1.1 PHYSICAL ASPECT OF CARE AND THE COMPONENTS OF MATERNAL TECHNOLOGY**

Before answering the first research question, it is necessary to present data and information about physical aspects of the care provided by caregivers in the three districts of Sanxay, Phouvong and Sanamxay. The result of the survey regarding nutrition, child immunization, management of diarrhea, water and sanitation and reproductive health will be presented as follows:

The percentage of the children under the age of five who were assessed for nutritional status was significantly lower in one district, Sanamxay, by 36 percent, in relation to the two others, Sanxay 68 percent and Phouvong 48 percent. In all three districts only one child per family was assessed for nutritional measurement and the number of children under age five who were malnourished was 52 percent in Sanamaxy, 33 percent in Sanxay and 28 percent in Phouvong. However, gender differentiation was not found to be associated with the malnutrition rate in Attapeu province. Among the children who received breastfeeding, half of them were given milk within one hour after birth, and 59 percent of the children received

breastfeeding exclusively until six months old. From all the respondents, about 65 percent knew the meaning of exclusive breastfeeding and about 45 percent of the respondents answered that they introduced rice as a supplementary food to children under 6 months old, and 92 percent continued breast-feeding with additional food until the child reached the age of one. The main supplementary foods given to children after the age of six months were 92 percent rice, 81 percent fish, 52 percent meat and 40 percent vegetables. The proportion of adults washing their hands before preparing food for the children was 59 percent in Sanxay, 58 percent in Phouvong and 62 percent in Sanamxay.

For all three districts, only 46 percent of the youngest child per family completed a vaccination program, and around 73 percent of the children received Vitamin A supplementation during the past year.

The interviewees were asked if their children had a fever in the past fortnight and the result showed that around 76 percent of children in Phouvong and Sanamxay included in the study and 56 percent in Sanxay had had a fever. The first choice of the family in the survey was seeking treatment through health centers and, surprisingly, the health workers that helped in the research said that they have seen only a few of the children in the health centers during the past two weeks.

Almost half of the children in the households surveyed had diarrhea during the past fortnight and about more than two thirds of the caregivers were aware of the definition of diarrhea. There was a significant relationship between those households with a child that had diarrhea during the past two weeks and information about the definition and causes of diarrhea.

Several causes of diarrhea such as eating uncooked and drinking unboiled water, not washing hands before eating, eating food that kept a long time without warming it and eating food that has been in contact with flies were mentioned in the survey. The result shows that the general knowledge about the causes had remained relatively low in all three districts.

Findings about Water and Sanitation show there was a great difference in the source of drinking water in all three districts and also that it varied during the rainy and dry seasons. Moreover, access to enough water during the dry season was significantly different between the three districts. The proportion of households who drank boiled water for daily use was low (about 60 percent) and only in Sanxay did 84 percent of the respondents were answer that they always drank boiled water.



Furthermore, only 65 percent of the respondents washed their hands with water and just 30 percent used soap and water to wash their hands. Access to proper sanitation was very low in all three districts and the majority of the respondents used rice fields and forests to defecate. Information about reproductive health, focusing on mother's nutritional practices during and after pregnancy has been collected in the survey. The result clearly shows that mothers avoid a wide range of food during and after the pregnancy. Many of mothers avoid eating meat and vegetables while pregnant, and the percentage was even higher after the delivery.

### **6.1.2. BREASTFEEDING AND FEEDING PRACTICES**

As the theory suggests, maternal education (e.g. Education level or schooling, knowledge, tradition and beliefs) plays a determinant role in the process of care. Better education enables caregivers to identify the needs of children and also empowers them to provide better childcare (Engle et al. 1997). In developmental studies, maternal education is usually associated with the nutritional level of the children (Haddad et al. 1997). Education improves the ability of parents to recognize the importance of care; it also provides the potential for caregivers to increase the income level of the family, which could further secure the food consumption of the households. Moreover, there is also a positive relationship between breast-feeding and education. Studies show that mothers with a higher level of education tend to know the value of exclusive breastfeeding better than uneducated ones. However, many studies in developing countries show women with a higher educational level are more likely to terminate breastfeeding sooner than less educated mothers (Engle et al. 1997, Da Vanzo & Starbird, 1991, Giugliani et al. 1992). However, in this respect decreases in breast-feeding practices can be seen as a result of urbanization, and women with higher educational levels tend to spend more time at the workplace (Haddad et al. 1997); therefore, the results of such studies are not applicable in this thesis, since this research was focused on rural areas of Lao PDR.

The result of the survey showed that the nutritional status of children under the age of five was particularly poor in all three districts. Caregiver's education, traditions and beliefs were found to be influential in the process of care and nutritional practices of children under the age of five in Attapeu province. However, the mother's educational level was not found to be associated with a higher level of income in the households.

As mentioned earlier, only 65 percent of the children surveyed received exclusive breastfeeding until the age of six months, and most of these children were among the ones where one, or both, parents went to school or were on a course about the benefits of exclusive breastfeeding provided by national or international organizations.

During the interviews, a mother of four children, with no educational background, was asked about the benefits of exclusive breast-feeding, and whether she would breastfeed her youngest child until it reached the age of six months. She answered:

*“I do not have time to breastfeed my child until she reaches the age of six months. I have other children to take care of, I have to search the forest for food for our daily consumption, and I also have to fetch water every day. However, I breastfeed her whenever I have time, otherwise she eats pre-chewed rice. I think she gets more energy from the rice.” (Respondent no. 4)*

Another mother of two described:

*“I breastfed my children for only two months and then started to give them food.” (Respondent no.8)*

Furthermore, it is discussed that education and knowledge not only increases the chances of adequate breastfeeding, but also has a positive effect on feeding practices. The effects could be on the frequency of food intake, quality of food and the time spent feeding a child (Haddad et al. 1997). As in this study, one of the interviewees who had primary education described:

*“When it is time to feed my children, I make sure that I do not need to do anything but feed them. I make sure that they eat three times per day. I wash my hands before food preparation and also before feeding my children.” (Respondent no.6)*

However, tradition and beliefs can play a great part in nutritional practices of children in Attapeu province. As the result of different interviews and the survey, this study shows traditional food behavior to be one of the underlying causes of malnutrition in Sanxay, Phouvong and Sanamxay. Food taboos and traditional beliefs cause lactating and pregnant women to avoid eating certain foods such as meat, vegetables and fruits. Findings show that about 12 percent of women surveyed avoided eating meat during the pregnancy and the first month of breast-feeding; while 45 percent think that they should not eat fruits and eggs during breast-feeding. Food taboos prevent the children from receiving the foods that contain essential nutrients. Findings show the prevalence of malnutrition among children under the

age of five was higher in the households where the caregiver avoids eating meat, fruits and vegetables during pregnancy and breastfeeding.

The lack of knowledge and information about the benefits of breastfeeding and exclusive breastfeeding was found to be enormous among the households in the target group. To understand the situation better and get another perspective on the matter, an interview has been conducted with Dr. Tomnian, a member of Lao Women Union (LWU)<sup>4</sup> in Vientiane, Lao PDR. Dr. Tomnian explained that in some highland areas (that were also part of my study), and depending on the ethnicity and traditions, people believe that women in their last months of pregnancy are not *clean and pure*. Consequently, they leave the house and live in a hut that has been built by the husband. In most cases, they stay there even after they give birth and only return home after two or three weeks. Usually, in the time of giving birth, they are alone, and there are no midwives or any family members to help them. She further explained the main problem is that generally women are responsible for finding food, and, when a pregnant woman goes to the hut, it is still her responsibility to find and prepare food for herself. Many of them are not able to do so and by the time of delivery they are very weak. Mothers do not have enough milk to feed their children or do not have the strength to breastfeed them, and when they come back home, tradition and beliefs cause them to avoid certain sorts of meat, fruits and vegetables. Dr. Tomnian went on to say that in these areas we could see that highest rate of severe malnutrition amongst mothers and children.

Galler et al. (1984) asserted that the dysfunctional pattern of behavior, as explained above, could be significantly influential in the case of child malnutrition. Therefore, it is important to look at the role of support systems in the aforementioned situation. As theory suggests, the support system contains four sorts of provision: informational, physical, emotional and social support. It is clear that tradition in these areas is the basis for this behavior, and it forms the care that caregivers and families provide for the children. Evidence from interviews and observations show fathers were rarely performed any kind of care, neither for the child nor the mother. Most of the mothers with malnourished child mentioned that they do not receive any help regarding childcare from their husbands. But the fact is, fathers can profoundly

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<sup>4</sup> LWU is a social organization working mostly with women in order to recognize and respond to their developmental needs. The organization tries to improve the status of women in the society and promotes unity amongst women with different ethnicity and social status (UNIFEM, 2003).

improve the well-being of the child and the mother. They can contribute more in the process of care giving by supporting mothers and providing food for them before and after pregnancy, and also take a part in the caregiving practices. Support from other members of the family could also improve the caregiving performance and develop the quality and quantity of childcare (Engle & Ricciuti, 1995).

Furthermore, the lack of education and knowledge combined with the unfavorable traditions and beliefs exacerbate the high rate of malnutrition, and it is recognized that the importance of nutritional practices has been undermined by influence of local culture. External and internal informational support from health centers, district health departments, and other national and international organizations could shift the beliefs and traditions towards something that favors caregivers in the process of childcare, and eventually reduce the prevalence of malnutrition. Community involvement and support can also include different aspects related to care behavior to improve both mother and the child's nutritional practices.

### **6.1.3. HEALTH-CARE-SEEKING PRACTICES**

Returning to the subject of maternal education, another form of behavior, which has been associated with the child's nutritional practices, is caregiver's health seeking behavior. Engle et al. (1997: 11) stated "*the effect of education on health-care-seeking practices is well documented; it is increasingly evident that maternal education affects a child's health and nutritional status through its effect on the caregiver's health-care-seeking practices.*" As the result of the survey shows, about 76 percent of children under the age of five in Phouvong and Sanamxay and 56 percent in Sanxay had fever during the past two weeks prior to the survey, and the health workers confirmed that only a few of them visited the health center. The reason for this had been asked during the interviews and the most common answers were: 1) they thought it is not important, and if the child did not get better after two days then they will go to health center, 2) they do not trust health workers and, if it is necessary, they will go to the hospital, and 3) in a few cases, some of the respondents answered that they would prefer to go to their spiritual healer.

However, the answers differ when asking slightly more educated mothers about health seeking behavior. Below are two examples of the answers that a mother with third-grade schooling, and one with no educational background, gave to explain how they react when their children get fever or diarrhea:

The mother with third-grade schooling answered:

*“I try to keep my child cool in case of fever and, if my child did not get better after one day, I would go to the health center. If my child has fever and diarrhea I will seek help immediately, and I also try to keep my child hydrated”.* (Respondent no.7)

While a mother with no educational background stated:

*“It is common that children get fever or diarrhea, and I do not go to health center every time it happens. They are kids; they get sick all the time and then after awhile they get better. I also know a little bit about different diseases, and I can treat them with herbs and roots of vegetables.”*(Respondent no.11)

On the basis of these findings, it is remarkably clear that education makes a difference in the process of care of a malnourished child. The rate of malnutrition among children under the age of five found to be connected with the level of education and knowledge of one or both parents. Other studies also confirm that more educated caregivers demonstrate a series of behavior that *“reflect a more committed attitude toward childcare”* (Engle et al. 1997: 11).

Engle and Ricciuti (1995) explained parenting efficacy happens when parents believe that the child’s health and nutritional development depend on their own pattern of behavior. They suggest that parents with low efficacy think that child’s health and nutritional growth depends on genetic factors or the child’s own effort. It confirms the reaction of respondent no.11 and her explanation about her child’s illness. Engle and Ricciuti (1995) further highlighted that parents with high efficacy think that the child’s health and nutritional status is dependent on how parents take care of a child in times of illness. As shown in the answer of respondent no.7, the caregiver reacts to the illness of the child and seeks help. It is interesting to note that many caregivers with a malnourished child did not perceive their child as sick, and, as a result of misinformation or lack of awareness and cultural beliefs, they do not provide adequate nutrition and care practices.

Based on these findings it is increasingly clear that education, knowledge, traditions and beliefs have the most impact on caregiver’s characteristics towards the physical care that they provide for children under the age of five in Attapeu province. Findings suggest that the rate of malnutrition among children under the age of five is higher when the caregiver is less well, or entirely, uneducated. The rate also increases when tradition and beliefs play a major role in the people’s lifestyle and behavior. Galler et al. (1984: 270) stated, *“The nature of care goes beyond the view that such unfavorable mother-child interactions are simply associated with*

*malnutrition as common risk factors in socially disadvantaged environments*". Lack of information and poor social and community support negatively affect caregiver-child relationships and the nutritional status of both children and mothers. Emotional and physical support from fathers and family member can facilitate the process of care for the mother. The informational support can help caregivers to recognize appropriate foods and feeding practices and, finally, social or community support can make a difference by promoting the importance of nutrition and health seeking behavior.

## **6.2. PSYCHOSOCIAL CARE AND ITS IMPACT ON MALNUTRITION**

This section will answer the second research question about "What are the factors that influence caregiver's characteristics while providing psychosocial care for children under the age of five in Attapeu province? "

In the previous chapter, the impact of caregiver's characteristics on physical care has been discussed. Findings from components of maternal technology and the guidance of the theoretical framework have helped to explore the effect of caregiver's characteristics on physical care.

However, besides physical care, there are other sets of actions that might affect the interaction between child and caregivers and ultimately improve, or worsen, the child's nutritional growth and development. These actions will be discussed as psychological and socio-emotional needs of a child. Engle and Ricciuti (1995: 1) outlined some aspects of psychosocial care as "*caregiver's responsiveness, warmth and affection, involvement with the child, and encouragement of autonomy and exploration*". The theory suggests that the child's early mental, motor and social growth are remarkably affected by different events in his/her early life experiences (Engle & Ricciuti, 1995, Engle et al. 1997). In the following part, I examine the possible impact of psychosocial care on child malnutrition. Semi-Structured interviews and direct observation have been conducted in order to study mentioned aspects of psychosocial care. As the theory suggests, psychosocial care will be measured based on three categories: (1) direct observation of caregiver-child interaction, (2) caregiver's autonomy, and (3) caregiver's self esteem and life satisfaction.

### **6.2.1 DIRECT OBSERVATION OF CAREGIVER-CHILD INTERACTION**

In order to illustrate the relevance of psychosocial care, different forms of behavior between caregivers and children have been observed and will be discussed in greater depth. A reminder for this section is that the nature of psychosocial care is more qualitative. Therefore, the data and information are more difficult to collect, and it could be easily misunderstood considering the differences in cultural context, the language barrier, traditions and beliefs, and also the perception of care itself, among different people.

Studying caregiver-child interaction in a natural setting and daily life involves varying actions and behavior that may have happened rapidly, naturally and instinctively. Consequently, it makes it difficult to study and measure or record the phenomenon. However, a regular set of behavioral observation and actions could make it possible to obtain a lot of significant and remarkable amount of data and information (Gewirtz and Boyd, 1976). As stated in the methodology chapter, for studying the psychosocial interaction between caregivers and children a method presented by Lewis et al. (1974) has been used. The method analyzes the flow of five different phases of transitions between caregivers and children by regular observation:

- When both caregiver and child behave (interaction toward each other),
- When neither of them behaves (no interaction between them),
- When child tries to interact with his or her caregiver,
- When caregiver only tries to communicate with the child
- When caregiver communicates with someone else and child tries to interact with caregiver.

For this research, I tried to observe all mentioned phases and some of the findings are as follows:

First Scenario: The feeding practices of caregiver No.3 showed an interesting result of the role of caregiver in the process of child eating behavior. In this case, the caregiver No.3 was a mother of two children under the age five. She was engaged in a part-time harvesting job and was forced to leave the children with other relatives during the day. The new caregiver, who was supposed to take care of children, had four kids of her own between the ages of 2 to 10. During the lunchtime she provided rice, vegetables and fish for them to eat. All of the children sat together, and each child had some of the aforementioned food in a bowl. The caregiver left the children alone and started to do her own things. The older ones ate their food and left the younger ones to eat, while they were playing with the food and eating from

each other's bowls. Engle and Ricciuti (1995) discuss that these caregivers are passive ones, and they are not even present to feed the children. While sitting with the other children encouraged them to eat, the absence of caregivers leave the children to share food with each other, spread food on the floor and eat from it and also cause the food to be in direct contact with flies. Involvement with the children in which caregivers care about child's well-being, and, in some cases such as feeding practices, take action on behalf of children and spend quality time with them, have a positive outcome on child's nutritional growth (Engle & Ricciuti, 1995).

Second Scenario: During lunchtime a family with a malnourished child (as assessed by the mobile health team) has been observed. The mother of the family prepared food for the children outside the house and sat with them to make sure they were eating their food. She had three children, the age of 6, 4 and 2.5. The youngest one was suffering from malnutrition and, during the lunchtime, he had no appetite to eat. He was playing with his food and the caregiver (mother) tried three times to feed the child, but he refused to eat. She continued to feed the other two children and then left the child under the sun and went back to the house. The child sat there a little longer without touching the food. The observation fits the Engle and Ricciuti (1995) framework by demonstrating that "*normally a malnourished child is less responsive to the caregivers and to his or her environment*". This type of behavior could make caregivers believe that the child needs less attention and caregivers may allocate their time to other tasks and different children.

Third Scenario: Normally, for the interviews 10 to 12 mothers and their children (they were mostly under the age of 5) were invited to sit in a circle and discuss the questions. Two types of caregivers have been observed during the interviews. The first group was caregivers who left the children to play while they were doing the interview. The children, mostly without any clothes, were running around, playing in the dirt and walking through the animal feces. Sometimes the children returned to the mothers but they were busy talking to each other and the children left to play again.

The second caregivers were the ones who held their children during the interviews. They tried to talk to them, hug them and occasionally kiss them. Some of the mothers even had some snacks and asked their children to share the snacks with other children.

This scenario shows a non-feeding situation that a caregiver can just provide psychosocial care for the child. Winnicott (1965) discussed the importance of the caregiver's role in the



early interaction with the children and used the term “Stage of primary maternal preoccupation”. He described that this is a period that caregivers need to be aware of child behavior, needs and emotional expression. The awareness and knowledge help the caregivers to understand the importance of the responsibility they have toward their children. Winnicott (1965) emphasized that children in early years of life find themselves reflected in their caregivers’ eyes and the caregivers need to provide a holding environment that provide both physical and psychological protection. He continued by underlining that this early-established relationship provides the experience of warm and empathic care for the child to feel that he or she is being recognized and understood.

Fourth Scenario: a family of five was sitting outside the house to eat dinner. Two of the three children were malnourished (as assessed by the mobile health team) and were under the age of five. It is necessary to mention that the family was facing a great food shortage. They were forced to live on two meals a day. The first meal was served around 8 o’clock in the morning, and consisted of frog’s legs and fruit that the mother of the family found in the forest. The second meal was served 5 o’clock in the afternoon and included sticky rice and bamboo soup. First the father of the family and then the mother ate the majority of the bamboo soup, leaving the children left with some rice and the leftovers from the soup. Despite the fact that both caregivers were present at the time of feeding, none of the children received any help and eating or reaching for food was dependent on their own abilities.

To summarize the findings from the observations, it is clear that caregivers in Attapeu province need to increase their direct participation when providing care for their children. The quality and availability of time they spend with children define the care that children receive. Engle and Ricciuti (1995: 6) described, “*Children in each developmental period depend on caregiver’s behavior and responsiveness to receive sufficient care and food*” However, findings in Attapeu show a great lack of caregivers’ responsiveness and involvement with childcare.

### **6.2.2 CAREGIVER’S AUTONOMY, SELF-ESTEEM AND LIFE SATISFACTION**

Additionally, one of the other components that affect psychosocial care is caregiver’s autonomy and control over family resources. Haddad et al. (1997: 21) defined autonomy and control of resources as “*the caregiver’s ability to play a role in decisions made within the household and the community*”. The low status of women in Sanxay, Phouvong and

Sanamxay shows they do not have much control over family resources and family decision-making. Although many of the women in the site of the study had income, they were not allowed to spend the money in the ways they wanted. Engle and Ricciuti (1995) discussed that if women have control over their income, they are more likely to contribute their money where it is most needed, such as purchase of food, clothes, etc. During the interviews one of the mothers mentioned:

*“I earn money by selling fabric, fruits and fried bananas. But I give all the money to my husband, and he spends it however he thinks it is best for us.” (Respondent no.9)*

Many of the interviewees answered that they gave the money to their husbands. The only exceptions were among slightly educated ones or when the head of the household was a woman. Mothers may be responsible for childcare, but they do not have any control over family resources. Many households had a food shortage, and they had to find food for daily consumption. It is woman’s job to get up early and go to the forest and look for food (e.g. frogs, snakes, fruits and vegetables) but it was part of their belief system that the best portion of the food belonged to head of the household (husbands, fathers, grandfathers). Women have a responsibility to procure resources for the family, but they have very little right to have control over resources. The low status of women influences the caregiver’s self-esteem, which indirectly affects their self-efficacy (Engle & Ricciuti 1995, Engle et al., 1997). A caregiver’s confidence while providing care affects the nutritional practices of a malnourished child. Self-esteem increases the willingness and responsiveness of a caregiver to feed a child more adequately and take better care of them (Brown et al. 1988, Gibbons & Griffiths, 1984).

Moreover, caregivers’ actions and decisions about nutritional practices of children under the age of five are found to be associated with their level of life satisfaction. The rate of malnutrition was higher among the households when the caregiver (e.g. mother) was not satisfied with her life. There were three sorts of dissatisfaction:

**First:** Mothers were not satisfied with their life because they did not have enough money and food. Lack of financial resources was found to be the primary cause of their life dissatisfaction. Listening to the words of the mothers provided valuable information about their daily life experiences and how they struggle to survive, and how poverty and the limitation of the resources influence their care behavior.

They explained;

*“We have to work long hours, but we still do not have enough money to buy rice for the whole year or another source of food. We do not have enough time to take care of our children and we do not have enough food to feed them.” (Respondent no.14)*

Engle and Ricciuti (1995) discussed that even if mothers have the control over resources and income is not enough to ensure a good nutritional status for the children. They stated, *“Without adequate resources, no amount of care giving or resource control is sufficient”*(p.19).

**Second:** Mothers were not happy when they had a malnourished child.

Respondent no.2, who had a malnourished child said:

*“I do not know what to do with her. She is always sick. She does not have energy, she does not play or eat properly”, “I am always worried about her, but what can I do?”*

As theory suggests, a malnourished child can make care giving more complicated. Many individual studies and analyses have validated that caregivers of a malnourished child interact with their child differently. They usually work harder, and they become more active in the caregiver-child interaction. However, a malnourished child is less responsive to their caregivers and his/her environment, and is also in a lesser developmental stage than a healthy one. Therefore, the caregiver’s satisfaction with parenting lessons under these situations (Crnic et al. 1983, Goldberg, 1978, Macy et al. 1987). Furthermore, caregivers with a lower level of life satisfaction were found to be less responsive to their children. The level of affectionate interaction and bonding (e.g. holding, communicating and playing) between caregiver and child was significantly low.

**Third:** They did not want to have more children. Many participants (e.g. mother) in this study were at the age of 20 and already had two or three children. Zeitlin et al. (1990) assert that, generally, those mothers who start childbearing in their teens are one the most disadvantaged groups in society. They are still growing mentally and physically, and are not prepared to take care of another human being. Having a child interrupts their growth as an individual and means that the opportunity to complete their formal education becomes lower. In order to perform continuous care for the children caregivers should have ability and motivation (Zeitlin et al., 1990), which these mothers were lacking during their performance as the primary caregiver. The low status of mentally and physically ill-prepared mothers, their lack of experience and poor support from the community and social system significantly affect the nutritional status of these children.

It is clear that caregivers of Attapeu province follow a dysfunctional pattern of behavior in providing psychosocial care for the children. Low self-esteem and self-efficacy among mothers, and low levels of life-satisfaction heavily influence nutritional practices towards children under the age of five. More pressure is added to the caregiver's by lack of access to food sources and limited financial resources. Findings showed the rate of malnutrition was higher among children that had a lower standard of home environments, meaning that caregivers of a malnourished child were less responsive, more passive, and less emotionally involved with their child's nutritional needs (Galler & Ramsay, 1985, Graves, 1976, Engle & Ricciuti, 1995, Haddad et al. 1997).

## **CHAPTER 7. CONCLUSION**

This research has sought to understand the role of care on the nutritional status of children under the age of five in Attapeu province, Lao PDR. Furthermore, the aim of the study was to recognize the caregivers' characteristics and the importance of their care performance on childcare. Additionally, the research was concerned with examining how different aspects of care, such as physical and psychosocial, affect the nutritional growth and development of children under the age of five in Attapeu province.

Findings from the study suggest that psychological care is as important as physical care in childcare behavior. Both types of care have to be provided in order to achieve sustainable nutritional growth. The results presented in this study showed poor physical and psychosocial care have a negative impact on nutritional practices toward children under the age of five in Attapeu province. The malnutrition rate was found to be associated with the level of physical and psychosocial care that caregivers provide for their children. Caregivers' characteristics such as education, knowledge and beliefs were recognized to be the most essential elements in defining physical care; while the caregiver's involvement, autonomy, self-esteem and the level of life satisfaction were among the most influential factors in presenting psychosocial care. Moreover, findings showed that the caregivers of a malnourished child to be less involved, less sensitive about their needs and more passive in childcare practices.

It is apparent that nutrition and care giving practices cannot be separated in the case of malnutrition. Therefore it is necessary to increase the caregiver's potential in order for them to perform a better standard of care. Education was found to be the most essential element in providing adequate physical care in this research. In many other studies, maternal education

is also found to be associated with a higher level of commitment to providing childcare (Behrman, 1996, Engle et al., 1997, Richter, 2004). Educated caregivers are more likely to seek help when a child is sick and also provide better health care and feeding practices for their children. Furthermore, the role of informational, emotional and physical support was found to be very low in the site of this study. Although fathers are the primary decision makers in the households, they, nonetheless, were rarely included in any discussions about care. However, the father of the family could profoundly improve the well-being of his children by being more engaged in care practices. Increased emotional and physical support from the fathers can reduce the mothers' workload and create more time availability for her to perform better care. Community and social support are also playing an important role in increasing caregiver's information about nutritional practices and health-care-seeking behavior. It is important that communities increase caregiver's awareness about the value of health seeking practices during times of illness and build trust between people and health worker. Additionally, as discussed earlier, many of the caregivers are socially isolated and live their lives based on their traditions and beliefs: therefore, it is crucial that communities and society provide informational support. Informational support can help the caregiver to define appropriate food and proper nutrition and health seeking practices.

Malnutrition is preventable. Millions of children suffer from malnutrition because of food shortage, lack of knowledge, illiteracy and insufficient health facilities. *"If it is in our power to prevent something very bad from happening, without thereby sacrificing anything morally significant, we ought, morally, to do it (Singer, 1972: 1)."*

**Length of thesis: 14842**

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- <http://www.oxforddictionaries.com/definition/english/gross-national-product?q=gross+national+product>

## APPENDICES

**Table 2. Food security and livelihood**

| Variable  | Sanxay = 25 | Phouvong = 25 | Sanamxay = 25 | Total = 75 |
|---|-------------|---------------|---------------|------------|
|   | No. (%)     | No (%)        | No (%)        | No (%)     |
| Do you have enough rice to eat for the whole year (just farmers)?<br>No. of the households with enough rice (%) | 9 (36)      | 6 (26)        | 9 (36)        | 24 (32)    |
| Months with enough rice to eat during the last year (just farmers)  | 6           | 5.5           | 6.5           | 6          |
| No. of Meals eaten yesterday, children  | 3.0         | 3.5           | 3.5           | 3.3        |
| <b>Food resources of family:</b>  |             |               |               |            |
| Forest  | 16 (64)     | 20 (80)       | 12 (48)       | 45 (64)    |
| River   | 3 (12)      | 2 (8)         | 12 (48)       | 23 (31)    |
| Garden/field  | 4 (16)      | 1 (4)         | 1 (4)         | 6 (8)      |
| Market/shop   | 2 (8)       | 5 (20)        | 1 (4)         | 8 (2)      |
| Other (Given by relatives)  | 1 (4)       | 0             | 0             | 1 (1)      |
| <b>Foods often eaten by family:</b>   |             |               |               |            |
| Meat  | 1 (4)       | 1 (4)         | 2 (8)         | 4 (5)      |
| Fish/frog   | 5 (20)      | 7 (29)        | 19 (76)       | 31 (41)    |
| Vegetable/bamboo shoot  | 19 (78)     | 17 (68)       | 5 (20)        | 42 (56)    |
| Fruits  | 1 (4)       | 0             | 0             | 1 (1)      |

|   |       |   |       |       |
|---|-------|---|-------|-------|
| Others (chili sauce, fermented fish, shell) | 1 (4) | 0 | 2 (8) | 3 (4) |
|---|-------|---|-------|-------|

**Table 3. Water and Sanitation**

| Variable  | Sanxay = 25 | Phouvong = 25 | Sanamxay = 25 | Total = 75 |
|---|-------------|---------------|---------------|------------|
|   | No (%)      | No (%)        | No (%)        | No (%)     |
| <b>Main source of drinking water during DRY season:</b> |             |               |               |            |
| Gravity-fed water system                                | 6 (24)      | 4 (16)        | 0             | 11 (15)    |
| Borehole  | 10 (40)     | 8 (33)        | 7 (28)        | 15 (20)    |
| Protected well  | 1 (4)       | 2 (8)         | 1 (4)         | 4 (5)      |
| Unprotected well  | 2 (8)       | 3 (12)        | 2 (8)         | 7 (9)      |
| Spring/river/stream/pond                                | 6 (24)      | 8 (33)        | 13 (52)       | 27 (36)    |
| Rainwater   | 0           | 0             | 1 (4)         | 1 (1)      |
| Bottle water  | 0           | 0             | 1 (4)         | 1 (1)      |
| No answer   | 0           | 0             | 0             | 0          |
| <b>Main source of drinking water during WET season:</b> |             |               |               |            |
| Gravity-fed water system                                | 7 (28)      | 3 (12)        | 0             | 10 (13)    |
| Borehole  | 5 (20)      | 6 (24)        | 6 (24)        | 17 (23)    |
| Protected well  | 2 (8)       | 1 (4)         | 2 (8)         | 5 (7)      |
| Unprotected well  | 2 (8)       | 3 (12)        | 6 (24)        | 11 (15)    |
| Spring/river/stream/pond                                | 6 (24)      | 2 (8)         | 3 (12)        | 11 (15)    |
| Rainwater   | 3 (12)      | 0             | 6 (24)        | 9 (12)     |

|   |         |         |         |         |
|---|---------|---------|---------|---------|
| Bottle water  | 0       | 10 (40) | 2 (8)   | 12 (16) |
| No answer   | 0       | 0       | 0       | 0       |
| <b>Distance between house and water source during DRY season</b>  |         |         |         |         |
| In the house location   | 7 (28)  | 5 (20)  | 7 (28)  | 19 (25) |
| Less than 100m  | 10 (40) | 10 (40) | 8 (33)  | 28 (37) |
| More than 100m away   | 8 (33)  | 10 (40) | 10 (40) | 28 (37) |
| No answer   | 0       | 0       | 0       | 0       |
| <b>Distance between house and water source during WET season</b>  |         |         |         |         |
| In the house location   | 7 (28)  | 13 (52) | 11 (44) | 31 (41) |
| Less than 100m  | 8 (33)  | 7 (28)  | 8 (33)  | 32 (43) |
| More than 100m away   | 10 (40) | 4 (16)  | 5 (20)  | 19 (25) |
| No answer   | 0       | 1 (4)   | 1 (4)   | 2 (3)   |
| Do you have enough water during the DRY season ?  | 18 (72) | 21 (84) | 24 (96) | 63 (84) |
| <b>How you keep clean water for long use</b>  |         |         |         |         |
| Plastic bucket with cover   | 7 (28)  | 7 (28)  | 7 (28)  | 21 (28) |
| Plastic bucket without cover  | 8 (33)  | 7 (28)  | 10 (40) | 25 (33) |
| Stile bucket with cover   | 1 (4)   | 2 (8)   | 2 (8)   | 5 (7)   |
| Stile bucket without cover  | 2 (8)   | 1 (4)   | 1 (4)   | 4 (5)   |
| Tank with cover   | 2 (8)   | 3 (12)  | 2 (8)   | 7 (9)   |
| Tank without cover  | 0       | 1 (4)   | 0       | 1 (1)   |
| Others (Plastic bag, Gallon, big pot, big bowl, big jar with cover or with no cover, long bamboo tube, pail without cover, plastic bottle, plastic pot with cover, tank with cover, water jug). | 5 (20)  | 4 (16)  | 3 (12)  | 12 (16) |
| <b>Do you boil water?</b>   |         |         |         |         |
| Always  | 21 (84) | 15 (60) | 15 (60) | 51 (68) |

|  |         |         |         |         |
|--|---------|---------|---------|---------|
| Sometimes  | 3 (12)  | 2 (8)   | 6 (24)  | 11 (15) |
| Never  | 1 (4)   | 7 (28)  | 3 (12)  | 11 (15) |
| Drink water from filter  | 0       | 1 (4)   | 1 (4)   | 2 (3)   |
| <b>How you keep boiled water safe</b>                          |         |         |         |         |
| Kettle with cover  | 13 (52) | 7 (28)  | 9 (36)  | 29 (39) |
| Kettle without cover   | 3 (12)  | 2 (8)   | 3 (12)  | 8 (11)  |
| Bottle with cover  | 0       | 0       | 0       | 0       |
| Bottle without cover   | 0       | 0       | 0       | 0       |
| Other with cover (Big pot)                                     | 7 (28)  | 8 (33)  | 8 (33)  | 23 (31) |
| Other without cover (Plastic bottle, plastic bag, gallon, pot) | 2 (8)   | 8 (33)  | 5 (20)  | 15 (20) |
| <b>How to wash hands</b>                                       |         |         |         |         |
| Only water   | 15 (60) | 16 (64) | 18 (72) | 49 (65) |
| With soap  | 10 (40) | 9 (36)  | 7 (28)  | 26 (35) |
| Others (Soap power, dish washing liquid, ashes)                | 0       | 0       | 0       | 0       |

**Table 4. Child immunization**

| Variable   | Sanxay = 25 | Phouvong = 25 | Sanamxay = 25 | Total = 75 |
|--|-------------|---------------|---------------|------------|
|  | No (%)      | No (%)        | No (%)        | No (%)     |
| Last child completed vaccination?<br>No. (%)               | 12 (48)     | 11 (44)       | 12 (48)       | 35 (46.5)  |
| Did your children get vitamin A last year?                 | 20 (80)     | 19 (76)       | 16 (69)       | 55 (73)    |
| <b>Did your child get fever/cough in the past 2 weeks?</b> |             |               |               |            |
| No   | 11 (44)     | 6 (26)        | 6 (26)        | 23 (31)    |
| Yes  | 14 (56)     | 19 (76)       | 19 (76)       | 52 (70)    |

|                                |        |         |         |         |
|--------------------------------|--------|---------|---------|---------|
| No answer                      | 0      | 0       | 0       | 0       |
| <b>First treatment seeking</b> |        |         |         |         |
| <b>Treat at home</b>           | 6 (26) | 3 (12)  | 4 (16)  | 15 (20) |
| Village Health Volunteer       | 5 (20) | 0       | 6 (26)  | 11 (15) |
| Pharmacy/clinic                | 0      | 0       | 1 (4)   | 1 (1)   |
| Health center                  | 8 (33) | 12 (48) | 11 (44) | 31 (41) |
| District hospital              | 4 (16) | 7 (28)  | 2 (8)   | 13 (17) |
| Provincial hospital            | 0      | 0       | 0       | 0       |
| Spiritual treatment            | 1 (4)  | 3 (12)  | 1 (4)   | 5 (7)   |
| Other (no treatment)           | 1 (4)  | 3 (12)  | 1 (4)   | 5 (7)   |

**Table 5. Diarrhea management**

| Variable   | Sanxay = 25 | Phouvong = 25 | Sanamxay = 25 | Total = 75 |
|--|-------------|---------------|---------------|------------|
|  | No (%)      | No (%)        | No (%)        | No (%)     |
| Child who had diarrhea in the last 2 weeks, no. (%)  | 8 (33)      | 14 (56)       | 12 (48)       | 34 (45)    |
| No. Know definition of diarrhea, no. (%)   | 18 (72)     | 20 (80)       | 23 (92)       | 61 (81)    |
| No. Know that eating uncooked or un-boiled water can cause diarrhea, no. (%)                                     | 15 (60)     | 14 (56)       | 15 (60)       | 44 (59)    |
| No. Know that diarrhea can cause by not hand washing before eating, no. (%)                                      | 14 (56)     | 8 (33)        | 11 (44)       | 33 (44)    |
| No. Know that diarrhea can cause by eating food contacted with flies, no. (%)                                    | 14 (56)     | 6 (26)        | 11 (44)       | 31 (41)    |
| No. Know that diarrhea can cause by eating food without making it hot or warm after food kept long time, no. (%) | 7 (28)      | 2 (8)         | 2 (8)         | 11 (15)    |
| No. People who do not know the causes of diarrhea or did not answer, no. (%)                                     | 4 (16)      | 8 (33)        | 5 (20)        | 17 (23)    |

|  |         |         |         |         |
|--|---------|---------|---------|---------|
| <b>Method to prevent from diarrhea:</b>                          |         |         |         |         |
| Hand washing before eating                                       | 16 (69) | 10 (40) | 15 (60) | 41 (55) |
| Drink boiled water   | 19 (76) | 17 (68) | 16 (64) | 52 (69) |
| Hand washing with soap after defecating and before eating        | 8 (33)  | 3 (12)  | 6 (26)  | 17 (23) |
| Cover food to prevent from flies                                 | 8 (33)  | 3 (12)  | 5 (20)  | 16 (21) |
| No answer  | 4 (16)  | 5 (20)  | 4 (16)  | 13 (17) |
| <b>First choice for diarrhea care:</b>                           |         |         |         |         |
| Treat at home  | 4 (16)  | 1 (8)   | 5 (10)  | 10 (13) |
| Village Health Volunteer   | 8 (33)  | 0       | 7 (28)  | 15 (20) |
| Pharmacy or clinic   | 0       | 1 (4)   | 3 (12)  | 4 (5)   |
| Health center  | 7 (28)  | 14 (56) | 12 (48) | 33 (44) |
| District hospital  | 4 (16)  | 6 (26)  | 3 (12)  | 13 (17) |
| Provincial hospital  | 0       | 0       | 0       | 0       |
| Spiritual treatment  | 2 (8)   | 4 (16)  | 2 (8)   | 8 (11)  |
| Other (Traditional healer)                                       | 5 (20)  | 8 (33)  | 3 (12)  | 16 (21) |
| <b>How the child was breastfed during his/her diarrhea?</b>      |         |         |         |         |
| Less   | 4 (16)  | 4 (16)  | 6 (26)  | 14 (19) |
| Same   | 6 (26)  | 6 (26)  | 4 (16)  | 18 (24) |
| More   | 11 (44) | 12 (48) | 13 (52) | 36 (48) |
| Not breastfed  | 3 (12)  | 2 (8)   | 2 (8)   | 7 (9)   |
| no answer  | 1 (4)   | 1 (4)   | 0       | 2 (3)   |
| <b>How the child was given to drink during his/her diarrhea?</b> |         |         |         |         |
| Less   | 4 (16)  | 3 (12)  | 5 (20)  | 12 (16) |
| Same   | 7 (28)  | 4 (16)  | 3 (12)  | 14 (19) |
| More   | 11 (44) | 16 (69) | 14 (56) | 41 (55) |
| No drink   | 1 (4)   | 1 (4)   | 1 (4)   | 3 (4)   |



|  |        |        |         |         |
|--|--------|--------|---------|---------|
| no answer  | 2 (8)  | 1 (4)  | 2 (8)   | 5 (7)   |
| <b>How the child was given to eat during diarrhea?</b> |        |        |         |         |
| Less   | 5 (20) | 8 (33) | 11 (44) | 24 (32) |
| Same   | 8 (33) | 7 (28) | 5 (20)  | 20 (27) |
| More   | 8 (33) | 5 (20) | 4 (16)  | 17 (23) |
| No drink   | 2 (8)  | 3 (12) | 4 (16)  | 9 (12)  |
| no answer  | 2 (8)  | 2 (8)  | 1 (4)   | 5 (7)   |

**Table 6. Nutrition**

| Variable  | Sanxay = 25 | Phouvong = 25 | Sanamxay = 25 | Total = 75 |
|---|-------------|---------------|---------------|------------|
|   | No (%)      | No (%)        | No (%)        | No (%)     |
| No. (%) of children under the age of five assessed for nutrition status by mobile health team | 7 (68)      | 12 (48)       | 9 (36)        | 28 (37)    |
| Median (range) number of children assessed per family   | 1 (1 – 6)   | 1 (1 – 6)     | 1 (1 – 6)     | 1 (1 – 6)  |
| <b>If assessed:</b>   |             |               |               |            |
| No malnutrition   | 15 (60)     | 17 (68)       | 12 (48)       | 44 (59)    |
| No. of children with malnutrition   | 8 (33)      | 7 (28)        | 13 (52)       | 28 (37)    |
| No answer   | 2 (8)       | 1 (4)         | 0             | 3 (4)      |
| <b>How to do with malnutrition:</b>   |             |               |               |            |
| Eat 3 groups of food  | 18 (72)     | 18 (72)       | 17 (68)       | 54 (72)    |
| Bring child to Village Health Worker  | 13 (52)     | 9 (36)        | 15 (60)       | 37 (49)    |
| If other problems to HC   | 10 (40)     | 4 (16)        | 8 (33)        | 22 (29)    |
| Other   | 2 (8)       | 5 (20)        | 2 (8)         | 9 (12)     |
| no answer   | 1 (4)       | 2 (8)         | 0             | 3 (4)      |
| <b>How fast did you breastfeed your child after birth?</b>                                    |             |               |               |            |
| Within 1 hour   | 17 (68)     | 12 (48)       | 15 (60)       | 44 (59)    |

|   |         |         |         |         |
|---|---------|---------|---------|---------|
| Other   | 7 (28)  | 11 (44) | 7 (28)  | 25 (33) |
| No answer   | 1 (4)   | 2 (8)   | 3 (12)  | 5 (7)   |
| <b>Meaning of exclusive breastfeeding:</b>                    |         |         |         |         |
| Only breast milk  | 18 (72) | 18 (72) | 13 (52) | 49 (65) |
| Breast milk with water  | 4 (16)  | 2 (8)   | 2 (8)   | 8 (11)  |
| Breast milk with pre-chewed rice                              | 4 (16)  | 3 (12)  | 6 (26)  | 13 (17) |
| Breast milk with general food in family                       | 0       | 0       | 0       | 0       |
| Others  | 3 (12)  | 3 (12)  | 5 (20)  | 11 (15) |
| <b>How long will you give exclusive breastfeeding?</b>        |         |         |         |         |
| From birth until 6 months                                     | 18 (72) | 18 (72) | 14 (56) | 50 (67) |
| Between 1 month to 1 year                                     | 3 (12)  | 3 (12)  | 7 (28)  | 13 (17) |
| No answer   | 4 (16)  | 4 (16)  | 4 (16)  | 12 (16) |
| <b>Feeding practice on children under the age of 6 months</b> |         |         |         |         |
| Only breast milk  | 16 (64) | 18 (72) | 9 (36)  | 43 (57) |
| Breast milk with water  | 0       | 1 (4)   | 2 (8)   | 3 (4)   |
| Breast milk with pre-chewed rice                              | 7 (28)  | 5 (20)  | 12 (48) | 24 (32) |
| Breast milk with general food in family                       | 3 (12)  | 2 (8)   | 3 (12)  | 8 (11)  |
| Other: fish, rice soup  | 2 (8)   | 2 (8)   | 2 (8)   | 6 (8)   |
| No answer   | 1 (4)   | 0       | 2 (8)   | 3 (4)   |
| <b>When children are given other food</b>                     |         |         |         |         |
| Right after birth   | 4 (16)  | 2 (8)   | 3 (12)  | 9 (12)  |
| Child is 2 months old   | 3 (12)  | 2 (8)   | 2 (8)   | 7 (9)   |
| Child is 4 months old   | 2 (8)   | 2 (8)   | 3 (12)  | 7 (9)   |
| Child is 5 months old   | 2 (8)   | 2 (8)   | 2 (8)   | 6 (8)   |
| Child is 6 months old   | 14 (56) | 17 (68) | 15 (60) | 46 (61) |

| <b>Supplementary food given to children when they are older</b>    |         |         |         |         |
|--|---------|---------|---------|---------|
| Rice   | 24 (96) | 22 (88) | 23 (92) | 69 (92) |
| Meat   | 18 (72) | 16 (64) | 18 (72) | 52 (69) |
| Fish   | 20 (80) | 19 (76) | 22 (88) | 61 (81) |
| Vegetables   | 14 (56) | 14 (56) | 12 (48) | 40 (53) |
| Fruit (Papaya, banana, other)                                      | 11 (44) | 8 (33)  | 11 (44) | 30 (40) |
| Others   | 2 (8)   | 3 (12)  | 2 (8)   | 7 (9)   |
| no answer  | 0       | 0       | 0       | 0       |
| <b>Frequency of hand washing while preparing food for children</b> |         |         |         |         |
| Every time before preparing food                                   | 14 (56) | 15 (60) | 15 (60) | 44 (59) |
| Sometimes  | 4 (16)  | 9 (36)  | 3 (12)  | 16 (21) |
| Only when remember   | 7 (28)  | 1 (4)   | 7 (28)  | 15 (20) |
| Never  | 0       | 0       | 0       | 0       |

**Table 7. Reproductive health**

| Variable                              | Sanxay = 25 | Phouvong = 25 | Sanamxay = 25 | Total = 75 |
|---------------------------------------|-------------|---------------|---------------|------------|
|                                       | No (%)      | No (%)        | No (%)        | No (%)     |
| <b>Food avoided by pregnant women</b> |             |               |               |            |
| Do not avoid any kind of food         | 18 (72)     | 11 (44)       | 18 (72)       | 47 (63)    |
| Fish                                  | 1 (4)       | 2 (8)         | 1 (4)         | 4 (5)      |
| Meat                                  | 3 (12)      | 2 (8)         | 1 (4)         | 6 (8)      |
| Vegetables                            | 0           | 0             | 0             | 0          |

|   |         |         |         |         |
|---|---------|---------|---------|---------|
| Others (Wild animal, snake, rat, turtle, deer, red ant, coffee, tobacco, alcohol, fermented food, food with bad smell/fatty/sweet food, egg, coconut, lizard, beef, cat/dog meat, banana, bamboo shoot, egg plant, papaya).   | 5 (20)  | 10 (40) | 5 (20)  | 20 (27) |
| <b>Food avoidance after giving birth</b>  |         |         |         |         |
| Do not avoid any kind of food   | 5 (20)  | 3 (12)  | 6 (26)  | 14 (19) |
| Fish  | 2 (8)   | 2 (8)   | 2 (8)   | 6 (8)   |
| Meat  | 3 (12)  | 3 (12)  | 3 (12)  | 9 (12)  |
| Vegetables  | 0       | 1 (4)   | 2 (1)   | 3 (4)   |
| Others (White buffalo meat, cat fish, bird, chili, garlic, wild animal, snake, rat, turtle, deer, red ant, coffee, tobacco, alcohol, fermented food, food with bad smell/fatty/sweet food, egg, coconut, lizard, beef, cat/dog meat, banana, bamboo shoot, egg plant, papaya).      | 15 (60) | 16 (64) | 14 (56) | 45 (60) |
| <b>Food avoidance during breast feeding</b>   |         |         |         |         |
| Do not avoid any kind of food   | 13 (52) | 8 (33)  | 15 (60) | 36 (48) |
| Fish  | 2 (8)   | 0       | 2 (8)   | 4 (5)   |
| Meat  | 0       | 2 (8)   | 0       | 2 (3)   |
| Vegetables  | 1 (4)   | 0       | 1 (4)   | 2 (3)   |
| Others (Sour fruit, fruit, food with strong smell, rotten food, wild animal, snake, rat, turtle, deer, red ant, coffee, tobacco, alcohol, fermented food, food with bad smell/fatty/sweet food, egg, coconut, lizard, beef, cat/dog meat, banana, bamboo shoot, egg plant, papaya). | 9 (36)  | 15 (60) | 7 (28)  | 31 (41) |

## **QUESTIONS INCLUDED IN INTERVIEWS**

### **1. Question for mother as a primary caregivers:**

1. How old are you?
2. How many children do you have?
3. How old are they?
4. Are any of your children sick?
5. If yes, what is the illness?
6. Are any of your children malnourished?
7. If yes, how did you found out?
8. When they get sick how do you take care of them?
9. Do you have a husband?
10. What is your occupation?
11. Do you have any educational background?
12. Do you have income?
13. If yes, how do you spend your money?
14. Do you have enough food for daily consumption?
15. Who takes care of children in your household?
16. Does your husband help you with caregiving?
17. Do any family members help you with childcare?
18. What are your daily responsibilities?
19. What are your husband's daily responsibilities?
20. Are you satisfied with your life?
21. If not, why?

### **2. Question for the fathers**

1. What is your occupation?
2. Are any of your children malnourished?
3. If your child got sick, what would you do?
4. Who takes care of children in your family?
5. Do you contribute to childcare practices in your household?

6. Who has control over family resources in your household?
7. What are your responsibilities at home?
8. Do you have enough food for your daily consumption?
9. If not, how do you provide food?

### List of Interviews

| Respondent's No. | Date    | Position  | Age | Sex    | District |
|------------------|---------|-----------|-----|--------|----------|
| 1                | 12.2013 | Caregiver | 25  | Female | Sanxay   |
| 2                | 12.2013 | Caregiver | 20  | Female | Sanxay   |
| 3                | 12.2013 | Caregiver | 25  | Female | Sanxay   |
| 4                | 12.2013 | Caregiver | 27  | Female | Sanxay   |
| 5                | 12.2013 | Caregiver | 26  | Female | Sanxay   |
| 6                | 12.2013 | Caregiver | 27  | Female | Sanxay   |
| 7                | 8.2013  | Caregiver | 30  | Female | Phouvong |
| 8                | 8.2013  | Caregiver | 23  | Female | Phouvong |
| 9                | 8.2013  | Caregiver | 20  | Female | Phouvong |
| 10               | 8.2013  | Caregiver | 25  | Female | Phouvong |
| 11               | 8.2013  | Caregiver | 29  | Female | Phouvong |
| 12               | 8.1013  | Caregiver | 31  | Female | Sanamxay |
| 13               | 8.1013  | Caregiver | 27  | Female | Sanamxay |
| 14               | 8.1013  | Caregiver | 25  | Female | Sanamxay |

| Respondent's No. | Date    | Position          | Age | Sex    | District  |
|------------------|---------|-------------------|-----|--------|-----------|
| 1                | 11.2013 | Dr. Tomnian (LWU) |     | Female | Vientiane |