

CHAPTER I

INTRODUCTION

1.1 Rationale and Background

Malnutrition causes numerous short-term and long-term consequences for children - both physical and mental. It is implicated in more than half of all child deaths worldwide, a proportion unmatched by any infectious disease since the Black Death [1]. Yet it is not an infectious disease.

Children who suffer from growth retardation tend to have increased numbers of severe diarrhoeal episodes and a heightened susceptibility to certain infectious diseases, e.g. malaria, meningitis and pneumonia [2,3]. Evidence has shown that there is an association between increasing severity of anthropometric deficits and mortality, and a substantial contribution is made by all degrees of malnutrition to child mortality [4-7]. Strong evidence exists that poor growth is associated with delayed mental development; and that there is a relationship between impaired growth status and both poor school performance and reduced intellectual achievement [8]. Growth retardation in early childhood is also associated with significant functional impairment in adult life and reduced work capacity [1], thus affecting economic productivity.

Although child malnutrition declined globally during the last two decades, with the prevalence of stunted children in developing countries falling from 48% in 1980 to 26% in 2005 [9], national levels of malnutrition still vary considerably (0% in Australia; 49% in Afghanistan) [10]. The largest decline in the level of child malnutrition was in south-eastern Asia where stunting levels decreased by one half between 1980 and 2005. Stunting rates also declined in Latin America and the Caribbean where the rate of stunted children decreased by one third (from 18% to 11%) over the last 15 years. In contrast, south-central Asia still has high levels of child malnutrition, even though the rate of stunted children declined from 51% to 40% during the 1990s. In Africa, the number of stunted children actually increased between 1990 and 2005 (from 40 million to 49 million), and it is estimated 35% of all children under five years old are stunted, which signals that little changed from a decade earlier [9].

In Vietnam, similar to the rapid improvement of the economy, nutritional status of children has improved considerably over the last 20 years. In 1985, the rate of stunting in children under 5 years of age was 60% [11], that declined by around a half by 2005 [12]. In spite of the reduction, Vietnam still is one of the countries with the highest child malnutrition rates in the region (the rate of stunting in children under 5 years of age in Malaysia was 15% in 1999 [10], and that in Thailand was 8% in 2003 [10]). Otherwise, the reduction rates vary across regions of Vietnam [13], differ among economic classes, ethnic groups and between urban and rural areas [14, 15].

Although, there are many efforts from both non-government organizations and government to change the situation over the past two decades, child malnutrition still is a public health problem in Vietnam. Thus, to develop cost-effectiveness intervention on child nutritional status, there is an urgent need to have clear understandings about child nutritional status, which children are more likely to face malnutrition, and the role of community characteristics in child nutritional status in the Vietnamese context.

1.2 Literature review

Overview of factors of child nutritional status

Almost all research on factors affecting child nutrition status have recently been conducted based on the United Nations Children's Fund's framework for the Causes of Child malnutrition [1] and the subsequent Extended Model of Care by Engle et al [16]. The framework is comprehensive, incorporating both biological and socioeconomic causes, and encompasses causes at both micro and macro levels. It recognizes three levels of causality corresponding to immediate, underlying, and basic determinants of child nutritional status.

The **immediate determinants** of child nutritional status manifest themselves at the level of the individual human being. They are dietary intake (energy, protein, fat, and micronutrients) and health status. The immediate determinants of child nutritional status are, in turn, influenced by three **underlying determinants** manifesting themselves at the household level. These are food security, adequate care for mothers and children, and a proper health environment, including access to health services. Associated with each is a set of resources necessary for their achievement. *Food security* is achieved when a person has access to enough food for an active and healthy life. The resources necessary for gaining access to food are food production,

income for food purchases, or in-kind transfers of food (whether from other private citizens, national or foreign governments, or international institutions). We know that no child grows without nurturing from other human beings. This aspect of child nutrition is captured in the concept of care for the children and their mothers, the latter who give birth to children and who are commonly their main caretakers after they are born. *Care*, the second underlying determinant, is the provision in households and communities of "time, attention, and support to meet the physical, mental, and social needs of the growing child and other household members". Examples of caring practices are child feeding, health seeking behaviors, support and cognitive stimulation for children, and care and support for mothers during pregnancy and lactation. The adequacy of such care is determined by the caregiver's control of economic resources, autonomy in decision making, and physical and mental status. All of these resources for care are influenced by the caretaker's status relative to other household members. A final resource for care is the caretaker's knowledge and beliefs. The third underlying determinant of child nutritional status, *health environment and services*, rests on the availability of safe water, sanitation, health care and environmental safety, including shelter.

A key factor affecting all underlying determinants is poverty. A person is considered to be in (absolute) poverty when the person is unable to satisfy his or her basic needs—for example, food, health, water, shelter, primary education, and community participation—adequately. The effects of poverty on child malnutrition are pervasive. Poor households and individuals are unable to achieve food security, have inadequate resources for care, and are not able to utilize (or contribute to the creation of) resources for health on a sustainable basis.

Finally, the underlying determinants of child nutrition (and poverty) are, in turn, influenced by **basic determinants**. The basic determinants include the potential resources available to a country or community, which are limited by the natural environment, access to technology, and the quality of human resources. Political, economic, cultural, and social factors affect the utilization of these potential resources and how they are translated into resources for food security, care and health environments and services.

Research on the association between child health and nutritional status

Diarrhoea and other infectious diseases manifested in the form of fever affect both dietary intake and utilization, which may have a negative effect on improved child nutritional status. A comparative study on children's nutritional status [17] indicated that stunting was highest among children with recent diarrhoea.

In a prospective study of morbidity pattern and nutritional status of a group of healthy newborns during their first year of life in a rural area near Alexandria [18], Ahmed and colleagues showed evidence of the significant effect of morbidity risk exposure on the nutritional status at the end of the first year.

Research on the association between dietary intake and nutritional status

There is a lot of research showing the effects of dietary intake on nutritional status. Golder et al. in a study of dietary intake and nutritional status of pre-school children in the Republic of the Maldives concluded that marginal nutritional status and marginal malnutrition are due to low fat intake and selected micronutrient deficiency [19]. A prospective study of Vietnamese children documents that early introduction of solid foods (< 3 months of age), or failure to exclusively breastfeed at that age, is associated with poor growth up to 48 months of age [20].

Research on the association between care practices, care resources and nutritional status

Care practices were mentioned as important factors of child nutritional status in a lot of research. Research in the Philippines [21], Uganda [22], and Vietnam [20] children shows the association between the positive behavior of breastfeeding and positive nutritional status of children. Time spent in child care is also an important care aspect. However, summaries of studies related to this issue do not lend strong support to the hypothesis that a quantitative measure of mother's time spent on child care has a significant association with child nutritional status. Blau et al. after controlling for fixed effects showed that the only remaining associations with child weight were time spent by a non-female relative, and for child height, time spent by the mother [23]. Conversely, many studies found no association between child care time and nutritional status [24, 25].

Education is one of the most important resources that enable women to provide appropriate care for their children, which is an important determinant of children's growth and development [16]. Studies in the Philippines [26], Libya [27], and India [28] show a decreased incidence of malnutrition among young children with an increase in the level of mothers' education. Yet, some studies in Vietnam [13, 29] and Kenya [30] did not find the association between mother's education and child nutritional status.

Birth weight, child growth, and adolescent growth determine nutritional status before and during pregnancy (maternal nutrition). Maternal nutrition also influences fetal growth and birth weight [31]. The presence of an intergenerational link between maternal and child nutrition means a small mother will have small babies who in turn grow to become small mothers. Some findings on the relationship between maternal and child nutrition [32, 33] showed that a high proportion of low-birth-weight and stunted children were observed among malnourished mothers.

Beside maternal physical health, there are evidences of the relationship between maternal mental health and child malnutrition. Harpham et al. showed this relationship in the study at Vietnam and India [34]. However, the findings from Peru and Ethiopia in the same study did not provide clear evidence for a similar association.

Although women's employment enhances the household's accessibility to income, it may also have negative effects on the nutritional status of children, as it reduces a mother's time for childcare. Some studies have revealed that mothers of the most malnourished children work outside their home [35, 36]. Another study argued that there is no association between maternal employment and children's nutritional status [37].

Research on the association between domestic economics and nutritional status

The economic status of a household is also one of the most important determinants of child nutritional status [38]. Comparative studies on child nutrition for more than 15 countries [17] and some local studies in Vietnam [13, 29, 39] showed that the higher the level of economic status of the household, the lower the level of child stunting.

Research on the association between environmental, health care behaviours and nutritional status

Unfavourable health environment caused by inadequate water and sanitation can increase the probability of infectious diseases and indirectly cause certain types of malnutrition [38]. A comparative study in some developing countries [17] showed that unprotected water source and non-availability of latrine were associated with low child stature.

Research on the association between child's own characteristics and nutritional status

Child's own characteristics are also mentioned in many studies. Schroeder showed that a cumulative indicator of growth retardation (height-for-age) in children is positively associated with age in a study in Vietnam [40]. One study showed that stunting is rare in birth order 2-3 [17], and higher birth order (5+) is positively associated with child malnutrition [28]. Higher birth spacing is also likely to improve child nutrition, since the mother gets enough time for proper childcare and feeding. Studies in developing countries showed that children born after a short birth interval (less than 24 months) have higher levels of stunting in most countries where Demographic and Health surveys have been conducted [17, 41].

Research on the association between community characteristics and child nutritional status

There have been a number of attempts to examine the associations between community characteristics and child nutritional status. However few characteristics have been worked with, a few strong results have emerged. The sample sizes were usually small, and from a relatively small area without a lot of variation in important variables. Some research based on data of National Health Surveys, National Living Standard Surveys, Multipurpose Surveys like the research in north-east India [42] that had sufficient sample sizes mentioned only the region variable, not specific community characteristics. In Vietnam, there was only the research of Glewwe P. et al.[43] based on Vietnam Living Standard Survey data with sufficient sample size, however, that only considered community healthcare services.

In summary, factors affecting child malnutrition are very complicated. The immediate and underlying factors are well documented in the world as well as in Vietnam. However, the basic factors like community characteristics are not clarified. This study aims to provide evidence about those in the Vietnamese context.