

Tytti Karppinen ja Terhi Kettunen

PROMOTION OF CHILD GROWTH IN VIETNAM

**Case Study. An Application of the PRECEDE-PROCEED
-Model to Assess Needs for an Intervention**

**Terveyskasvatuksen
Pro gradu –tutkielma
Kevät 2002
Terveystieteiden laitos
Jyväskylän yliopisto**

ABSTRACT

Karppinen, T. & Kettunen, T. Promotion of Child Growth in Vietnam. Case Study. An Application of the PRECEDE-PROCEED –Model to Assess Needs for an Intervention. Master's Thesis on Health Education. University of Jyväskylä. Department of Health Sciences. Spring 2002. 76 pages. 9 appendices.

In Vietnam about 66,000 children under the age of five die every year. It can be estimated that malnutrition contributes to about 33,000 of these deaths. The governments of Finland and Vietnam have agreed on a bilateral development aid project in the health sector. The purpose of this study was to prioritize behavioral and environmental factors affecting child growth and to suggest tentative objectives and indicators, which can guide the selection of interventions, indicators, collection of baseline data and facilitate the final evaluation of the project.

Using the PRECEDE-PROCEED –model as the framework, this study examines the nutritional status of children, parents' child feeding practices, growth monitoring and nutrition education in Nghê An province, Vietnam.

The case study was used as the research strategy. The mode of analysis was pattern-matching logic, which compares the empirically based patterns with several predicted links that the models suggest. The data collection relied on documentation, semi-structured interviews and ranking of different health concerns. The documents were reviewed to obtain nation wide data and information on guiding regulations of promotion of the child nutrition. The interview data (N=16) was coded and organized in categories facilitating clustering the segments related to the research tasks. Ranking was conducted in a workshop attended by the staff involved in health care delivery.

The findings that deserve attention include: 33% of under-five children in Vietnam are underweight. The cause of malnutrition in Vietnam is inadequate complementary feeding/child feeding rather than inadequate breastfeeding. Regarding micronutrients, iodine and iron are a major concern. Parents' child feeding practices that need attention include early initiation of breastfeeding, feeding of colostrums, exclusive breastfeeding, timely initiation of complementary feeding, provision of frequent meals, provision of nutritionally adequate diet for a child. Growth monitoring and nutrition education were rated as important targets for interventions due to following reasons: The health education methods used were mainly conventional, such as traditional lecturing. Practical skills training for caretakers seemed to be non-existent. Mass media, Women's Union and village-volunteers seemed promising options as intervention channels, but were not fully utilized. Growth monitoring was not yet fully functioning. It is proposed that the baseline data on child growth requires an assessment of a randomized sample in the target area.

Following the guidance of the PRECEDE-PROCEED –model a list of tentative health, behavioral, learning and resource objectives with indicators was presented as a final product of this study.

Keywords: child-growth, development aid, health care, nutrition, PRECEDE-PROCEED-model, Vietnam

TABLE OF CONTENTS

1 INTRODUCTION.....	1
2 PRECEDE-PROCEED –MODEL	4
3 DETERMINANTS OF CHILD GROWTH AND THE CONCEPTS OF STANDARDIZED ASSESSMENT.....	6
3.1 DETERMINANTS OF THE NUTRITIONAL STATUS OF CHILDREN	6
3.2 INTERNATIONAL STANDARD FOR ASSESSING CHILD GROWTH.....	9
4 CHILD HEALTH SITUATION AND HEALTH CARE IN VIETNAM.....	11
4.1 HEALTH PROFILE	11
4.2 HEALTH STAFF AND ADMINISTRATION OF HEALTH CARE IN VIETNAM	12
4.3 POLICY PAPERS GUIDING PROMOTION OF NUTRITION IN VIETNAM	14
5 GENERAL ASSESSMENT OF BEHAVIORAL AND ENVIRONMENTAL FACTORS AFFECTING CHILD NUTRITION	17
5.1 ASSESSMENT OF BEHAVIORAL FACTORS AFFECTING CHILD NUTRITION	17
5.1.1 Parents’ Child Care Practices Related to Nutrition	17
5.1.2 Factors Constraining Caregivers in Providing Child Care for Nutrition	20
5.1.3 Changeability of Breastfeeding and Complementary Feeding Behavior	23
5.2 ASSESSMENT OF ENVIRONMENTAL FACTORS AFFECTING CHILD NUTRITION	25
5.2.1 Growth Monitoring in the Promotion of Child Nutrition	27
5.2.2 Social Marketing in the Promotion of Child Nutrition	28
5.3 CONSIDERATION OF EVALUATION IN THE ASSESSMENT PHASE OF NUTRITION PROGRAMS.....	29
6 RESEARCH TASKS	31
6.1 RESEARCH TASK ONE.....	31
6.2 RESEARCH TASK TWO	32
6.3 RESEARCH TASK THREE	34
6.4 RESEARCH TASK FOUR	35

7 METHODS AND MATERIALS	37
7.1 CASE STUDY	37
7.2 COLLECTION OF DATA	38
7.3 DATA ANALYSIS	39
8 RESULTS	41
8.1 NUTRITIONAL STATUS OF UNDER-FIVE CHILDREN	41
8.2 CONCERNS OF COMMUNITIES RELATED TO CHILD HEALTH AND NUTRITION	43
8.3 BREASTFEEDING AND COMPLEMENTARY FEEDING PRACTICES	45
8.4 CONSTRAINTS OF CAREGIVERS IN PROVIDING CARE FOR CHILD NUTRITION	48
8.5 IMPORTANCE OF GROWTH MONITORING AS A TARGET FOR INTERVENTIONS.....	50
8.6 IMPORTANCE OF NUTRITION EDUCATION AS A TARGET FOR INTERVENTIONS.....	52
9 SUMMARY OF THE RESULTS AND RECOMMENDATIONS	56
9.1 ASPECTS OF MALNUTRITION IN VIETNAM.....	56
9.2 CONCERNS OF THE COMMUNITIES ABOUT CHILD NUTRITION IN NGHÊ AN PROVINCE.....	57
9.3 BREASTFEEDING AND COMPLEMENTARY FEEDING PRACTICES IN VIETNAM.....	58
9.4 CONSTRAINTS OF CAREGIVERS IN PROVIDING CARE FOR CHILD NUTRITION IN NGHÊ AN PROVINCE	58
9.5 GROWTH-MONITORING IN NGHÊ AN PROVINCE	59
9.6 NUTRITION EDUCATION IN NGHÊ AN PROVINCE.....	59
10 DISCUSSION	63
11 CONCLUSION: TENTATIVE OBJECTIVES AND INDICATORS	66
REFERENCES.....	69
APPENDICES	77

APPENDIX 1. TABLE 1. Comments of health care staff members and mothers on nutrition.

APPENDIX 2. TABLE 2. Comments of health care staff members describing their skills concerning child nutrition.

- APPENDIX 3. TABLE 3. Comments of the interviewees on the current child feeding behavior.
- APPENDIX 4. TABLE 4. Comments of the interviewees that state reasons for the current child feeding behavior.
- APPENDIX 5. TABLE 5. Comments of mothers and health staff members on utilization of growth-monitoring service.
- APPENDIX 6. TABLE 6. Comments by health service providers on health education and sources of health information.
- APPENDIX 7. TABLE 7. Comments of mothers on health education and sources of health information.
- APPENDIX 8. TABLE 8. Ranking of health concerns by health service providers in Nghệ An Province, Vietnam.
- APPENDIX 9. TABLE 9. Background of the Interviewees.
Categorization of the interview data.

1 INTRODUCTION

Over 200 million children in developing countries under the age of five are malnourished. Malnutrition contributes to more than half of the nearly 12 million under-five deaths in developing countries each year. Malnourished children often suffer the loss of precious mental capacities. They fall ill more often. If they survive, they may grow up with lasting mental or physical disabilities. (UNICEF 1998, 6.)

In Vietnam about 66,000 children under the age of five die every year. It has been estimated that malnutrition contributes to about 33,000 of these deaths (Pelletier 1994; Pelletier, Frongillo, Schroeder & Habicht 1995; Schroeder & Brown 1994). However, there is an extensive scientific evidence for the effectiveness of interventions to promote growth even under poor socio-economic conditions (WHO 1999, 1). This being shown, the importance of development aid to Vietnam in health sector is evident.

The governments of Finland and Vietnam have agreed on a bilateral development aid project in the health sector. The geographical area of the Finland-Vietnam Child Health Care Project is Nghê An Province. The National Research and Development Center for Welfare and Health (STAKES) was responsible of the planning phase, which began in 1997. The final report of the planning phase was published in June 2000. The writers of this study were privileged to participate, as students, in the planning phase of the program. As a consequence, the writers also joined a field trip of the project expert delegation to Vietnam in October 1998. In August 2001, the Ministry of Foreign Affairs of Finland approved the funding for the implementation phase of the project.

There are three components in the Finland-Vietnam Child Health Care Project: Health care system development, Coordination of child health care activities and Health promotion. As a long-term development objective the project named following: *The improved health status of children in Nghê An Province*. The immediate project objective is *improved*

quality and more adequate utilization of child health care, both preventive and curative. The three objectives of component three, Health Promotion, are: 1) *Improved awareness of people on health issues, especially on malnutrition and hygiene and management of common childhood diseases;* 2) *Health education skills and propaganda materials and practices developed, targeted especially on malnutrition of children and hygiene Issues;* 3) *Improved socialization of child health care.* (STAKES 1999, 26, 34.) The last one refers to mobilization and involvement of communities. Health promotion is the particular component in which the writers of this paper were involved.

The focus of this study is to examine child growth and nutrition, parents' child-feeding practices, growth monitoring and nutrition education in Nghê An province, Vietnam. The purpose is to prioritize behavioral and environmental factors affecting child growth. Based on the examination the final expectation of this study is to produce a set of tentative objectives and indicators for the Finland-Vietnam Child Health Care Project. The tentative objectives and indicators can direct the selection of interventions, the collection of baseline data in the target area and can ultimately facilitate the final evaluation of the project.

The focus of this study is narrower than the scope of the component three in Finland-Vietnam Child Health Care Project. In the first place, writers of this paper were told to focus only on child nutrition. On the other hand, focusing was necessary also for restricting the extent of this examination.

First, in this paper we will introduce the PRECEDE-PROCEED -model (Green & Kreuter 1991), which then guides us through the examination. In the third chapter we have chosen to present the Smith and Haddad (2000) model, since it identifies behavioral and environmental determinants that are linked to a child's nutritional status. We will also take a brief glance at the International Standard for Assessing Child Nutrition (NCHS/WHO) (WHO 1995), which is widely accepted and used as a standardized tool to measure child growth in all the studies reviewed in this paper. In the chapter four, we will take a look at the health situation in Vietnam, viewing it from both global and regional perspective and in the light of the country's own organizational and administrative resources and

capabilities. This comprises the administrative and policy diagnosis in the PRECEDE-PROCEED –model.

In chapter five, we will review, in general, what research evidence is found about factors affecting nutritional status of children. This is to determine the strength of the link between behavioral and environmental factors and child growth, i.e. the importance of factors as a target for interventions. In addition, the chapter addresses changeability of the determinants already ranked in terms of importance. The changeability is determined on the basis of documentation on successful projects targeting these behavioral and environmental factors. Finally, we will review some aspects of evaluation of nutrition programs and requirements that evaluation design sets for the assessment phase. The research tasks continue rating the importance of selected behavioral and environmental factors in terms of prevalence and quality of the current implementation in Vietnam and in Nghê An province.

2 PRECEDE-PROCEED –MODEL

In this study, we use Green's and Kreuter's PRECEDE-PROCEED -model to guide us to examine the hierarchy of determinants affecting child growth. This model provides a comprehensive planning and evaluation framework for planners of a health project. It has served as a successful model in a number of field trials. Another strength of the model is that it allows an integration of other models within it, such as the Smith and Haddad (2000) model or the social marketing approach. (Green & Kreuter 1991, 24.)

The PRECEDE-PROCEED -model guides planners to think deductively, starting with the final consequences and work back to the original causes. It encourages planners to take into account the multiple factors that ultimately shape health status. However, we will only introduce the PRECEDE part of this model, since this part comprises the assessment phase of a project. Following the phases given in the model the project planners are guided in the generation of specific objectives and criteria for evaluation. (Green & Kreuter 1991, 22, 26, 29.)

In phase one, general hopes or problems of concern to the target population are assessed. In phase two, project planners identify and rank the specific health goals or problems that may contribute to social goals noted in the phase one. This is done by describing and quantifying health problems, which in turn helps assessing the relative importance of various health problems and provides basis for setting program priorities. Phase three consists of identifying the specific health-related behavioral and environmental factors that could be linked to selected health goal. Consequently, the identified behaviors and environmental factors need to be ranked in terms of importance and changeability (Green & Kreuter 1991, 26-29, 96-97, 138.)

Phase four groups these factors according to educational and organizational strategies likely to be employed. Categorizing the factors takes the planners on to decide which deserve highest priority. The three groups are predisposing factors, reinforcing factors, and enabling

factors. *Predisposing factors* include a person's knowledge, attitudes, beliefs, values and perceptions that facilitate or hinder motivation for change. *Enabling factors* are those skills, resources, or barriers that can help or hinder the desired behavioral changes as well as environmental changes. *Reinforcing factors*, the rewards received, and the feedback the learner receives from others following adoption of the behavior, may encourage or discourage continuation of the behavior. Finally, phase five consists of the assessment of organizational and administrative capabilities and resources for the development of the project. (Green & Kreuter 1991, 26-29.)

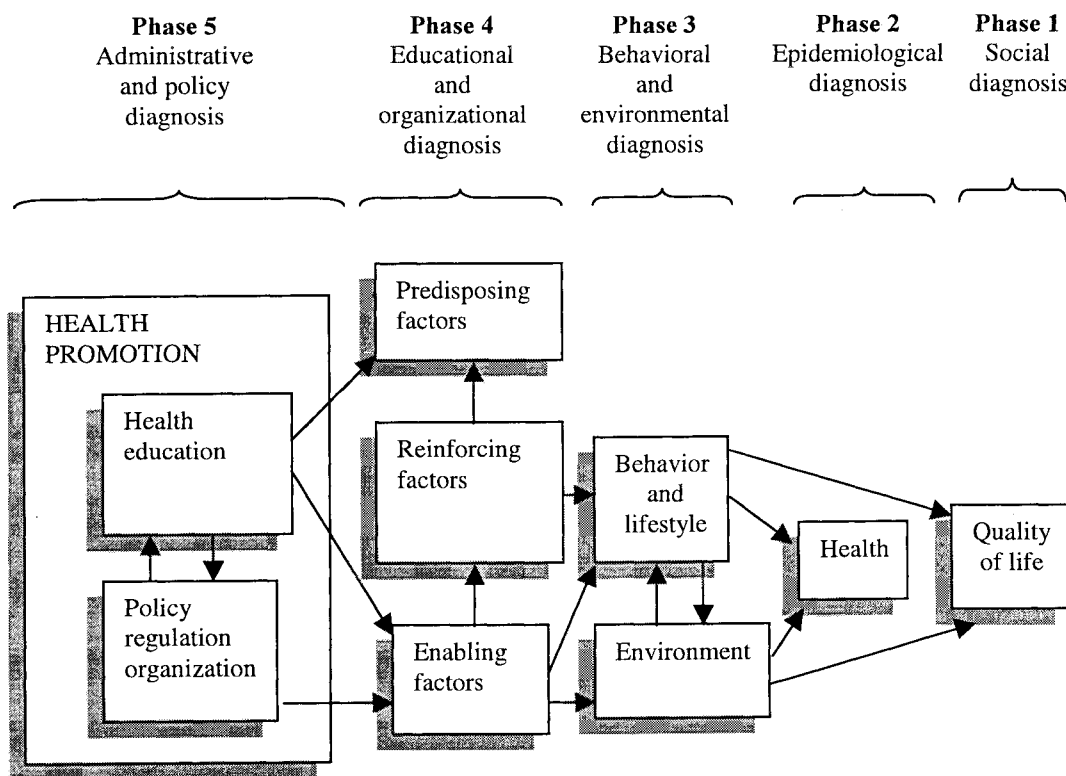


FIGURE 1. The PRECEDE part of the PRECEDE-PROCEED -model for health promotion planning (Green & Kreuter 1991, 24). (Note: The arrows illustrate the causal links between the multiple factors that ultimately shape health status.)

3 DETERMINANTS OF CHILD GROWTH AND THE CONCEPTS OF STANDARDIZED ASSESSMENT

3.1 Determinants of the Nutritional Status of Children

The purpose of analyzing health problem, in this case child nutrition, is to get a comprehensive picture, and this requires collecting data about the factors that are contributing to it (Green & Kreuter 1991, 151; Hawe, Degeling & Hall 1990). The conceptual framework of Smith and Haddad (2000) (Figure 2) indicates the factors related to child's nutritional status. Therefore, we have chosen to use it in the framework of the PRECEDE-PROCEED –model.

The model breaks the determinants of child's nutritional status into three levels of causality: *immediate determinants, underlying determinants and basic determinants*. In this conceptual model for child nutrition, the immediate determinants that affect child's nutritional status are child's dietary intake and health status. The care behaviors for both the child and the mother are included as underlying factors to the two immediate determinants of child nutrition. In this formulation, care giving behaviors that are adopted in the household together with the household's access to food and health services contribute to child's nutrition. Each underlying determinant is associated with a set of resources necessary for their achievement. Finally, the underlying determinants of child nutrition are, in turn, influenced by the basic determinants. (Smith & Haddad 2000, 6.)

Basic determinants include the potential resources available to a country or a community, 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. (Smith & Haddad 2000, 6.)

Malnutrition may result from any one or a combination of *underlying causes* such as the lack of or low utilization of health services, inadequate water supplies and sanitary facilities, poor food hygiene or inadequate childcare. Similarly death from disease may result from any one or a combination of causes. (UNICEF 1990-1, 19.)

Douglas (1998) notes that the greatest advance in health will come in three main ways: changing behavior, changing environments, and providing better services. This is consistent with what Smith and Haddad (2000) classify as underlying determinants of child's nutritional status. The PRECEDE-PROCEED -model (Green & Kreuter 1991, 22) includes the same elements, and additionally takes the angle of a program design, which facilitates assessment as well as planning of a program.

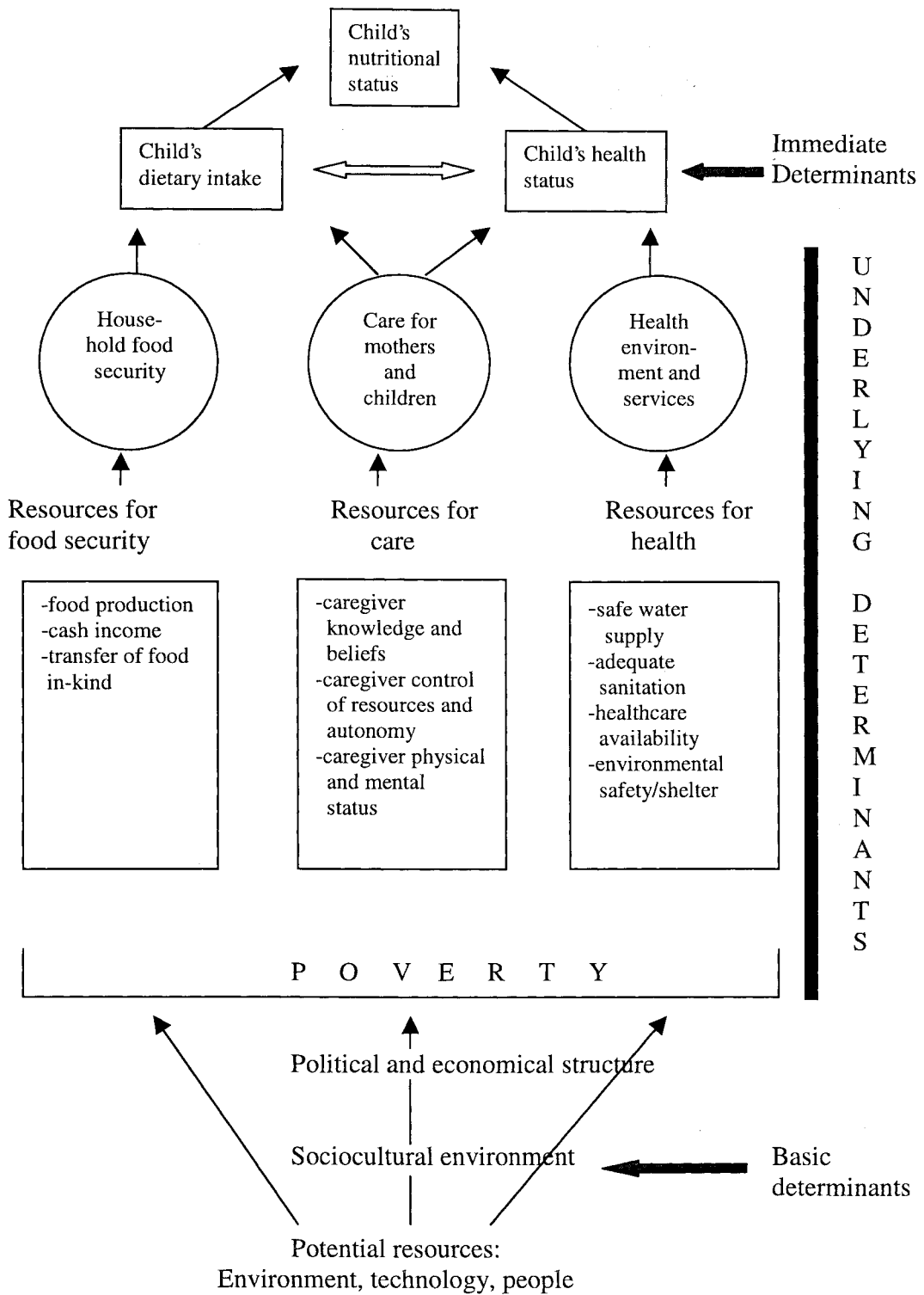


FIGURE 2. Conceptual framework guiding the analysis of the nutritional status of children. (Smith & Haddad 2000, 5.)

3.2 International Standard for Assessing Child Growth

One responsibility of program planners is to interpret local data in the light of medical knowledge and also look at the distribution of the health problem in the national population (Green & Kreuter 1991, 120). International Standard (NCHS/WHO) for Assessing Child Growth is developed as a standardized tool to measure child growth. It is based on strong medical research evidence. It also makes possible comparison of child nutrition situation within a country and between different countries. This standardized tool is used in all the studies that we refer to in this paper hence it is introduced here. (WHO 1995.)

In a well-nourished population, there is a standard distribution of height and weight for children under age five. Undernourishment in a population can be gauged by comparing children to this standard distribution. There are three nutritional status indicators: weight-for age, height-for age and weight-for-height. Each of the three nutritional status indicators is expressed in standard deviation units (Z-scores) from the median of this reference population. A universal standard distribution of height is justified, since across most populations there seems to be very little difference in mean growth or its distribution around the mean that is attributable to genetics. The main strength of this particular reference data is that it derives from a population that has fully met its growth potential, in other words it comes from a well-nourished population. (WHO 1995, 7-8, 10-11, 29.)

Weight-for-age is a measure of both acute and chronic malnutrition. Children whose weight-for-age is more than two standard deviations (-2SD) below the median of the reference population are considered *moderately or severely underweight* while those whose weight-for-age is more than three standard deviations (-3SD) below the median are classified as *severely underweight*. (WHO 1995, 170-171.)

Height-for-age is a measure of linear growth. Children whose height for age is more than two standard deviations below the median of the reference population are considered short for their age and are classified as *moderately or severely stunted*. Those children whose height-for-age is more than three standard deviations below the median are classified as

severely stunted. Stunting is a reflection of chronic malnutrition as a result of failure to receive adequate nutrition over a long period and recurrent or chronic illness. (WHO 1995, 163-164.)

Finally, children whose weight-for-height is more than two standard deviations below the median of the reference population are classified as *moderately or severely wasted* while those who fall more than three standard deviations below the median are *severely wasted*. Wasting is usually the result of a recent nutritional deficiency. The indicator may exhibit significant seasonal shifts associated with changes in the availability of food or disease prevalence. (WHO 1995, 163, 165.)

4 CHILD HEALTH SITUATION AND HEALTH CARE IN VIETNAM

4.1 Health Profile

In phase one of the PRECEDE-PROCEED –model general hopes or concerns to the target population are assessed (Green & Kreuter 1991, 26). In the Finland-Vietnam Child Health Care Project this assessment had been completed by the time the authors of this study became involved. The Project Proposal document (STAKES 1996), allows us to understand that prioritization was done following the review of local documents and discussions with the central and provincial authorities. Since the view of the target population is missing, we will consider it in the research task one.

In phase two the project planners identify and rank the specific health goals or problems. Although child nutrition was already set as the priority in the Finland-Vietnam Health Project, it is essential even in these circumstances to weigh the importance of the assigned health problem against that of other problems (Green & Kreuter 1991, 93). Some of the figures presented below are from a secondary source of information, but they nonetheless provide a global and regional perspective and enable comparison.

The under-five mortality rate in Vietnam is 40 per thousand live births, giving it a ranking of 89 in the list of 193 countries in the world. The infant mortality rate is 31 per thousand live births. Both rates are slightly below the mean figures in the South-East Asia region. (UNICEF 2001, 15.) The disease pattern of Vietnam is typical for a developing country. Morbidity in children is due mainly to malaria, acute respiratory diseases, diarrhoeal diseases, immunizable diseases, dengue fever and hepatitis. Most of this morbidity is both the outcome and cause of malnutrition. (INFDC 1995, 181; UNICEF 1994, 58.)

Behavioral indicators show that 79 percent of the population in Vietnam is using improved drinking water sources and 44 percent is using adequate sanitation facilities. Of the children 0-3 months, 29 percent are exclusively breastfed, and 51 percent of children of age 6-9

months are partially breastfed with complementary food. The figure in Vietnam on the use of improved drinking water sources is higher than the regional mean figure (75%), while figures on use of adequate sanitation facilities (regional mean 75%) and exclusively breastfed infants, 0-3 months old, (regional mean 57%) are lower than the regional mean figures. (GSO 2000, 54, 56-57; UNICEF 2001, 23.)

The nutritional status indicators show that 33 percent of under-five children in Vietnam are moderately or severely underweight, 6 percent of them severely. The percentage of under-five children, that are moderately or severely wasting is 6 and stunting 36, respectively. The regional mean figures for moderate or severe underweight, wasting and stunting are 19%, 6% and 24%. These nutrition indicators show clearly a poorer status of children in Vietnam than the mean figures in the region. The nutrition-related process indicators measuring the effectiveness of service provision show that the Vitamin A supplementation coverage rate for children 6-59 months in Vietnam is 82 percent, and that 61 percent of households are consuming iodized salt. The percentage of fully immunized children under-one for TB is 100, DPT 98, polio 97 and measles 97. All service delivery indicators, except consumption of iodized salt (regional mean 81%) are ten to seventeen percents higher than the mean figures in the region. (GSO 2000, 56, 58-59; UNICEF 2001, 19,23.)

As seen, globally Vietnam ranks in the middle with regard to under-five mortality rate. Considering the facts that the link between under-five deaths and child nutrition is shown (Pelletier 1994; Schroeder & Brown 1994) and the child nutrition figures in Vietnam are poorer than the regional mean figures, there is little doubt about the importance of child nutrition as a target for interventions.

4.2 Health Staff and Administration of Health Care in Vietnam

Phase five in the PRECEDE-PROCEED –model (Green & Kreuter 1991, 29) guides the assessment of the policies, resources and circumstances prevailing in the organizational situation that can facilitate or hinder the development of a program. The administrative and

policy assessment, in this study, will enable identifying needs for organizational support. It also will ensure that the project intervention plan is consistent with the existing policy and documents, which guide the promotion of child nutrition in Vietnam.

The Ministry of Health is the main authority in the health sector in Vietnam. It provides policy guidance and technical direction as well as organizes the system for education of health professionals. It also has specialized institutes - such as the National Institute of Nutrition and National Institute of Hygiene and Epidemiology - which are responsible for research, training, and implementation of national health programs. Vietnam has developed a number of self-contained, vertical health programs with structures running down from central level to district level. (STAKES 1999, 8.)

There are 61 provinces in Vietnam. The provincial level health service is administered by the Provincial Health Department under the authority of the Provincial People's Committee. The Provincial Center for Preventive Medicine is responsible for preventive health activities and services, and also for the training the district and commune level health staff on prevention. (STAKES 1999, 8.)

Almost all of the 564 existing districts in the country have a District Health Center, which includes the District Health Office, responsible for surveillance and management, and District Hospital for curative care. (STAKES 1999, 8.)

In 2000, 98% of the 10 291 communes in the country had a Commune Health Station which delivers all health services at the commune level (GSO 2000, 173). Each commune health station is staffed with an average 5.4 health workers (GSO 2000, 173), out of whom at least one should be an assistant physician with three years of training. After the collapse of the rural co-operative system, which used to fund the commune health stations, the staff members at this level have had difficulties in sustaining their livelihood with their low salaries. Because of this the staff members need to have other jobs resulting in short working hours at the health station and lower commitment to the work. (STAKES 1999, 8.)

Each commune consists of a number of villages. Previously a nurse was providing outreach services at this level working in close collaboration with the farmers' association, but presently the system is under reorganization. The aim, however, is to have these outreach services available in all villages. (STAKES 1999, 9.)

The Nghệ An Pediatric Hospital (NAPH) is one of the six pediatric hospitals in Vietnam. It is the only pediatric hospital for the North Central Coast region, responsible for a large geographical area including the whole Hà Tĩnh Province and parts from Provinces Thanh Hòa and Quang Binh as well as three provinces from Laos. (STAKES 1999, 14.)

In North Central Coast, which Nghệ An province is part of the average number of health workers in a health center is 5,4, in particular 0,45 doctors, 1,4 midwives and 3,54 other staff. All communes have a midwife in a health center, but only 31% have a doctor. (GSO 2000, 173) There is a lack of second-level midwives and the distribution of health personnel is not optimal, most of the staff works at the centers, fewer staff work in rural, remote areas. The low level of knowledge and qualifications of the health staff is regarded as a problem. The provincial health authorities realize that they have big challenges ahead in order to fulfill the needs for better health care services among the population when facing, at the same time, diminished and limited financial resources. The improvement of the capacity of the health personnel is considered as one important tool in this. (STAKES 1999, 14.)

4.3 Policy Papers Guiding Promotion of Nutrition in Vietnam

Green and Kreuter (1991) state that before a project plan can be implemented, it must be examined from the standpoint of its fit with the existing policy. Therefore, we present selected points from three policy papers guiding nutrition promotion in Vietnam. These are *National Programme of Action for Survival, Protection and Development of Children in Vietnam 1991-2000*; *National Plan of Action for Nutrition 1996-2000*; and *Ministry of Health Circular No. 7, Guiding the Contents of Primary Health Care*. The new National

Plan of Action for Nutrition 2001-2005 is still undergoing the process of approval by the Government of Vietnam (UNICEF 2000, 74).

In 1991 Vietnam adopted a *National Programme of Action for Survival, Protection and Development of Children in Vietnam 1991-2000 (NPA)*, aiming at significantly improving the lives of children and women by the year 2000. The document sets the targets for the year 2000, which include:

- 1) Reduction of infant mortality rate (IMR) from 46 to 30 and the under 5 mortality rate (U5MR) from 81 to 55 (per 1,000 live births).
- 2) Reduction of incidence of malnutrition among children under five from 41.8% to 35% in 1995, and to 30% in 2000.
- 3) Xerophthalmia will be eliminated and incidence of goiter will be halved in those areas covered by iodine deficiency disorder control programme. (NPASPDC 1990,16-17.)

The same program of action lists nine major programs targeted to promote child nutrition, namely growth monitoring; promotion of breastfeeding; control of iodine deficiency disorders; control of Vitamin A deficiency; control of anemia; promotion of household food security; food and nutrition monitoring; nutrition rehabilitation; and nutrition education. (NPASPDC 1990, 24-28.)

National Plan of Action for Nutrition was ratified 1995. This paper sets in place principles in promotion of nutrition, which include:

- 1) Encompassing health programmes targeted at high-risk groups, such as children or very poor families, working within a framework of a community based health care. In order to be successful, this requires many different groups to work together.
- 2) Targeting micronutrient deficiencies to reach Vietnam's full intellectual and physical potential.
- 3) Communicating the importance of good nutrition through health education by health staff, agricultural staff and village volunteers.

The major strategy in *National Plan of Action for Nutrition* at national level is the support of diversified food production, like production of fruits, vegetables and pulses, and farming

of small livestock and fisheries. At the individual level, the major strategy is the support for improving family food production.

The third policy paper guiding the promotion of nutrition is *Ministry of Health Circular No.7 (1997), Guiding the contents of primary health care*. This circular lists 10 essential elements of primary health care in Vietnam, which include health education and proper nutrition. The health sector is given responsibility to provide technical inputs to develop health education programs, and responsibility to cooperate with related sectors. The same circular makes commune health centers responsible for the collection of data and for doing the first analysis of the basic health information e.g. on prevailing health situation. (MOH Circular No.7 1997.)

5 GENERAL ASSESSMENT OF BEHAVIORAL AND ENVIRONMENTAL FACTORS AFFECTING CHILD NUTRITION

5.1 Assessment of Behavioral Factors Affecting Child Nutrition

5.1.1 Parents' Child Care Practices Related to Nutrition

The first part of *phase three* in the PRECEDE-PROCEED -model (Green & Kreuter 1991, 28) consists of identifying the specific health-related behavioral factors that are linked to the selected health goal. The focus of this study is children's nutrition, for which *care for children* is noted as one underlying determinant in the Smith and Haddad -model (2000). Referring to *care for children*, in this study, we use the term *childcare for nutrition* meaning the practices (i.e. behaviors) of the caregivers in the household, which translate food security and health-care resources into child's growth and development.

In this chapter we will rate the importance of behaviors linked to child's nutritional status in general level. Green and Kreuter note that the importance of a behavior is indicated if it is clearly linked to the health problem. Such a relationship can be inferred from a thorough literature review, which we have done. (Green & Kreuter 1991, 136.) Later on (chapter 5.1.3) we will look at the changeability of the behaviors rated more important. Thereafter, the prevalence of the prioritized behaviors in Vietnam will be examined in research task two (chapter 9.2). That will finally determine the importance of behaviors as a target for interventions in Vietnam.

Engle (1997, 29-34) divides *childcare for nutrition* in the following five practices of caregivers:

- 1) Breastfeeding and complementary feeding.
- 2) Food preparation and food hygiene.
- 3) Hygiene practices.
- 4) Home health practices.

- 5) Psychosocial care. Not only the practices themselves, but also the ways they are performed are critical to child's growth and development.

Later on, Engle, Menon and Haddad (1999) add to the list by breaking the first group into more specific practices:

- 1.1) Initiation of breastfeeding within first hour.
- 1.2) Breastfeeding on demand.
- 1.3) Development of skills of breast milk expression.
- 1.4) Protection from commercial pressures for artificial feeding.
- 1.5) Ensuring adequate intra-household food distribution.
- 1.6) Appropriate response to poor appetite in young children.

Four of these practices we consider as behavior of caregivers. Two of them, namely development of skills of breast milk expression and protection from commercial pressures for artificial feeding we consider as factors enabling child feeding behavior of caregivers that will be discussed more in chapter 5.1.2.

A number of studies have found correlation between care practices and child growth or daily energy intake. Range, Naved and Phattarai (1997) found important factors contributing to poorly nourished children: early introduction of complementary food and the absence of specially prepared food items in the child's diet. In Thailand, a study by Durongdej, Pravahanavin and Sacholvicharn (1987) found that consumption of colostrum, current breast-feeding, and well-baby clinic attendance, were among factors determining well-nourished children. Another study in Sudan found that illness and the age of introduction of complementary foods were the most important determinants of gain in both weight and length during the first year of life; infants given complementary food later gained more than those to whom foods were introduced at an earlier age. (Brush, Harrison & Zumrawi 1993.) In the Philippines, Adair et al. (1993) studied determinants of growth of approximately 3000 infants from birth to 24 months. Full breast-feeding and mixed breastfeeding were strongly associated with greater weight gain during the first six months of life compared with mixed breast-feeding or no breast-feeding, respectively.

There is some evidence on the importance of activity and persistence in child-feeding situations. In Mexico, 25 well-nourished infants were found to receive more physical assistance from their mothers in eating meals and snacks than 25 age-matched malnourished infants in the same low-income squatter community (Zeitling & Ghassemi 1986). Similar finding was observed by Zeitling, Houser and Johnson (1989): more active feeding behaviors were associated with increased dietary intake and greater anthropometric scores. Another study finding reflects the importance of breastfeeding on demand. A common practice among mothers in rural Bangladesh is to interrupt breastfeeding sessions for various reasons. The mothers with well nourished children were nine times more likely to breastfeed until the breasts were emptied compared to mothers with poorly nourished children. (Range, Naved & Bhattarai 1997.)

The latest WHO (1998, 167-168) recommendations regarding appropriate feeding practices are:

- 1) Full term infants with appropriate weight-for-gestational-age should be exclusively breast-fed until about six months of age.
- 2) Children should continue to be breast-fed for up to two years of age or beyond, while receiving nutritionally adequate and safe complementary foods.
- 3) Once complementary foods are introduced at about 6 months, special transitional foods (foods with semi-solid consistency and adequate energy and nutrient densities) are recommended. Most infants are able to consume chopped or mashed family foods by the end of the first year of life.
- 4) Breast-fed infants from 6-8 months of age should receive, in addition to breast milk, at least two or three meals per day, depending on the population's nutritional status and the likely energy density of complementary foods. Breast-fed infants older than eight months should receive at least three meals per day.

Of all the behaviors linked to child nutrition we found strongest research evidence on breastfeeding and complementary feeding practices. On this basis we rated breastfeeding and complementary feeding as the most important behaviors of caregivers in general level. Table 1 presents the result of our examination and classifies the behaviors linked to child

nutrition into more important and less important as guided by the PRECEDE-PROCEED - model. Chapter 5.1.3 continues examining changeability of breastfeeding and complementary feeding practices.

TABLE 1. Rating importance of behaviors related to child nutrition.

More Important	Less Important
<ul style="list-style-type: none"> • Breastfeeding and complementary feeding <ul style="list-style-type: none"> ○ Initiation of breastfeeding within first hour (including colostrum) ○ Breastfeeding on demand ○ Exclusive breastfeeding until about six months of age ○ Breastfeeding up to two years of age ○ Introduction of nutritionally adequate complementary foods at about six months ○ Special transitional foods to children from six months to about one year of age ○ Appropriate response to poor appetite in young children ○ Two to three meals per day prepared for infants from six to eight months ○ Three meals per day prepared for infants older than 8 months ○ Adequate intra-household food distribution 	<ul style="list-style-type: none"> • Food preparation and food hygiene • Hygiene practices • Home health practices • Psycho-social care

5.1.2 Factors Constraining Caregivers in Providing Child Care for Nutrition

Phase four in the PRECEDE-PROCEED -model (Green & Kreuter 1991) further examines what are the causes of those behavioral and environmental conditions linked to health status. Accordingly, next in this study we review literature and studies to find what is known about the causes of *child care for nutrition* practices in general. These causes we will then group into predisposing, enabling and reinforcing factors as guided by the model. Then research task two examines which of the causes are found in Vietnam. The final rating of these causes in terms of importance should be done based on the prevailing situation by each factor in the target area.

WHO (1998, 111) lists groups of major factors that may constrain caregivers in their ability to provide care: 1) Caregiver's education, knowledge, and beliefs. 2) Workload and time constraints. 3) Caregivers' health and nutritional status. 4) Mental health, stress, and self-

confidence. 5) Autonomy, control of resources, and intra-household allocation. 6) Social support from family members and community. Resources for care mentioned in the Smith and Haddad -model (2000) are more or less the same as these.

The following section discusses some research in consistent with *childcare for nutrition* practices and particular conditions linked to them. Firstly, with regard to education, knowledge and beliefs, mothers' access to knowledge is found as one important key factor contributing to children's nutrition (Range et al. 1997), and mothers with more schooling are observed often to have greater nutritional knowledge (Ruel, Habicht, Pinstrup-Andersen & Grohn 1992). Concerning beliefs, there is some evidence that mothers who feel that a child who refuses food should be encouraged to eat more have better nourished children than those who feel that a child's refusal should not trigger additional food. (Engle & Riccuiti 1995.)

Referring to the second group of factors, workload and time constraints, Engle (1992) found that in the first year of life care by anyone but mother or a competent adult can be associated with higher mortality. Leslie's (1995) summary of findings suggests the possibility of negative outcomes for children of mothers who worked during the first year of life.

With regard to social support, Littman, Medendorp and Goldfarb (1994) note that fathers may provide a particularly important source of emotional or informational support. Fathers' opinion about childcare can have significant effects on decisions about infant feeding and particularly breast-feeding. Another finding refers to autonomy and control of resources. LaMontagne, Engle and Zeitlin (1998) observed poorer anthropometric status for children of women who have little security of income.

The PRECEDE-PROCEED –model guides that for each behavioral priority needed skills should be identified. (Green & Kreuter 1991, 164-165). Some project designs have included training in such practical skills as food preparation for infants and hand expression of breast milk (Sternin, Sternin & Marsh 1997, 49; Valdés 2000). Additionally, physical

consequences of behavior like a child gaining or losing weight, provide positive (or negative) feedback and is supported socially (Green & Kreuter 1991,165).

Current evidence suggests that programmatic interventions to improve complementary feeding are not likely to succeed unless they incorporate a consideration of both behavioral factors and constraints to care in their designs (WHO 1998, 118). This is in accordance with the PRECEDE-PROCEED –model, which refers to resources or barriers that can help or hinder the desired changes (Green & Kreuter 1991, 29, 153). Table two presents the causes of *childcare for nutrition* practices divided into predisposing, enabling and reinforcing factors.

TABLE 2. Categorizing factors affecting behavior related to childcare for nutrition.

Predisposing factors	<ul style="list-style-type: none"> • Caregivers’ education, knowledge and beliefs
Enabling factors	<ul style="list-style-type: none"> • Workload and time constraints • Caregivers’ health and nutritional status • Mental health, stress and self confidence • Autonomy, control of resources and intrahousehold allocation • Practical skills of caregivers such as food preparation for infants and hand expression of breast milk • Protection from commercial pressures for artificial feeding
Reinforcing factors	<ul style="list-style-type: none"> • Social support from family members and community • Feedback given in growth-monitoring sessions of a child gaining or losing weight

Noting the objective of component three in the Finland-Vietnam Child Health Care project, it seems that there is made a decision to address knowledge and beliefs of population only. As we have seen, there are also enabling and reinforcing factors that can affect caregivers behavior. The project intervention planned to assess situation in the project site is Knowledge-Attitudes-Practices (KAP) survey (STAKES 1999, 35). The survey may reveal other constraints of caregivers. In research task two (chapter 9.2) we review literature and analyze records of our interviews to contribute to formulation of KAP-questionnaire. The result of the KAP-questionnaire will produce valuable information about the prevalence of

behaviors and contributing factors in the target area. Thereafter, gained information enables the final rating of each in terms of importance.

5.1.3 Changeability of Breastfeeding and Complementary Feeding Behavior

Phase three in the PRECEDE-PROCEED –model rates behaviors in terms of changeability. The judgments on changeability can be based primarily on evidence that the behavior has responded to interventions in previous studies and programs. (Green & Kreuter 1991, 137.) For assessing changeability of child feeding behavior and its determinants, we review some research findings on the effectiveness of nutrition programs in general. All these studies are conducted in the developing countries. Research task two examines the prioritized nutrition related factors in Vietnam to rate the importance.

There is strong evidence that knowledge and practices regarding complementary feeding can be improved through well-designed nutrition education campaigns. However, whether or not this translates into improvements in growth and other outcomes needs further evidence. (Dewey 2000.) For example, in rural Bangladesh, a nutrition intervention consisted of in-home demonstrations of nutritious snacks and messages of nutrition and hygiene. A significant difference was found in the weight-for-age between intervention group and control group. (Brown et al. 1992.) However, in the Congo, mothers were invited to take part in nutrition-education sessions, where local educators encouraged recommended feeding practices and demonstrated the preparation of improved complementary foods. Mothers' knowledge of the key messages improved, but there was no evidence of improvement in growth of children. (Treche 1997.)

When nutrition-education trials include an emphasis on breastfeeding, not just improved complementary foods, a growth effect is likely to be observed (Armstrong 1995; Dewey 2000). Numerous efforts have been made to improve complementary feeding and breastfeeding practices in developing countries through nutrition education. Caulfield, Huffman and Piwoz (1999) recently reviewed 16 such programs. In many cases, the

messages covered not only what to feed, but also how to feed it, including the need for patience and persistence. Most programs reported large shifts in maternal knowledge and practices, like reduction in percentage of mothers who introduced complementary foods too early, and substantial increase in the usage of specific foods for child. Five studies included an evaluation of changes in infant growth, of which four reported a positive impact. (Caulfield et al 1999.)

The evidence shows that most impact is likely to be observed when complementary feeding messages are incorporated into a comprehensive program to meet the needs of both women and children (Dewey 2000). An example of this is the WHO/UNICEF strategy called Integrated Management of Childhood Illness (IMCI). IMCI is a comprehensive program to improve child health and reduce deaths from major childhood illnesses. The program includes extensive guidelines for both health workers and parents on child feeding (WHO 1998, 5). Evaluating the impact of the nutrition-counseling component of the IMCI, a weight gain and a change in weight-for-height z-score was observed among children of the intervention group older than 12 months compared with children in the control group (dos Santos & Victoria 1999).

Another approach used to incorporate complementary feeding into health programs is the Hearth model (Berggren 1997, 43), which focuses primarily on the rehabilitation of malnourished children. This approach is being used successfully in countries such as Vietnam, Bangladesh and Haiti. It is intended to function as part of a comprehensive program that includes growth monitoring, deworming, vitamin A and iron supplementation, and treatment for infectious diseases. Volunteer mothers from the community are trained to conduct feeding sessions in their homes, intended to provide malnourished children with one nutritious meal per day in addition to their normal diet. Mothers attend with their malnourished children each day during two-week rehabilitation period, to learn how to prepare nutritious foods. The meals fed during the sessions are usually developed by determining which foods are fed by low-income mothers in the same community whose children are well nourished. The impact has been formally evaluated in Vietnam. Within

two years, the prevalence of severe underweight (<-3 WAZ) decreased from 23% to 6 %. (Berggren 1997, 58.)

The Credit with Education -program in Ghana couples a micro-credit program for women with education in the basics of health, nutrition, birth timing and spacing, and small business skills. The project evaluation showed large impact on feeding practices such as giving colostrum (60% vs. 98%). The project had also a significant impact on child weight and height. (MkNelly & Dunford 1998.)

Earlier in this study (chapter 5.1), we made a decision that of all practices of caregivers regarding *childcare for nutrition* we would focus on breastfeeding and complementary feeding only. In this section, we found evidence to support that targeting these two practices of caregivers, growth effect is likely. It should be noted that most educational interventions also included practical skills training on preparation of complementary food.

Effectiveness increases if the programs address the needs of children and women more broadly, such as through deworming, vitamin A and iron supplementation, treatment of infectious diseases, and food security by providing micro-credit loans. However, considering the limited financial resources for the Finland-Vietnam Child Health Care Project and that the component three plays a minor role in it, it is better to keep interventions as focused as possible. In chapter 5.1.1 breastfeeding and complementary feeding practices were rated as the most important behaviors linked to child nutrition. This chapter provided evidence on changeability of these practices.

5.2 Assessment of Environmental Factors Affecting Child Nutrition

Environmental factors are the causes in the social and physical environment that can be linked to behavior identified, in this case breastfeeding and complementary feeding practices (Green & Kreuter 1991, 126). For identifying the environmental causes we used the Smith & Haddad –model and reviewed literature. The judgment on importance and

changeability is based on evidence of successful interventions. The rating takes into account the limited financial resources reserved for the component three in the Finland-Vietnam Child Health Care Project. Table 3 presents and rates the environmental factors in terms of importance and changeability.

In the following is addressed the basis for rating in table 3. The Smith and Haddad model indicated household food security as one factor affecting child nutrition. Although it is important, improving household food security requires considerable financial resources and co-operation with agriculture or other sectors. It is not indicated as a target in the Finland-Vietnam Child Health Care Project.

Availability of health care for treatment of diseases is seen as one environmental factor in the Smith and Haddad model as well as in the PRECEDE-PROCEED –model. It is rated as less important since the density of health care network in Vietnam is considered fairly good compared to many neighboring countries (UNICEF 1994). However, if further information in the target area indicates any need for strengthening the service provision, the selection of it as a target for interventions can be reconsidered. The access to safe water in Vietnam is better than regional mean figure. Use of adequate sanitation is lower than regional mean figure, but requires financial resources and co-operation with other sectors. We have also described successful nutrition interventions without interventions to construct sanitation facilities. As the lowest in priority order falls infectious diseases, due to difficulties to have an impact on the incidence of infectious diseases in a few years program.

TABLE 3. Rating importance and changeability of environmental factors linked to breastfeeding and complementary feeding.

	More Important	Less Important
More Changeable	<ul style="list-style-type: none"> • Availability of growth monitoring • Availability of nutrition information 	<ul style="list-style-type: none"> • Availability of health care for treatment of diseases • Safe water supply • Adequate sanitation
Less Changeable	<ul style="list-style-type: none"> • Household food security 	<ul style="list-style-type: none"> • Infectious diseases

Rating of importance will be further complemented in terms of prevalence in Nghê An province in research tasks three and four. In the following, we briefly talk about growth monitoring, and Social-Marketing as a method for providing nutrition information. It also provides evidence for rating.

5.2.1 Growth Monitoring in the Promotion of Child Nutrition

Having reviewed number of studies and reports on successful nutrition projects we bring up one environmental factor that is common to all those projects: availability of growth monitoring.

Growth-monitoring is probably the only visible way to demonstrate child growth or its faltering to parents and other caregivers. It also provides an opportunity for health education (WHO 1999, 34). A supporting observation about importance of regular growth monitoring comes from a study by Durongdej et al. (1987), which found that baby clinic attendance was one factor determining whether or not babies were well-nourished.

The projects reviewed in this paper have all incorporated intervention to strengthen growth monitoring. For example, the nutrition intervention program in Bangladesh and the Hearth model in Vietnam included bimonthly growth monitoring and counseling for under two children (Berggren 1997; Filoramo 1997). In a community-nutrition project in Senegal services included monthly growth monitoring (Marek, Diallo, Ndiaye & Rakotosalama 1999).

UNICEF (1990-1, 23) emphasizes the importance of growth monitoring noting that it provides the most important tool for parents, communities and officials at district and local levels to obtain information about child nutrition. If the full potential of growth monitoring for growth promotion is to be realized, weighing should take place monthly from birth to at least 18 months of age, and sessions should be limited in size so that counseling can be conducted properly.

5.2.2 Social Marketing in the Promotion of Child Nutrition

Communication is an intervention strategy to change predisposing factors like knowledge, attitudes, beliefs and perceived needs, which relate to the motivation of an individual to act. (Green & Kreuter 1991). Engle (1997) notes the importance of communication in nutrition projects: “By information, education and communication we can strengthen human resources, like parents’ knowledge, which can have direct effects on *child care for nutrition* practices”. WHO (1999, 32-33) view nutrition education as one major programmatic option for promoting improved complementary feeding. Educational messages may be designed either to influence general feeding behaviors, or to transfer more detailed information on specific recipes for improved complementary foods. Communication of these messages may rely on traditional educational techniques or social marketing methods.

The Finland-Vietnam Child Health Care Project has selected health education as the main intervention in component three. The project will only reserve some funds to support other limited interventions (STAKES 1999, 34-35). We have chosen to present the social marketing approach as an option for health-education strategy, due to positive experiences found in the literature (Manoff Group, Inc. 1991; Parlato, Fishman & Creen 1994). We describe briefly lessons learned in applying social marketing and requirements that its application sets for assessment phase.

Social marketing is a systematic approach for improving child nutrition, for example, by improving household practices, and by enhancing use of health services. Social marketing assists in bringing programs closer to community needs and thus enhances the potential for success. (Griffiths 1994.)

Final evaluation results (AED 1996, 11) from six country projects applying social marketing strategies, contained lessons learned:

- 1) Importance of identifying specific action-based behaviors that are realistic given the audiences time and economic constraints and their preferences.

- 2) Ensuring that the target population is exposed to the messages frequently (AED 1996, 11; Manoff Group, Inc. 1991, 13.)
- 3) Interpersonal and mass media channels need to be examined to calculate how many people can be reached and how frequently. Thus, careful selection of a mix of media, where mass media and community outreach components play a crucial role.
- 4) Entertainment formats are immensely popular and can be powerful ways of introducing new concepts, information and skills to the target audience. (AED 1996, 13.)

In searching for creative solutions social marketing uses formative research. That is, program designers go to the communities and to the consumers, to find out what they want. This helps the designers shape the product service, or concept and to fine-tune the promotional angle. (Griffiths 1994.)

In the project formulation phase, the six nutrition communication projects discussed above used following research methods: 1) analysis of village health information sources 2) qualitative research, like focus group discussions and in-depth interviews to identify messages and media 3) nutrition related Knowledge-Attitudes-Practices survey 4) dietary recall, 5) market studies to identify locally available food, and 6) ethnographic studies. (AED 1996, 92-93.)

5.3 Consideration of Evaluation in the Assessment Phase of Nutrition Programs

Another strength of the PRECEDE-PROCEED -model is, that by following the planning phases carefully, it provides criteria for evaluation. Evaluation thus becomes integral and continuous part of working with this model. The criteria for evaluation fall naturally from the health, behavioral, learning and resource objectives defined in the corresponding steps of phase one to phase five, bearing in mind that objectives have to state *who* is expected to experience *how much* of *what change* by *when*. (Green & Kreuter 1991, 22-24, 29, 118.) As a final product of this study, having examined research tasks, we will suggest tentative objectives and indicators for the Finland-Vietnam Child Health Care Project.

Because sound evaluation design sets some requirements for collection of baseline data, in the following, a review of some recommendations: It is important to identify the malnourished cohort in both intervention and control populations with a prospective 100% weighing, not the retrospective selection of those children who voluntarily participated in weighing. Socioeconomic and demographic characteristics of the target group and control group are needed so that the two groups can be shown to be matching. (Burkhalter & Northrup 1997, 41.)

Measurement of height at the same time as weight would allow determination of the impact of the program on both wasting and stunting, as well as a more precise assessment of the nutritional status of the population at the beginning and end of the program. (Burkhalter & Northrup 1997, 41.)

When the intervention area is large, Burkhalter and Northrup recommend assessing randomized representative sample of the total child population. Then, findings can be used as a measure of public health. By confining the monitoring of changes to only the malnourished children, the potential of the intervention to influence community behavior beyond the participants and to change the proportion of malnourished children in the whole population cannot be determined. (Burkhalter & Northrup 1997, 38-40.) Dewey (2000) agrees, noting that randomized design to compare outcomes before and after implementation in program and control communities would allow attributing the changes observed directly to the programs.

6 RESEARCH TASKS

Research tasks continue the process of prioritization and reveal causes for behavioral and environmental factors found in Vietnam. Once the priority health problem, target behaviors, environmental factors and factors affecting prioritized behavior and environments are defined as far as possible, we will develop a list of objectives and indicators, as guided by the PRECEDE-PROCEED –model.

6.1 Research Task One

Our first research task examines the aspects of child nutrition in Vietnam and rates these in terms of importance. The basis for rating is the prevalence in Vietnam measured by each indicator. UNICEF notes child malnutrition comprising of four aspects: protein-energy malnutrition, iodine deficiency disorders and deficiencies of iron and vitamin A. Malnutrition can take a variety of forms that often appear in combination and contribute to each other. (UNICEF 1998, 14.) There are commonly used indicators to measure these aspects of child nutrition, some of which are service delivery indicators. Service delivery indicators are often used due to simplicity and cost.

Globally, micronutrient deficiencies affect at least one third of the population of developing countries. These deficiencies are more prevalent than protein-energy malnutrition, in part because the cheapest foods, which the poor eat to meet their energy needs tend to have the lowest content of available micronutrients. (Mason et al. 2001.) Vitamin A deficiency has widespread effects on health and response to infection (Underwood 1998). A meta-analysis of eight intervention studies showed that providing high dose vitamin A supplements to children in deficient populations reduced mortality by an average of 23% (Beaton et al. 1993). In the countries where vitamin A program is in place, it is commonly assessed the efficiency of vitamin A capsule delivery instead of assessing the prevalence of vitamin A deficiency.

Goiter is the sign most commonly assessed for iodine deficiency disorders (IDDs). IDDs cause neuromotor and cognitive impairment, especially in pregnancy; mild deficiency is common and leads to impaired educability and other cognitive effects (Stanbury 1998). Meta-analysis of 18 studies in deficient populations gave an estimated reduction of 13.5 IQ points (Bleichrodt, Escobar del Rey, Moreale de Escobar, Garcia & Rubio 1989). Interventions to reverse IDDs have been associated with substantial reduction in infant and child mortality (Cobra et al. 1997). In the countries where universal salt iodization program is in place, the iodine situation is often monitored by assessing the prevalence of households consuming iodized salt.

Iron deficiency is a major cause of anemia. Iron deficiency (for which anemia is taken as an indicator) has a range of negative consequences, including lowered immunity and compromised cognitive development (Viteri 1998).

Besides reviewing the available data, we chose to examine the concerns that mothers and health care staff members have on child health and nutrition, as the phase one of the PRECEDE-PROCEED -model guides considering local people's own perceptions.

Research task one: What is the prevalence of a) undernutrition, b) vitamin A capsule supplementation, c) anemia among under-five children and d) households consuming iodized salt in Vietnam? Which are the concerns of mothers and health care staff members related to children's' health and nutrition in Nghê An province?

6.2 Research Task Two

Earlier, (chapter 5.1.1 and 5.1.3) we prioritized breastfeeding and complementary feeding practices out of all the behaviors affecting child nutrition. The WHO recommendations (chapter 5.1.1) provide inventory of desirable parents' feeding practices contributing to child nutrition. For continuing rating of importance of behaviors as a target for interventions we will examine the available data on the current breastfeeding and

complementary feeding practices in Vietnam. We expect to prioritize behaviors based on their prevalence in Vietnam. We will also examine our interview data to reveal predisposing, enabling and reinforcing factors affecting the particular feeding practices in Nghê An province. In the following there is presented research findings and the recommendations on desirable behaviors that we compare the data with.

WHO (1998, 168) recommends that children should continue to be breast-fed for up to two years or beyond, while receiving nutritionally adequate and safe complementary foods. Frequent exclusive breast-feeding is critical for stimulating optimal milk production, especially during the first few weeks of life (Daly & Hartmann 1995). There is evidence that breastfeeding and particularly colostrum protects against infectious diseases (Clavano, 1982; Mata, Allen & Jimenez 1983; Pichaipat, Thanomsingh & Tongpenyai 1993; Saadeh 1993).

Full term infants with appropriate weight-for-gestational-age should be exclusively breast-fed until about six months of age. Complementary foods should only be introduced at this age. (WHO 1998, 167-168.) Exclusive breastfeeding is shown to reduce mortality in the developing countries (de Zoysa, Rea & Martines 1991). The prevalence of diarrhoea has been shown to double when water and teas are offered in addition to breast milk (Brown, Black & Romana 1989; Popkin et al. 1990). It is also shown that supplementation of breastfed children under six months of age with water and/or tea is not necessary, even in hot and humid climates (Almroth & Bidinger 1990). Additionally, intake of other foods different from breast milk may interfere with the bioavailability of key nutrients in human milk, such as iron and zinc (Saarinen & Siimes 1979).

The average amount of energy required from complementary foods for developing country children under two years is 275-750 Kcal/d and breastfed children older than eight months should receive at least three meals per day (WHO 1998, 168).

Research task two: Which breastfeeding and complementary feeding practices can be prioritized as targets for interventions in Vietnam? Which factors in Vietnam constrain caregivers in their ability to provide care for child nutrition?

6.3 Research Task Three

UNICEF (1990-1, 24) recommends that weighing of children should take place monthly from birth to at least 18 months of age. In Vietnam, the National Program of Action for Children (1991) sets a target of 50 % of children monitored regularly with growth-monitoring charts by the year 2000. The geographical area of implementation was planned to cover two-fifths of the total number of districts in 1998 and all districts in 1999. One planned step in pursuing the target was training of commune health workers to use growth-charts. (Nguyen Van Cu 1995.)

A nationwide health information system to monitor and control nutrition is under development in Vietnam. National Plan of Action for Children (1991) set as a target that by the year 2000, all provinces were to have established communication networks to monitor and control nutrition (Nguyen Van Cu 1995). A Ministry of Health Circular, Guiding the Contents of Primary Health Care, names the heads of commune health centers as responsible persons for the collection of data on primary health care activities for monitoring purposes, including data on growth monitoring and nutritional status of children. Commune health centers are in charge of not only collecting, but also of doing the first analysis of the basic information (MOH Circular No. 7 1997).

In this paper, growth monitoring in general was prioritized as an important and changeable environmental factor affecting child nutrition (chapter 5.2). The administrative documents quoted above indicate the growth monitoring as a national priority in Vietnam and confirm its importance as an environmental factor. In the research task three we will examine the implementation of growth monitoring in Nghê An province to continue assessing its importance as a target for interventions.

Research task three: What is the importance of growth-monitoring as a target for interventions in Nghệ An province?

6.4 Research Task Four

Availability of nutrition information is prioritized as another important and changeable environmental factor affecting child nutrition (chapter 5.2). Our fourth research task aims at revealing information about implementation of nutrition education in Nghệ An province. We will examine comments of interviewees comparing them to the guidance given in the nutrition policy papers in Vietnam, lessons learned by nutrition projects and evidence based knowledge of effective interventions. Thereafter, we rate the importance of nutrition education as a target for intervention.

We will assess the importance of health education as a target for interventions in Vietnam based on the following criteria: 1) Variety of health education methods used. 2) Availability of practical skills training. 3) Availability of health education material. 4) Focus of health education. 5) Variety of channels for dissemination of nutrition information. 6) Mothers' access to nutrition education. In the following paragraphs we present the basis for the selected criteria.

The National plan of Action for Nutrition (1995) gives a special emphasis to information about importance of good nutrition. For raising overall awareness among the population the target audience would need to be reached widely and ensured frequent exposure to messages, as evaluation of social marketing projects suggests (AED 1996, 11). Wide and frequent exposure to nutrition education is also the guidance given in the National Plan of Action for Nutrition (1995).

Hearth-Model, applied elsewhere in Vietnam, includes practical skills training for mothers in food preparation. Volunteer mothers from the community are trained to conduct feeding

sessions in their homes. (Sternin et al. 1997, 49.) For sustaining exclusive breastfeeding, another useful practical skill for mothers is hand expression of breast milk in the occasions that the mother needs to leave her baby behind for a few hours. Global Baby-Friendly Hospital Initiative (Valdés 2000), promoted by World Health Organization and UNICEF, defines ten steps to successful breast-feeding. The steps include this particular practical skill, which is noted to be necessary for every mother to master.

There is little guidance on the content of nutrition education in the three national policy papers on nutrition promotion. The only reference to content was a note of emphasis areas: exclusive breastfeeding, proper complementary feeding, importance of frequent meals, improvement of calorie intake by adding of fats and oils (MOH Circular 1997). Range et al. (1997) suggest that it would be beneficial for the outcome of nutrition programs to identify some key local practices, regarding child nutrition and focus health education on these. In Vietnam, the task of adapting nationwide health education programs to the characteristics of the local population is given to local level (MOH Circular 1997).

Ministry of Health is given a task to conduct nutrition education through various channels, such as the formal school curriculum, mass media and the network of community nutrition and village volunteers. The National Plan of Action for Nutrition assigned tasks for many other sectors as well in order to promote child nutrition, like Vietnam Committee for Protection and Care of Children in educating mothers on appropriate feeding practices, VACVINA in providing high quality breeding seeds, animals and technical support and Women's Union in control of malnutrition and provision of small scale credits. (Nguyen Van Cu 1995.) Ministry of Health is the sector given responsibility for providing the technical input to develop health education programs and co-operate with related sectors and mass organizations to implement them (MOH Circular, 1997).

Research Task four: What is the importance of nutrition education as a target for interventions in Nghệ An Province?

7 METHODS AND MATERIALS

7.1 Case Study

We have chosen to use case study as a research strategy in this study for the following reasons: Case studies continue to be used extensively in practice-oriented fields (Yin 1994, xiii), and investigators of international programs have discovered the importance of the case study as a serious research tool (Yin 1994, XV).

A case study is usually undertaken because one wants better understanding of one particular case. The case study design draws the researcher towards an understanding of what is important about that case within its own world, developing its issues, contexts, and interpretations. Case researchers seek out both what is common and what is particular about the case. (Stake 1994, 237-8, 242.) Case studies can be based on both quantitative and qualitative evidence. (Yin 1994, 11-14.)

Data collection for case studies can rely on many sources of evidence: documentation, archival records, interviews, and direct observation. Documentary information to be considered includes administrative documents and formal studies of the same subject under study. The most important use of the documents is to corroborate and augment evidence from other sources. One of the most important sources of case study information is the interview method. Most commonly, case study interviews are of an open-ended nature. (Yin 1994, 78,81,84.)

In this study we rely on theoretical proportions drawn from two theoretical models introduced earlier in this paper. The objectives, design and research tasks of this study reflect the models. This one of the general strategies suggested by Yin. (1994, 103.)

7.2 Collection of Data

We used following sources of evidence for the collection of data: 1) review of documents, 2) semi-structured interviews and 3) ranking of different health concerns. We interviewed mothers and health staff members to gain information and insight knowledge on childcare for nutrition and constraints/resources of caregivers to childcare for nutrition in Vietnam. We chose interviewing as one of the methods for two reasons. The first was that it is one informal method recommended by Green and Kreuter (1991). The second was Engle's (1997) statement pointing out that formal methods like questionnaires should not replace processes of community assessment through talks with the younger women and children who are not perceived as leaders of opinion and who may not speak readily in groups, but who are most directly affected by programs to improve care (Engle 1997).

We reviewed nation-wide studies and administrative documents for getting baseline data to assess child growth and childcare for nutrition practices nation-wide in Vietnam. All the chosen studies used large sample sizes. They were conducted with the technical assistance of UNICEF. Administrative documents were reviewed to gain information of the guiding regulations of promotion of child nutrition in the country.

Semi-structured interviews were conducted in the project area with health workers and with selected mothers that have under-five children. More background information on interviewees is found in Appendix 9. The interviews took place in health facilities and in villages in mothers' homes. All the interviewees were happy to participate in the discussion. The discussions were peaceful but in villages other community members gathered around to follow the situation without interfering.

The mothers were chosen incidentally in the health facilities that were selected beforehand by the government health authorities. Three interviewees were conducted in the villages chosen by us. The interviews focused on exploring child care for nutrition by caregivers and provided health care services to promote child nutrition.

A written interview schedule was prepared beforehand. Interviewing technique improved as interviews proceeded. The questions were modified more simple and concrete. At the end of each day the first brief interview notes were written up to expanded recordings adding details.

In total, seven mothers were interviewed. Specific topics in mothers' interviews were: family data, child feeding practices, breastfeeding, growth monitoring, hygiene practices, and community associations/mass organizations or other sectors that are active in promotion of child nutrition. In total, nine staff members, who work in a field of childcare, were interviewed. Specific topics in health care personnel's interviews were: education, training, daily routines, children's growth monitoring, causes of malnutrition, health education program, needs at the hospital/clinic, village health workers, projects, organizations or sectors promoting child nutrition.

7.3 Data Analysis

The specific mode of analysis in this study was pattern-matching logic. Such a logic compares an empirically based patterns with several predicted links that the models and successful programs suggest. (Yin 1994, 106.) This analysis applies to all the collected data: 1) review of documents, 2) semi-structured interviews and 3) ranking of different health concerns.

The interview data was coded and then organized in 18 categories, which enabled us quickly to find, select and cluster the segments relating to our particular research task. Then we examined the displays that were focused enough to permit a viewing of a full data set in the same location, and were arranged systematically to answer the research questions at hand as guided by Miles and Huberman (1994, 57). The method of analysis was condensation of meaning and categorization of meaning (Kvale 1996, 192-199) compared with theoretical knowledge or evidence based knowledge gained by evaluating successful nutrition programs.

Ranking of different health concerns (Appendix 8) was conducted in a workshop organized by a delegation of Finnish experts, and where writers of this study were observers. The 35 attendants were provincial and district level higher health authorities, managers from Nghê An children's hospital and members from some International Agencies supporting health sector. All attendants were divided into five groups. The groups worked individually to identify the five biggest problems of child health in Nghê An province. All identified problems were collected in a matrix and each group was given a task to prioritize five of them (indicate each by a dollar sign). In the matrix (Appendix 8) the higher ranked health concerns are indicated by a larger number of dollar signs.

8 RESULTS

8.1 Nutritional Status of Under-Five Children

What is the prevalence of a) undernutrition, b) vitamin A capsule supplementation, c) anemia, among under-five children and d) households consuming iodized salt in Vietnam?

The nation-wide MICS-survey (Multiple Indicator Cluster Survey) reports that the prevalence of moderate or severe undernutrition (-2SD) for children under five years in Vietnam is 33% for underweight (i.e. weight for age), 36% for stunting (i.e. height for age), and 6% for wasting (i.e. weight for height). Girls seem more likely to be malnourished than boys with disparity of 2-3%. In North Central Coast, which Nghê An province is part of, low weight for age proportion (39%) is the third highest of the eight regions in the country. The figures for stunting and wasting in the same region are 45%, 6%, respectively. (GSO 2000, 96.)

When the underweight prevalence is broken into age groups, it can be seen that children under one are less exposed to malnutrition than those in the other age brackets, low weight for age prevalence nationally being highest in the age of 24-35 months (40%). Between the age groups of 6-11 months and 12-23 months the increase of the underweight prevalence is remarkable, from 13% to 38%. (GSO 2000.)

The prevalence of severe undernutrition (-3SD) for children under five years nationwide in Vietnam is 6% for underweight, and 12% for stunting. Respective figures in North Central Coast are 7% for severe underweight, 16% for severe stunting.

In the period 1995-2000, the underweight prevalence in the country decreased from 42% (NIN 1995b) to 33% (GSO 2000, 96). Although studies confirmed a sustained decline of under-five malnutrition rate, the national target of 30% has not been reached. Another thing to note is that the proportion of underweight children starts increasing from the age of one,

when children's growth relies on complementary food more than breastfeeding. This implies that the cause for malnutrition in Vietnam is inadequate complementary food rather than inadequate breastfeeding.

The VAD/PEM survey in 1994 reports that in the sampling design of seven selected ecological zones in Vietnam, in none does the prevalence of active cases of xerophthalmia exceed any of the WHO cut-off points, indicating that clinical VAD (Vitamin A Deficiency) is not a significant public health problem in the country. Government of Vietnam has made considerable efforts to increase the nation-wide coverage of children with vitamin A capsules. In 2000, nation-wide 85% of children of age six to 49 months received vitamin A capsules, 60% of them within passed six months. In Vietnam, vitamin A distribution is scheduled every six months for all children of 6-36 months. Respective figures for receiving vitamin A capsule in North Central Coast are 91% and within six months 61%. (NIN 1995a; GSO 2000, 101.)

Vietnam was recognized as a xerophthalmia-free country already in 1995 indicating that the national target is achieved. Although figures show vitamin A supplementation well organized, it does not seem to reach all targeted children. The survey report notes that the survey coincided with local preparations for vitamin A supplementation campaign and may have contributed to observed result, which is lower than expected (GSO 2000, 59).

Household consumption of iodized salt in Vietnam is 61% nationwide. The result is a proportion of households that used iodized salt, as salt was tested. However, only 39% of households use adequately iodized salt (15+ PPM). In the North Central Coast region, respective figures are 54% and 26%. The last figure is the second lowest of the eight regions in the country and points to the need to promote iodized salt quality control. (GSO 2000, 100.)

The prevalence of under-five children with anemia (Hgb<11g/dl) nationally in Vietnam in 1995 was 45%. The survey divided the country into seven ecological zones. In the zone 3, of which Nghê An province is part, the prevalence was 43%, which was the second lowest

prevalence of the seven zones in the country. Nationally, the anemia rate for children was higher in rural areas (45%), especially remote areas (51%) and among children living in communes reported to be poorer (55%). The most severely affected population group in the country was children younger than two years (60%). (NIN 1995a.)

The National Programme of Action for survival, protection and development of children in Vietnam 1995-2000 set a target to reduce prevalence of malnutrition among under five children to 30% by the year 2000 (NPASPDC 1991). Thus, malnutrition is highly ranked as a problem of national priority. The national target in Vietnam was to eliminate xerophthalmia by the year 2000. Xerophthalmia is a consequence of Vitamin A deficiency. (NPASPCD, 1990.) This target is already achieved, but needs continuous follow up. There are nation-wide programs for eliminating iodine and iron deficiencies, but they have not achieved the targets as well as VAD-program.

TABLE 4. Rating of the aspects of malnutrition in Vietnam in terms of importance.

More Important	Less Important
Protein-energy malnutrition	Vitamin A deficiency
Iodine deficiency	
Iron deficiency	

8.2 Concerns of Communities Related to Child Health and Nutrition

Which are the concerns of mothers and health care staff members related to children's' health and nutrition in Nghê An province?

Referring to the phase one of the PRECEDE-PROCEED –model, we interviewed members of health staff and mothers to find out their views on child health and nutrition in Nghê An province. The recordings of interviews were first coded and classified in 18 classes. Then three classes were combined to examine comments describing child growth and nutrition. These classes comprised 1) mothers' opinion on child's health 2) mothers' view on malnutrition and 3) health care staff's view on malnutrition. The comments are presented in

Table 1 (Appendix 1). We examined the comments in the theoretical framework described in the Smith and Haddad model (2000).

Most mothers interviewed thought their children were in good health. Common health concerns included stomach problems, skin problems and 'many health problems' without being specific. Only one mother raised a concern that the growth of her children was not satisfactory.

Health problems mentioned by the health staff interviewed were dengue fever, respiratory infections, helminthes, and malnutrition. All agreed that child malnutrition is a concern in the area. Estimates of the prevalence of malnutrition varied from 10% to 50%.

As factors affecting children's health, mothers referred to *inadequate household food security* and *access to health care*. One mother said her family harvested only once a year securing rice for only about three months. Another mother told of having no money to take children to a hospital, when there was a need. This might need further investigation, since health care for under-five children is supposed to be free of charge in Vietnam (STAKES 1999, 7). Either, the treatment of under five children free of charge is not a common practice or all the mothers are not aware of their entitlements.

Health care staff members referred to *inadequate food security* by families as one reason for malnutrition. We found comments like, 'there is not enough food', 'families have not enough land for farming', 'soil of land is poor', and 'poor economic condition of families'. Health staff also referred to *child's health status* and *dietary intake* as accounting for malnutrition by comments such as 'diseases caused by dirty hands', and 'poor quality of breast milk'. Other comments referred to *resources for childcare*: 'low knowledge of parents', 'many children in a family' and 'parents work too hard'. Finally, we found a comment by health staff referring to *access to health care*, 'living in remote areas'.

Staff members made no comments that referred to inadequate feeding practices as being a reason for malnutrition. However, feeding practices were mentioned when health staff

members were asked to describe what they do when they meet a malnourished child. These comments are found in Table 2 (Appendix 2). The table comprises the comments in the class 'skills of health staff' relating to child nutrition.

Table 2 (Appendix 2) indicates that all the staff members interviewed knew something about nutrition and could give advice to mothers on child feeding practices. The comment of one staff member was interesting: A midwife said she had no idea how mothers cooked or served food for children since they lived so far away. If this were the case more widely, an assessment of the local child feeding practices would provide valuable information to help make advice more practical and to possibly bring up a need for practical skills training for mothers. A successful intervention in Vietnam of this kind has been described by Berggren (1997, 43-47).

Overall, in a group of seven mothers, only one was concerned about child nutrition, while all government health staff members interviewed had some concern for child nutrition. We found comments referring to all the immediate and underlying determinants of child nutrition described by Smith and Haddad (2000). Most of the stated reasons for child malnutrition referred to *household food security*. The second most common reason referred to *resources for childcare*, specifically the knowledge of caregivers and their time constraints.

8.3 Breastfeeding and Complementary Feeding Practices

Which breastfeeding and complementary feeding practices can be prioritized as targets for interventions in Vietnam?

We examined studies concerning child-feeding practices in Vietnam for prioritizing behaviors linked to child nutrition in Vietnam. The nation-wide MICS-survey reports that 88 percent of children under one year of age were breastfed in Vietnam in 2000 (GSO 2000, 58). Already in 1994, the median duration of breastfeeding was 17 months

(Statistical Publishing House 1996). In North Central Coast, 96% of children aged 12-15 months are breastfed, and 34% of children aged 20-23 months are breastfed. The latter figure is 7% higher than the second highest percentage of the eight regions. (GSO 2000, 58.) Comparing 1996 and 2000 survey results there has been no big change in duration of breastfeeding (Statistical Publishing House 1996). In the North Central Coast, it is slightly more common to breastfeed children for longer than any other region in the country. Overall, in the North-Central Coast the prevalence of breastfeeding is the highest in Vietnam and the duration is quite close to what is recommended by WHO.

A survey in Vietnam in 1994 reported that breastfeeding was quite frequent, averaging close to nine feeds per 24-hour period. Children were breastfed somewhat more frequently at night than during the day. However, only a minority of mothers (18%) in Vietnam initiated breastfeeding within one hour after birth, 59% within 12 hours, and some mothers (11%) even waited several days before starting to breastfeed. (Statistical Publishing House, 1996.) Another study reports that some infants may miss out on receiving colostrum. This is based on the report that some mothers expel colostrum from the breast before breastfeeding (Khoi & Giay 1994). On average, the frequency of breastfeeding in Vietnam is sufficient, but the findings that only a minority of mothers initiate breastfeeding as recommended and that some mothers expel colostrum are concerning.

In Vietnam, 74 percent of breastfed infants under four months of age and 89 percent of those four to five months are given some drink or solid food besides breast milk. The same study reports that 15% of breastfed infants are *regularly* given solid/mushy food by the age of two months. Children of age four to six months in rural areas are given solid/mushy food more likely (42%) than children in urban areas (19%). As a conclusion, another problematic aspect of infant feeding practiced in Vietnam is the provision of supplements, including plain water, at very early ages. If all liquids and foods are considered, a very substantial proportion of even the youngest breastfed infants under two months (61%) receive at least something in addition to breast milk. Thus only a minority of infants (24%) under four months and 9% under six months can be considered as truly being exclusively breastfed. (GSO 2000, 58.) In addition, not all children are introduced to complementary

food, when the need is there. Only 51% of children aged six to nine months are given solid/mushy food, while in North Central Coast only 30% of children of age six to nine months are receiving solid/mushy food. (GSO 2000, 58.) These findings are far from what is recommended.

UNICEF (1994, 74) reports that the availability of energy in Vietnam is more than 2,250 kcal/capita/day. This indicates that undernutrition in Vietnam is not a problem of inadequate food production, but instead of availability, distribution and demand. The Vietnamese diet is principally rice based with some vegetables added. Foods rich in carbohydrates contribute between 62 and 83% of energy intake in children under five. Consumption of milk and milk products is minimal even among young children. Fat consumption is also low, averaging less than half of the 18% of total energy intake recommended. (UNICEF 1994, 74-75.) The predominance of rice is of particular concern in the case of young children, because the caloric density of rice is low, and these individuals may not be able to consume enough energy and other nutrients to meet their special needs (NIN 1995b).

In poor areas of the country, it is not uncommon that a family will just have two meals in a day. In addition, since most mothers have to work in Vietnam, childcare is frequently passed to older siblings or the elderly, who generally do not take the time to prepare extra meals (UNICEF 1994, 77). As breastfed children older than eight months should receive at least three meals per day and the need increases after the termination of breastfeeding, the reported two meals a day is not sufficient (WHO 1998, 168).

Following breastfeeding and complementary feeding practices can be prioritized as targets for interventions in Vietnam: early initiation of breastfeeding, feeding of colostrum for newborns, exclusive breastfeeding, initiation of complementary feeding at the age of six months, provision of frequent meals and provision of nutritionally adequate diet.

8.4 Constraints of Caregivers in Providing Care for Child Nutrition

Which factors in Vietnam constrain caregivers in their ability to provide care for child nutrition?

In order to examine parents' child feeding practices in Nghệ An province, we interviewed health staff members and mothers. The recordings of the interviews were first coded and classified in 18 classes. Then two classes, namely 1) breastfeeding and 2) parents' child feeding practices, were combined to examine comments describing current breastfeeding and child feeding practices that indicate a need for an intervention. Table 3, of the comments about child feeding practices is presented in Appendix 3. The findings are within the group of interviewed people in Nghệ An province. They tell only what kind of practices exists, they tell little about the prevalence of these practices.

We found the following child feeding practices that indicate a need for an intervention: 1) delay in initiation of breastfeeding, 2) early termination of breastfeeding, 3) early initiation of complementary food, 4) late initiation of complementary food, 5) frequency of meals too low, 6) little variety in the diet, 7) inappropriate response to poor appetite in young children. All the practices except one (7) are the same as found in the documents earlier. The interview data suggests another behavior of caregivers to be added in the list of prioritized targets for interventions: appropriate response to poor appetite in young children.

We continued to examine the same two classes, namely breastfeeding and parents' child feeding practices searching for stated reasons for the current child-feeding behavior. Additionally, we noted comments about alternate caregiver (other than mother), since there is found a link between alternate caregivers and child's poor nutrition (Engle 1997).

The comments of interviewees are presented in Table 4 in Appendix 4. We found following stated reasons: 1) difficult labor is a hindrance to initiation of breastfeeding, 2) baby being small is a hindrance to initiation of breast feeding, 3) quality of breast milk is not always

good. 4) Child's refusal to eat mashed/solid food is a hindrance to initiation of complementary food.

Mothers' comments about delaying initiation of complementary food due to a child's refusal to eat indicate difficulties in appropriate response to poor appetite in young children. This might reflect mothers' belief that children eat naturally what they need and there is no need for persistence.

A comment referring to a poor quality of breast milk is certainly an indication of a need for more education on child nutrition, as well as the following misconception in Vietnam found in the literature review. There is a belief that colostrum is bad, even poisonous for the newborns and causes diarrhea (UNICEF 1994, 76). This might be one reason for delaying initiation of breastfeeding and discarding of colostrum. UNICEF also reports about a study indicating a need for more education to childcare takers in health and childcare. The report continues that even for those women who are properly educated in health and childcare, time is a great constraint. Additional work burdens in and out of the home may prevent women from providing proper care. (UNICEF 1994, 60.)

The statement by a midwife about delaying breastfeeding when labor is difficult is an indication of poor knowledge of a health staff member regarding breastfeeding. Studies carried out in different countries have frequently found indifference, inconsistencies, and poor attitudes and knowledge on the part of health professionals regarding breastfeeding (Giuliani 2000; Popkin, Yamamoto & Griffin 1984).

Some studies suggest that care by a caregiver younger than a teenager is associated with lower nutritional status (LaMontagne et al. 1998). Concerning alternate caregivers, our interviews revealed that there were families in Nghê An province in which the grandmother was the primary caregiver during the daytime. We also found that there were families that left their children unattended at times. We do not have information about the prevalence of these practices. Almost the same is noted by UNICEF (1994, 60) pointing out that mothers

tend to return to work for very long hours, when babies reach three to six months. Infants are left in the care of grandmothers or older children at this time.

The Finnish expert delegation organized a participatory workshop in Vinh City. Participants were divided in five groups to identify and prioritize problems in health sector in Nghệ An Province. A full table of the ranking of health problems is presented in Appendix 8. The two highest ranked problems were: 1) Poor knowledge of mothers and communities about childcare and nutrition. 2) Lack of health staff and limited professional capacity of health staff. (STAKES 1999, annex 6, 7/13.) These are the prioritized concerns by health authorities in the province. Both highest ranked problems can be seen contributing to children's nutritional status.

The table 5 presents the causal factors constraining caregivers in care for child nutrition in Nghệ An province. The local data on the prevalence of these factors in the target area will facilitate further prioritization.

TABLE 5. Categorization of the causal factors affecting to child care for nutrition in Nghệ An province.

Predisposing factors	<ul style="list-style-type: none"> • Poor knowledge of mothers regarding breastfeeding and complementary feeding • Poor knowledge of health staff members regarding breastfeeding, child care and nutrition • Harmful belief of health staff: difficult labor is a hindrance to initiation of breastfeeding • Harmful belief of health staff: baby being small is a hindrance to initiation of breastfeeding • Harmful belief of mothers: children eat naturally what they need and there is no need for persistence • Harmful belief of mothers: colostrum is bad, even poisonous for the newborns and it causes diarrhea
Enabling factors	<ul style="list-style-type: none"> • Time constraints
Reinforcing factors	<ul style="list-style-type: none"> • No feedback by peers about child care and nutrition due to poor knowledge in communities on the issue

8.5 Importance of Growth Monitoring as a Target for Interventions

What is the importance of growth monitoring as a target for interventions in Nghê An Province?

The examination is based on the interview recordings. To begin examination of research task three we extracted the class, “Mothers' Activity of Using Health Services” and refined it by selecting only comments regarding growth-monitoring services. Clustered comments are presented in Table 5 (Appendix 5).

We can conclude from Table 5 (Appendix 5) that there are families in Nghê An province that have never taken their children for growth monitoring, and that do not even know that such service is available. Secondly, there are families, which have taken their two to three-year-old children for growth monitoring only occasionally, such as once a year. Thirdly, there are families who have taken the children for growth monitoring regularly. However, we do not know what these families mean by stating regularly. In addition, none of the mothers interviewed possessed a growth-monitoring chart for her children.

The health staff interviewed believed that most parents brought their children regularly, meaning once a month during the first year, at least four times during the second year of life and at least once a year up to five years of age. This indicates that the interviewed health staff members seem to have the knowledge of importance of regular growth monitoring. However, the big difference in comments by health staff and mothers may reflect a tendency of health staff members to tell what they know is ideal. An additional fact to support this assumption is that none of the mothers possessed a growth-chart for the children.

The discrepancies found in the reports of health staff members about the coverage of growth monitoring indicate that analysis of the basic information is not operational at the health center level. A commune health center staff member told the attendance in vaccination days, when growth is also monitored, being 30-40 children. Even if a vaccination day is organized every week that makes less than 200 children a month. (Table

5 in Appendix 5). Considering there is living many thousand under five children in the coverage area of each health center, the staff member's statement that most children are growth-monitored regularly is questionable. This finding indicates a need to strengthen the capacity of health center staff in interpreting collected data.

As shown in the record of an interview of a village health worker (Table 5, in Appendix 5), there is an attempt to organize growth monitoring and collect health data on the utilization of growth-monitoring service, as well as data on child growth. However, when researchers inquired provincial health staff about this data in Nghê An province, the paper provided was a province sample result of a national nutrition survey. This implies that basic data on child growth is not collected consistently.

Based on the findings, either growth-monitoring is not yet settled as one institutionalized activity in all health facilities, or growth-monitoring service is not functioning in its full potential as described in UNICEF (1990-1, 24) recommendation. Implementation seems to be lagging behind the national target of growth monitoring. The examination indicates growth monitoring as an important target for interventions in Nghê An province. Table 6 summarizes the findings and the basis for rating.

TABLE 6. Basis for rating growth monitoring as an important target for interventions in Nghê An province.

Important	Basis for rating
Growth-monitoring	<ul style="list-style-type: none"> • Caregivers did not take their children for growth monitoring regularly • The interviewed mothers did not possess a growth-chart for their children • Analysis of the basic data on child growth was not operational at the health center level • No consistent collection of the basic data on child growth at provincial level • Skills of health center staff in analyzing the data on child growth were limited

8.6 Importance of Nutrition Education as a Target for Interventions

What is the importance of nutrition education as a target for interventions in Nghệ An Province?

To begin with the examination, we extracted the classes 1) Health Education by Health Care Staff Given to Mothers and 2) Other Organizations Supporting Health Care services/Health Education. To facilitate comparison between the comments of health service providers and mothers we divided the two examined classes in two tables. In Table 6 (Appendix 6) we present comments of health staff members and other health service providers. The comments of mothers are presented in Table 7 (Appendix 7).

The interviews indicate that two main types of health education were implemented: individual counseling and group health education, although all the health facilities researched visited did not organize group education. Where group health education was reported to take place, it was said to be regular (Appendix 6). However, it is not optimal for individual counseling to be the only method of health education in a health facility as it mainly reaches the parents of the children who are already underweight, not other parents. For raising overall awareness among the population the target audience would need to be reached widely and ensured frequent exposure to messages (AED 1996, 11).

We examined descriptions of interviewees attached to group health education to obtain an impression of the methods used. The attached descriptions indicate that health staff talked and mothers listened. Only in Women's Union meetings was there also discussion afterwards. One comment suggested that women also needed practical training (Table 6 in Appendix 6 & Table 7 in Appendix 7). These comments imply that health-education methods currently in place in these areas are conventional, traditional lecturing. Practical skills training for caretakers is non-existent according to these interviewees. Additionally, the researchers visits to health facilities demonstrated the lack of health education material. Posters on the wall comprised the only material available (Table 6, Appendix 6).

The topics of health education that the health staff interviewed mentioned were balanced diet, breastfeeding, symptoms of malnutrition, growth monitoring, vaccinations and childcare. The topics that the mothers interviewed reported to have learned about were nutrition, breastfeeding, childcare, family planning and health of a mother (Table 7, Appendix 7). All these topics are relevant and important and consistent with the current nutrition policy papers in Vietnam. However, in pursuing a better impact for nutrition programs the identification of some key local practices and focusing health education on these would be beneficial (Range et al. 1997). National level research in Vietnam is available for facilitating the selection of practices, as found out when the research task two was examined.

Besides their own health education implemented by them, health staff members mentioned other sources of health knowledge for the population, such as the Women's Union, church people, village headmen and village nurses/volunteers. Comments about VACVINA association (Appendix 6) suggest that for some reason, this organization is not active in the area.

Mothers interviewed had most often heard health education through the Women's Union. Another source of health knowledge mentioned was the health center. A mother, who was a Women's Union activist, knew that there had been an attempt to deliver health messages through headmen as well. Of these three sources of health knowledge the Women's Union was mentioned by the most mothers interviewed. (Table 7, in Appendix 7.) The service providers also mentioned the Women's Union, noting that it had support at the village level and it reached mothers most easily (Table 6, in Appendix 6).

A comparison of the interviewees' comments on the used health education channels to the National Plan of Action for Nutrition (1995) suggests that all recommended channels are not in use, such as Vietnam Committee for Protection and Care of Children, VACVINA association, the school curriculum and media. An effective use of several of these channels would contribute to a greater exposure to messages.

The UNICEF-Government study reveals some information about the sources of influence within a family, thus serving in the selection of target groups and channels for nutrition education. Most women reported receiving unsolicited advice from their own parents, especially mothers, rather than in-laws. Mothers ranked mass media as the source for advice they followed most and thereafter their own mother and finally health workers. (UNICEF 1994, 125-126.)

To gain some understanding about how health education reaches the population in Nghê An province, we examined mothers' comments about their attendance to health education sessions (Table 7, Appendix 7). In short, two mothers attended health education sessions regularly, but both were Women's Union activists. Some mothers attended health education sessions a few times a year. Some mothers had never attended any health education session about nutrition. Thus, for one reason or other, not all the mothers had regular access to nutrition information, which is a key factor contributing to children's nutrition (Nguyen Van Cu 1995). Although our interviews revealed little about the prevalence, we can conclude that the regular nutrition education does not reach all the population.

The examination indicates nutrition education as an important target for intervention in Nghê An province. Table 7 summarizes the findings and provides the basis for rating.

TABLE 7. Basis for rating nutrition education as an important target for interventions in Nghê An province.

Important	Basis for rating
Nutrition education	<ul style="list-style-type: none"> • Limited use of group health education • Limited use of interactive methods for health education • No practical skills training for mothers • Lack of health education material • Limited use of focused messages in dissemination of nutrition education • Limited number of channels in use for dissemination of nutrition education • Limited access to nutrition education by child care takers

9 SUMMARY OF THE RESULTS AND RECOMMENDATIONS

In this section, summarizing the results we make recommendations, and based on them propose interventions and indicators for the component three in the Finland-Vietnam Child Health Care Project. The indicators to be suggested are intended to facilitate the collection of local baseline data and thereafter setting of precise objectives. The Ministry for Foreign Affairs, Finland Guidelines (1997, 38) advises defining an optimal number of indicators, since too many or too complex indicators can be difficult and costly. The final selection of indicators, as well as of project objectives, should be made after the final rating of importance of each identified factor affecting child growth. This requires the baseline data in the target area. The rating will be based on the prevalence of each factor in the target area. (Green & Kreuter 1991, 144-145.)

9.1 Aspects of Malnutrition in Vietnam

Examining research task one, we found that 33% of under five children in Vietnam are under weight and that the cause for malnutrition in Vietnam is inadequate complementary feeding/child feeding rather than inadequate breastfeeding. The finding supports the selection of childcare practices regarding complementary feeding/child feeding as a major focus of intervention in the Finland-Vietnam Child Health Care Project.

Vitamin A supplementation for under-five children seems to be functioning fairly well, although it does not yet reach all the targeted children. However, the project should focus on disseminating information on vitamin A rich food as part of education on child feeding practices.

The Ministry of Health in Vietnam is addressing iodine-deficiency disorders through universal salt-immunization (UNICEF 1995, 109). In the North-Central Coast about half of the households consume iodized salt. Among these households barely half had acceptable

levels of iodine in salt. Iodine levels tend to reduce due to improper storage such as exposure to moisture, light and heat (WHO 1996, 4). The finding suggests that the Finland-Vietnam Child Health Care Project could focus on informing about proper storage of iodized salt at commune and household level.

Close to half of under-five children suffer from iron deficiency in Nghệ An province area. Given that nutrition education is selected as a target of intervention in the project, information about food rich of iron should be an essential part of it.

Children's nutritional status can serve as an overall indicator for all the interventions suggested above. Improvement in children's nutritional status is also in accordance with the long-term development objective of the Finland-Vietnam Child Health Care Project. If another indicator is desired for example to assess the consumption of iodized salt, there are available simple inexpensive kits for salt testing.

9.2 Concerns of the Communities about Child Nutrition in Nghệ An Province

The interviews revealed that in the group of mothers, only one was concerned about child nutrition, while all government health staff members interviewed were concerned about child nutrition. If there is only minor concern on child nutrition by the final beneficiaries in the project area, the success of the project may be at risk, since the services that will be offered may not be valued or used by communities as noted by Green and Kreuter (1991, 45).

We found comments referring to all the immediate and underlying determinants of child nutrition by Smith and Haddad (2000). The most often stated reasons for child malnutrition referred to *household food security*. In the case that household food security is widely viewed as the main cause for malnutrition, broader program approach might bring about a better impact. MkNelly and Dunford (1998) describe an example of a broader program including micro-credit loans and education on small business skills.

9.3 Breastfeeding and Complementary Feeding Practices in Vietnam

Having stated that inadequate breastfeeding is less likely to be a cause for malnutrition in Vietnam, nevertheless the general research evidence on successful interventions, supports involvement of education on breastfeeding (Armstrong 1995; Dewey 2000). Although almost all the children (96%) in the North-Central Coast are breastfed, there are a few practices that need attention, such as early initiation of breastfeeding, feeding of colostrum and exclusive breastfeeding. Findings suggest the inclusion of focused messages on these particular practices.

Considering other child feeding practices of parents the examination of research task two suggests a focus on initiation of complementary feeding for children at the age of six months, provision of frequent meals, provision of nutritionally adequate diet and appropriate response to poor appetite in young children.

Each of the above mentioned child feeding practices could be measured by an indicator. Only, that measuring nutritional adequacy of diet is costly and time consuming, unless it is conducted using community participation like in Shishu Kabar Program in Bangladesh (Filoramo 1997). The report describes baseline assessment, in which locally trained volunteer mothers carried out pictorial 24-hour diet recall with illiterate mothers.

9.4 Constraints of Caregivers in Providing Care for Child Nutrition in Nghệ An Province

Having examined factors behind parents' child feeding behavior, we found an existence of beliefs regarding initiation of breastfeeding, colostrum, breast-milk and regarding appropriate response to poor appetite in young children (Table 5). Concerning the last one Burkhalter and Northrup (1997, 20) used the word "force feeding" and suggested it as one indicator in measuring outcome in nutrition projects. Selection a change in beliefs as a target for interventions depends on the prevalence of beliefs in the project area.

The examination indicated a need for an intervention to improve the knowledge of childcare takers and health staff members on child feeding practices. It also indicated a need to take time constraints of caregivers into consideration in planning of interventions.

Additionally, we examined comments on alternate caregivers and found that there are families, where the grandmother is the primary caregiver during the daytime and families that sometimes leave their children unattended when parents go to their field. Information regarding alternate caregivers can serve in selection of target group for interventions.

9.5 Growth-Monitoring in Nghệ An Province

Having examined policy papers and comments on growth monitoring by interviewed people in research task three, we found that the caretakers do not use the growth-monitoring service regularly and that growth monitoring still needs strengthening. The findings suggest that the provincial health information system can not, as yet, provide reliable data on nutritional status of children to serve as a baseline data for the Finland-Vietnam Child Health Care Project. That being the case, the only way to obtain satisfactory baseline data for the project is to assess a randomized representative sample of the total under-five population in the target area and control area.

In research task three growth monitoring was determined as an important target for interventions. All the factors found (Table 6) can be formulated into an objective for the interventions. The objectives provide criteria for the collection of a quantifiable local baseline data and direct the planning of interventions.

9.6 Nutrition Education in Nghê An Province

The examination of the types of health education, as part of the research task four indicated that group health education is not organized in all health facilities and that health education methods in place in visited areas are conventional, traditional lecturing. Should the same situation apply in the selected target area of the Finland-Vietnam Child Health Care Project, knowing the variety of health education methods (Pretty, Guijt, Scoones & Thompson 1995), the health staff might benefit of training on health education and communication skills. Research finding by Pugin, Valdés and Labbok (1996) provides evidence for this suggestion: The use of interactive education methods contributed in achievement of significantly higher breastfeeding rate.

The examination indicated the lack of health education material in health facilities. In Vietnam, the task of adapting nationwide health education programs to the characteristics of the local population is given to local level (MOH Circular 1997). At the same time, adaptation of programs, for example, by delivering selected, focused messages is difficult for local levels to implement, unless they are provided with special financial and other resources to develop information education and communication (IEC) material for facilitating message delivery.

Practical-skills training for caretakers seems to be non-existent. Successful nutrition projects have included practical skills training in the project plan, such as preparation of special food for infants and hand expression of breast milk (Sternin et al. 1997, 49; Valdés 2000)

All the topics of health education the interviewees reported were relevant and important. However, it would be beneficial to identify some key local practices and focus messages on these, such as found in examining research task two: 1) Initiate breastfeeding within one hour after birth. 2) Yellow breast-milk is most nutritious and most appropriate food for a newborn baby. 3) Children under six months need no water, no nothing but breast-milk. 4) Children of age 6-8 months need 2-3 meals/snacks a day besides breastfeeding. Children

older than 8 months need at least three meals per day. 5) After termination of breastfeeding children need five meals/snacks a day.

As sources of health information, interviewees mentioned health staff, Women's Union, church people, village headmen, and village nurses/volunteers. All recommended channels in the National Plan of Action for Nutrition seem not being in use in the areas the researchers visited. Of the recommended channels, besides the health care system, at least mass media, Women's Union and village volunteers seem promising options for the Finland-Vietnam Child health Care Project. Ministry of Health/UNICEF has demonstrated involvement of village-volunteers in nutrition education. This pilot project focused on the training of village-volunteers and empowered them to serve communities by organizing growth monitoring and providing nutrition education. (UNICEF 2000, 46.)

Based on the examination, the Women's Union seems to be a strong and respected source of health knowledge, and is already involved in delivering health messages. Interestingly, village volunteers did not appear at all in the comments of the mothers interviewed, although the role of village volunteers is especially emphasized in the National Plan of Action for Nutrition (1995). It may be that the training of village volunteers on nutrition has not yet reached all geographical areas. Anyway, volunteers in villages are a potential resource that can be considered for dissemination of health messages by the Finland-Vietnam Child Health Care Project.

As mass media was considered by mothers as the source for advice they followed most it can not be ignored in the formulation of the project activities for the Finland-Vietnam Child Health Care Project. A study found that 60% of population in Nghê An province area report watching TV at least one hour a week, and 45% of population report listening radio at least one hour a week. It is interesting that even in rural areas people report watching TV more often than listening radio. (UNICEF 1994; NIN 1995b.)

As identifying the contributing factors to the current implementation of nutrition education, many of the findings of research task four point to the need of strengthening the knowledge

and skills of health care staff members in implementation and organization of health education. Another found factor affecting the current implementation of health education is the limited availability of health education material. Examination in chapter 4.2 brought about additional reasons like low salary and low commitment to work of health staff members, as well as limited funding to health services. Table 8 summarizes the factors found affecting current implementation of nutrition education.

TABLE 8. Categorizing the factors affecting current implementation of nutrition education in Nghệ An province.

Predisposing factors	<ul style="list-style-type: none"> • Knowledge of health staff members on effective nutrition education • Low commitment to work of health staff members
Enabling factors	<ul style="list-style-type: none"> • Lack of effective nutrition education skills by health staff members • Limited availability of health education materials • Low salaries of health staff members • Limited funding to health services
Reinforcing factors	<ul style="list-style-type: none"> • No incentives available for health staff members

10 DISCUSSION

The document review, in this study, concerning child growth, nutrition and child feeding practices is based on national or regional level data. The interviews represent an example of inside knowledge of some members in the target group. Local data was not available, but will be gathered in the beginning of the Finland-Vietnam Child Health Care Project (STAKES 1999, 35, 51). The results of this study suggest that the collection of local baseline data requires assessing height and weight of a randomized representative sample of the total under five population in the target area and a control area. Additionally, at least a questionnaire for child caretakers for assessing their behavior, knowledge and skills is needed, both in the target area and a control area. Another questionnaire is required for health facilities or other service providers that disseminate health messages. The information examined in this study can guide the preparation of such survey instruments.

The use of both qualitative and quantitative data can be seen as a strength in this study. It strengthens the validity of the findings as the results produced in part are congruent, on the other hand they complement each other.

The surveys that the quantitative data in this paper is based on are among the most reliable found in Vietnam in the area of child nutrition. The sample sizes are large, varying from 7623 to 9550 households or from 10,500 to 37,920 individuals. The sample design used in the reviewed studies is two to three -stage probability sample, stratified and clustered. (GSO 2000, 35; NIN 1995a, 13; NIN 1995b, 18; Statistical Publishing House 1996, 2.)

For the part of interviews we faced several difficulties, mainly due to the reason that they took place in another culture with another language. One constraint was the limited skill of English by the interpreter. If the resources had allowed it would certainly have been better to involve a better qualified interpreter or to train a local person to conduct the interviews and then examine the translated transcripts. Another constraint was that unfortunately the time did not allow translation of agreed interview questions from the local language into

English and back translation to check that the intended meaning was conveyed. It is noted that when more than one language is in use, translation means added time and financial costs (INFDC 1997). We also felt that using an interpreter for conducting interviews is a challenge. In spite of very precise training of the translator we sensed that at times he wanted to be helpful by summarizing and explaining responses. This kind of behavior is described by Patton (1990) as well. Another constraint faced in interviewing the health staff members was that at times we felt that they gave the “right answers” which may not reflect their own practices. One reason stated for this kind of behavior is that the health staff members are seen more as teachers than as learners by the study population (INFDC 1997).

For these reasons, the conclusions of the interviews were made cautiously. For project assessment purposes the information can not stand on its own, but needs to be complemented by a local survey data to show the distribution of concerns, behaviors and beliefs uncovered. Based on that, the final rating of importance of each factor as a target for interventions can be done.

Resources for food security is beyond the scope of this study, but following the Smith & Haddad model and the PRECEEDE-PROCEED -model it can not be ignored in the Finland-Vietnam Child Health Care Project. The link between poverty level of a family and child nutrition has been shown (Engle 1997) and the most effective nutrition projects have included household food security as one target for interventions (Berggren 1997; MKNelly & Dunford 1998). For example, the Nutritional Education and Rehabilitation Program in Vietnam included resources for food security as a target for interventions by establishing nutrition revolving loan fund for families of children who failed to gain weight after two fortnight attendance of nutrition education and rehabilitation sessions (Berggren 1997). For such collaboration National Plan of Action for Nutrition in Vietnam 1995-2000 introduces VACVINA association as a potential partner. The task of VACVINA is to provide high quality breeding seeds, animals and technical support. (Nguyen Van Cu 1995.)

Another limitation was that no decision on the geographical target area for intervention of the component three in the Finland-Vietnam Child Health Care Project had been made. If this decision was made at an earlier stage, it would have enabled interviewing people in the specified target area.

The PRECEDE-PROCEED -model has provided us a comprehensive framework throughout the examination. It clarified us the process of the assessment phase, whereas Smith and Haddad model complemented in identifying the causal factors of child growth required for application of the PRECEDE-PROCEED -model. One learning experience for us was that the baseline assessment is a process of consistent prioritization and selection. Only limited data can be obtained surveying among the target population. Besides surveyed data conclusions need to rely on literature review and discussions with the people involved. This diminishes the amount of local baseline information that needs to be collected.

Case study as a research strategy was challenging, but we felt it was the only choice for us. We would have benefited of a guidance by a more experienced case-study researcher that unfortunately was not available.

11 CONCLUSION: TENTATIVE OBJECTIVES AND INDICATORS

As the final product of this study we present a list of tentative health, behavioral, learning and resource objectives with indicators based on the examination. They are consistent with the guidance given in the PRECEDE-PROCEED –model and in line with the project objective of the Finland-Vietnam Child Health Care Project. Formulation of learning objectives follows from the identification of predisposing factors and skills. Development of organizational and resource objectives follows from the identification of reinforcing and enabling factors. (Green & Kreuter 1991, 177.)

The present objective of the component three in the Finland-Vietnam Health Project targeted to population is formulated to focus only on improving awareness. However, examining factors behind parents' child feeding behavior, we found that parents' knowledge is one resource factor among others that may constrain caregivers in their ability to provide care for child nutrition. Knowledge does not guarantee changes in attitudes nor in behavior, but it is considered a step in the process of behavioral changes (Kaplowitz & Olson 1983). In order to see whether increased knowledge causes action or interventions achieve the desired impact on child growth we propose a more comprehensive list of objectives. (Table 9).

TABLE 9. Tentative objectives and indicators for the Finland-Vietnam Child Health Care Project.

PRIORITIZED HEALTH OBJECTIVE	INDICATOR
<ul style="list-style-type: none"> • By the end of the project, 5 per cent decrease in prevalence of underweight (<-2z-scores) among under-five children in the project area. 	<ul style="list-style-type: none"> • Proportion of underweight under-five children measured by pre- and post-intervention study assessing randomized representative sample of total under five population in the target and control areas.
PRIORITIZED BEHAVIORAL OBJECTIVES	INDICATORS
<ul style="list-style-type: none"> • By the end of the project, 30 % increase in the prevalence of newborn babies in the project that were initiated to breast feeding within one hour after birth, in the target area. • By the end of the project, 20 % increase in the prevalence of exclusive breast-feeding (exclusive also water) of infants under 6 months in the project area. • By the end of the project, 20 % decrease in the prevalence of initiation of complementary feeding to infants under 6 months, in the project area. • By the end of the project 20% increase in prevalence of infants 6-8 months given 2-3 complementary meals a day, in the project area. • By the end of the project 20 % increase in the mothers, who daily prepare special food for their 6-12 months old children in the project area. • By the end of the project 20% increase in the prevalence in mothers that respond appropriately to poor appetite in young children. • By the end of the project, 20% increase in children under 18 months old in the project area, that possess a growth-chart and growth was monitored in the past month. • By the end of the project, 30% increase in the children of age 18 to 48 months in the project area that possess a growth-chart and growth was monitored in the past year. • By the end of the project, 30 % increase in the percentage of mothers in the project area that have attended to a group session of nutrition education in the passed half a year. 	<ul style="list-style-type: none"> • Proportion of newborn babies that were initiated to breastfeeding within one hour measured by a study questionnaire to mothers. • Proportion of infants under six months exclusively breastfed measured by a study questionnaire to mothers. • Proportion of infants under six months with complementary feeding initiated measured by a study questionnaire to mothers. • Proportion of infants of age 6-8 months given 2-3 complementary meals a day measured by a study questionnaire to mothers. • Proportion of mothers daily preparing special food for their 6-12 months old children measured by a study questionnaire to mothers. • Proportion of mothers that report demonstrating determination in feeding young children with poor appetite measured by a study questionnaire to mothers. • Proportion of children under 18 months possessing a growth-chart and growth monitored within the past month measured by a study questionnaire to mothers. • Proportion of children of age 18 to 48 months possessing a growth chart and growth was monitored within the past year measured by a study questionnaire to mothers. • Proportion of mothers that have attended a group session of nutrition education within the passed half a year measured by a study questionnaire to mothers.
PRIORITIZED LEARNING OBJECTIVES	INDICATORS
<ul style="list-style-type: none"> • By the end of the project, head of each health facility in the project area is able to analyze the utilization of growth-monitoring service and the prevalence of children's nutritional status in the health-facility coverage area. 	<ul style="list-style-type: none"> • Proportion of the heads of health facilities that analyzes monthly the utilization of growth-monitoring service and the prevalence of children's nutritional status in the health facility coverage area measured by the health facility records.

- By the end of the project 50 % of the adult population in the project area can recognize delivered messages and answer correctly in true-false scale.
- By the end of the project 20 % increase in the mothers of infants under 6 months in the project area, who possess a skill to express breast-milk.
- By the end of the project in the project area 20% increase in the mothers that possess a skill to prepare special food for infants.
- By the end of the project, 20 % decrease in the prevalence of health staff in the project area holding harmful beliefs such as "Difficult labor is a hindrance to initiation of breast feeding" or "Baby being small is a hindrance to initiation of breast feeding".
- By the end of the project, 30 % decrease in the prevalence of adult caregivers in the project area holding beliefs such as "Quality of breast milk is not always good" or "Colostrum is bad, even poisonous for the newborns and causes diarrhea".
- Proportion of adult population recognizing delivered health messages and answering correctly in true-false scale measured by a study questionnaire to adult population.
- Proportion of mothers of infants under six months able to hand-express breast milk measured by a study questionnaire to mothers.
- Proportion of mothers able to prepare special food for infants measured by a study questionnaire to mothers.
- Proportion of health staff holding harmful beliefs regarding initiation of breastfeeding measured by a study questionnaire to mothers.
- Proportion of adult caregivers holding harmful beliefs regarding breast milk measured by a study questionnaire to adult caregivers.

PRIORITIZED RESOURCE OBJECTIVES

- By the end of the project increased number of organized group sessions of nutrition education in the project area by health care and Women's Union.
- By the end of the project mass media is involved in delivering focused health messages on child nutrition.
- By the end of the project 20 % increase in adult population in the project area that report having received nutrition information at least from two sources within the past half a year.
- By the end of the project, extended variety of health education methods in use in the project area.
- By the end of the project growth-monitoring service is available every day in all the health facilities, in the project area.
- By the end of the project 100 % increase in the recorded growth monitoring visits in each health facility in the project area.
- By the end of the project each village in the target area have a trained village volunteer.
- By the end of the project 70 % of the trained village volunteers have conducted nutrition education session during the past half a year.
- By the end of the project all health facilities, local Women's Union and village volunteers are provided a basic set of nutrition education material

INDICATORS

- Number of organized group sessions of nutrition education organized by health care and Women's Union measured by records.
- Number of broadcast health spots in the project area measured by project records.
- Proportion of adult population reporting having received nutrition information at least from two sources within the passed half a year measured by a study questionnaire to adult population.
- Proportion of health staff members that report having used several health education methods measured by a study questionnaire to health staff.
- Number of working days in a week that growth monitoring is available measured by a questionnaire to health staff.
- Number of recorded growth-monitoring visits in each health facility measured by records in health facilities.
- Proportion of villages in the target area that have a trained village-volunteer measured by records in health facilities.
- Proportion of mothers reporting that they have attended health education session conducted by a village volunteer within the passed half a year measured by a study questionnaire to mothers.
- Number of basic sets of nutrition education material printed and disseminated to local nutrition educators indicated by the project records

REFERENCES

- Almroth, S. & Bidinger, P. 1990. No Need for Water Supplementation for Exclusively Breastfed Infants under Hot and Arid Conditions. *Trans Royal Soc Med Hygiene* 84, 602-4.
- Academy for Educational Development (AED). 1996. Final report. Nutrition Communication Project. USAID, Washington DC.
- Adair, L. S. Popkin, B. M. VanDerslice, I. Akin, J. S. Guilkey, D. K. Black, R. Briscoe, I. & Flieger, W. 1993. Growth Dynamics during the First Two Years of Life: a Prospective Study in the Philippines. *European Journal of Clinical Nutrition*, 47:42-51.
- Armstrong, H. C. 1995. Breastfeeding as the Foundation of Care, *Food and Nutrition Bulletin* 16, 299-312
- Beaton, G. Martorell, R. Aronson, K. Edmonston, B. McCabe, G. Ross, A. & Harvey, B. 1993. Effectiveness of Vitamin A Supplementation in the Control of Young Child Morbidity and Mortality in Developing Countries. ACC/SCN State-of-the-Art Series, Nutrition Policy Discussion Paper No 13. ACC/SCN, Geneva.
- Berggren, G. G. 1997. Nutritional Education and Rehabilitation Program: A Save the Children Project in Vietnam. In Wollinka, Keeley, Burkhalter & Bashir Hearth *Nutrition Model: Applications in Haiti, Vietnam, and Bangladesh*.
- Bleichrodt, N. Escobar del Rey, R. Moreale de Escobar, G. Garcia, I. & Rubio C. 1989. Iodine Deficiency. Implications for Mental and Psychomotor Development in Children. In DeLong, G.R. Robbins, J. Concliffe, P.G. Edit. *Iodine and the Brain*. New York, Plenum, 269-287.
- Brown, K. H. Black, R. & Romana, G. L. 1989. Infant Feeding Practices and Their Relationship with Diarrhoea and Other Diseases in Huascar (Lima), Peru. *Pediatrics* 83, 31-40.
- Brown, L. V. Zeitlin, M. F. Peterson, K. E. Chowdhury, A. M. R. Rogers, B. L. Weld, L. H. & Gershoff, S. N. 1992. Evaluation of the Impact of Weaning Food Messages on Infant Feeding Practices and Child Growth in Rural Bangladesh. *American Journal of Clinical Nutrition* 56, 994-1003.
- Brush, G. Harrison, G. A. & Zumrawi, F. Y. 1993. A Path Analysis of Some Determinants of Infant Growth in Khartoum. *Annals of Human Biology*, 20, 381-387.

- Burkhalter B. R & Northrup R. S, 1997. Hearth Program at the Hospital Albert Schweitzer in Haiti. In Wollinka, O. Keeley, E. Burkhalter, BR. & Bashir, N. Edit. *Hearth Nutrition Model: Applications in Haiti, Vietnam, and Bangladesh*. World Relief Corporation. BASICS. IL, USA.
- Caulfield, L. E. Huffman S. L. & Piwoz, E. G. 1999. Interventions to Improve Intake of Complementary Foods by Infants 6 to 12 Months of Age in Developing Countries: Impact on Growth and on the Prevalence of Malnutrition and Potential Contribution to Child Survival. *Food and Nutrition Bulletin* 20: 183-200.
- Clavano, N. R. 1982. Mode of Feeding and Its Effect on Infant Mortality and Morbidity. *J Trop Pediatr* 28, 287-93.
- Cobra, C. Muhilal, Rusmil, K. Rustama, D. Djatnika, Suwardi, S. S. Permaesih, D. Muherdiyantiningsih, Martuti, S. & Semba R. D. 1997. Infant Survival is Improved by Oral Iodine Supplementation. *J Nutr.* 127, 574-578.
- Daly, S. E. & Hartmann, P. E. 1995. Infant Demand and Milk Supply. Part 1: Infant Demand and Milk Production in Lactating Women. *Journal of Human Lactation* 11, 21-26.
- Dewey, K. G. 2000. Approaches for Improving Complementary Feeding of Infants and Young Children. Background paper for WHO/UNICEF Technical Consultation on Infant and Young Child Feeding.
- de Zoysa, I. Rea, M. & Martines, J. 1991. Why Promote Breast-Feeding in Diarrhoeal Disease Control Programmes? *Health Policy and Planning*, 6:371-379.
- dos Santos, I. & Victoria, C. 1999. Final Report. Evaluating the Efficacy of the Nutritional Councillng Component of the Integrated Management of Childhood Illness (IMCI) Strategy.
- Douglas, R. 1998. A Framework for Healthy Alliances, in Scriven, A. Eds. *Alliances in Health Promotion: Theory and Practice*. Macmillan, Basingstoke, 3-17.
- Durongdej, S. Pravahanavin, C. & Sacholvicharn, V. 1987. An Exploratory Approach in Identification of Risk Factors Underlying the Difference between Normal and Malnourished Children among Poor Socioeconomic Group in Urban Bangkok. Xerox.
- Engle, P. L. 1992. Care and Child Nutrition. Theme paper for the international conference on nutrition. UNICEF, New York.
- Engle, R. 1997. The Care Initiative. The Assessment, Analysis and Action to Improve Care for Nutrition. UNICEF, Nutrition section, New York.

- Engle, P. L. Menon, P. & Haddad L. 1997. Care and Nutrition. IFPRI Occasional Paper. International Food Policy Research Institute, Washington, DC.
- Engle, P. L. Menon P. & Haddad. 1999. Care and Nutrition: Concepts and Measurement. *World Development* 27 (8): 1309-1337.
- Engle, P. L. & Ricciuti H. 1995. Psychosocial Aspects of Care and Nutrition, *Food Nutr Bull.* 16, 356-77.
- Filoramo, L. 1997. Initiation of the Shishu Kabar Program in Southwestern Bangladesh. In Wollinka, O. Keeley, E. Burkhalter, B. R. Bashir, N. Edit. *Hearth Nutrition Model: Applications in Haiti, Vietnam, and Bangladesh.* World Relief Corporation. BASICS. IL, USA.
- General Statistical Office (GSO). 2000. Vietnam Committee for Protection and Care for Children. Analysis of Results of the Multiple Indicator Cluster Survey II (MICS II). Statistical Publishing House. Hanoi.
- Giuliani, E. R. J. 2000. Technical Consultation on Infant and Young Child Feeding. How Can We Increase Exclusive Breast Feeding. Background paper for WHO/UNICEF technical consultation on infant and young child feeding.
- Green, L. W. & Kreuter, M. W. 1991. *Health Promotion Planning. An Educational and Environmental Approach.* Mountain View; CA, Mayfield.
- Griffiths, M. 1994. Social Marketing: Achieving Changes in Nutrition Behaviour from Household Practices to National Policies. *Food and Nutrition Bulletin*, vol 15, No. 1.
- Hawe, P. Degeling, D. & Hall, J. 1990. *Evaluating Health Promotion: a Health Worker's Guide.* Sydney, MacLennan & Petty.
- International Nutrition Foundation for Developing Countries – INFDC. 1995. *Community-Based Longitudinal Nutrition and Health Studies: Classical Examples from Guatemala, Haiti and Mexico.*
- International Nutrition Foundation for Developing Countries – INFDC. 1997. *Hygiene Evaluation Procedures – Approaches and Methods for Assessing Water- and Sanitation-Related Hygiene Practices.*
- Kaplowitz, D. D. & Olson, C. 1983. The Effect of an Education Program on the Decision to Breastfeed. *J Nutr Educ*, 15, 61-65.
- Khoi, Ha Huy & Tu, Giay. 1994. *Malnutrition and Community Health in Vietnam.* Hanoi Medical Publishing House.

- Kvale, S. 1996. *InterViews: An Introduction to Qualitative Research Interviewing*. Sage. CA.
- LaMontagne, J. Engle, P. L. & Zeitlin, M. 1998. Maternal Employment and Nutritional Status of 12-18 Month Old Children in Managua, Nicaragua. *Social Science and Medicine*, 46, 403-414.
- Leslie, J. 1995. Improving the Nutrition of Women in the Third World. In *Child Growth and Nutrition in Developing Countries*. Cornell University, Ithaca, New York, 117-138.
- Littman, H. Medendorp, S.V. & Goldfarb, J. 1994. The Decision to Breastfeed. The Importance of Father's Approval. *Clinical Pediatrics*, 33, 214-219.
- Manoff Group, Inc. 1991. *The Weaning Project Improving Young Children Feeding Practices in Indonesia: Project overview*. Nutrition Directorate, Ministry of Health and the Manoff Group, Inc.
- Marek, T. Diallo, I. Ndiaye, B. & Rakotosalama, J. 1999. Successful Contracting of Prevention Services: Fighting Malnutrition in Senegal and Madagascar. *Health Policy and Planning*, 14, 382-389.
- Mata, L. Allen, M. A. & Jimenez, P. 1983. Promotion of Breastfeeding, Health, and Growth among Hospital-born Neonates, and among Infants of a Rural Area of Costa Rica. In Chen, L. C. Scrimshaw, N. S. Edit. *Diarrhoea and malnutrition: interactions, mechanisms, and interventions*. Plenum, New York, 177-202.
- Mason, J. B. Lotfi, M. Dalmiya, N. Sethuraman, K. Gillenwater, K. Gilman, A. Deitchler, M. Geibel, S. Mason, K. & Mock, N. 2001. *The Micronutrient Report: Progress in Controlling Micronutrient Deficiencies*. MI/UNICEF/Tulane. IDRC, Ottawa, Canada.
- Miles, M. B. & Huberman, M. A. 1994. *Qualitative Data Analysis: an Expanded Sourcebook*. Sage, Thousand Oaks, CA.
- Ministry for Foreign Affairs, Finland. 1997. *Guidelines for Programme Design, Monitoring and Evaluation*. Helsinki, Finland.
- Ministry of Health Circular No. 07/BYT-TT (MOH Circular No.7), *Guiding the Contents of Primary Health Care*. May 28, 1997. Hanoi.
- MkNelly, B. & Dunford, C. 1998. *Impact of Credit with Education on Mothers' and Their Young Children's Nutrition: Lower Rural Bank Credit with Education Program in Ghana*. Research paper No. 4 Davis, CA, Freedom from Hunger.
- National Institute of Nutrition (NIN), Vietnam. 1995a. *Anemia & Nutrition. Report of the National Anemia and Nutrition Risk Factor Survey, Vietnam*.

- National Institute of Nutrition (NIN), Vietnam. 1995b. VAD/PEM. Vietnam, Xerophthalmia Free. 1994 National Vitamin A Deficiency and Protein Energy Malnutrition Prevalence Survey. Consultancy Report by Bloem, M.W. & Gorstein, J.
- National Programme of Action for the Survival, Protection, and Development of Children of the Socialist Republic of Vietnam (NPASPDC) 1991-2000. 1991. Hanoi, Vietnam.
- Nguyen, Van Cu. (edit). 1995. National Plan of Action for Nutrition 1995-2000. Medical Publishing House. Hanoi.
- Parlato, M. B. Fishman, C. & Creen, C. 1994. Nutrition Education. In Food, Nutrition and Agriculture Review 10. FAO.
- Patton, M. Q. 1990. Qualitative Evaluation and Research Methods. Sage. CA.
- Pelletier, D. L. 1994. The Potentiating Effects of Malnutrition on Child Malnutrition and on Child Mortality: Epidemiologic Evidence and Policy Implications. Nutrition Reviews, Vol. 52, No.12. Dec 1994: 409-415.
- Pelletier, D. L. Frongillo, E. A Jr. Schroeder, D. B. & Habicht, J-P. 1995. The Effects of Malnutrition on Child Mortality in Developing Countries, Bulletin of the WHO 73(4): 443-448.
- Pichaiapat, V. Thanomsingh, P. & Tongpenyai, Y. 1993. Reduction of Postnatal Morbidity, Mortality and Budget in Nakhon Ratchasima Hospital During Breast-feeding Program Period. Thai J Epidemiol, 1, 45-52.
- Popkin, B. M. Yamamoto, M. E. & Griffin, C.C. 1984. Traditional and Modern Health Professionals and Breast Feeding in the Philippines. J Pediatr Gastroenterol Nutr, 3, 765-776.
- Popkin, B. M. Adair, L. Akin, J. S. Black, R. Briscoe, J. & Fielger, W. 1990. Breast-feeding and Diarrhoeal Morbidity. Pediatrics, 86, 874-82.
- Pretty, J. N. Guijt, I. Scoones, I. & Thompson, J. 1995. A Trainer's Guide for Participatory Learning and Action. IIED Participatory Methodology Series.
- Pugin, E. Valdés, V. & Labbok, M. 1996. Does Prenatal Breastfeeding Skills Group Education Increase the Effectiveness of a Comprehensive Breastfeeding Promotion Program? J Hum Lact 12(1), 15-19.
- Range, S. K. K. Naved, R. & Bhattarai, S. 1997. Child Care Practices Associated with Positive and Negative Nutritional Outcomes for Children in Bangladesh: A Descriptive Analysis. Discussion paper No. 24. Food Consumption and Nutrition Division. International Food Policy Research Institute, Washington.

- Ruel, M. T. Habicht, J.P. Pinstrup-Andersen, P. & Grohn, Y. 1992 The Mediating Effect of Maternal Nutrition Knowledge on the Association between Maternal Schooling and Child Nutritional Status in Lesotho. *American Journal of Epidemiology*, 135, 904-914.
- Saadeh, R. Global Breastfeeding Prevalence and Trends. 1993. In Saadeh, R. J. Labbok, M. H. Cooney, K. A. & Koniz-Booher, P. Eds. *Breast-feeding. The Technical Basis and Recommendations for Action*. World Health Organization, Geneva.
- Saarinen, U. M. & Siimes, M. A. 1979. Iron Absorption from Breast Milk, Cow's Milk, and Iron-supplemented Formula: an Opportunistic Use of Changes in the Total Body Iron Determined by Hemoglobin, Ferritin, and Body Weight in 132 Infants. *Pediatric Research*, 13, 143-147.
- Schroeder, D. G. & Brown, K. H. 1994. Nutritional Status as a Predictor of Child Survival: Summarizing the Association and Quantifying Its Global Impact. *Bulletin of WHO*, 72, 569-579.
- Smith, L. C. & Haddad, L. 2000. *Overcoming Child Malnutrition in Developing Countries. Past Achievements and Future Choices*. International Food Policy Research Institute. Food, Agriculture, and the Environment, Discussion Paper 30. February 2000.
- Stake, R. E. 1994. Case Studies, in *Handbook of Qualitative Research*, 236-247. Sage, Thousand Oaks, CA.
- STAKES. 1996. Project Proposal. Support to Child and Maternal Health Care Development in Nghê An Province, Vietnam.
- STAKES. 1999. Child Health Care Project in Nghê An Province. Project document, final draft.
- Stanbury, J. 1998. Prevention of Iodine Deficiency. In Howson CP, Kennedy ET, Horwitz A. Edit. *Prevention of Micronutrient Deficiencies. Tools for Policymakers and Public Health Workers*. 167-201. National Academy Press, Washington DC.
- Statistical Publishing House Hanoi. 1996. *Infant Feeding Practices in Vietnam*. Inter-cencal demographic survey.
- Sternin, M. Sternin, J. & Marsh, D. 1997. Sustained Childhood Malnutrition Alleviation through a Positive-Deviance Approach in Rural Vietnam: Preliminary Findings. In Wollinka, O. Keeley, E. Burkhalter, B. R. & Bashir, N. Edit. *Hearth Nutrition Model: Applications in Haiti, Vietnam and Bangladesh*. BASICS. World Relief Corporation. IL, USA.

- Treche, S. 1997. Development and Evaluation of Strategies to Improve Complementary feeding in the Congo. International workshop on infant feeding, HEINZ-UNICEF-SEAMO.
- Underwood, B. A. 1998. Prevention of Vitamin A Deficiency. In Howson, C. P. Kennedy, E. T. Horwitz, A. Edit. Prevention of Micronutrient Deficiencies. Tools for Policymakers and Public Health Workers. Pp 103 B 165. National Academy Press, Washington DC.
- UNICEF 1990-1. A UNICEF Policy Review 1990-1. Strategy for Improved Nutrition of Children and Women in Developing Countries.
- UNICEF. 1994. Vietnam, Children and Women, A Situation Analysis.
- UNICEF Vietnam 1996-2000. 1995. UNICEF–The Government of the Socialist Republic of Vietnam Country Programme of Operations. Hanoi, Vietnam
- UNICEF. 1998. The State of the World's Children. Focus on Nutrition. Oxford University Press. New York.
- UNICEF Vietnam 2001-2005. 2000. UNICEF–The Government of the Socialist Republic of Vietnam Country Programme of Operations. Hanoi, Vietnam.
- UNICEF. 2001. The State of the World's Children. Focus on Early Childhood. Official Summary. Oxford University Press, New York.
- Valdés V. 2000. Strengthening and Extending the Baby-Friendly Hospital Initiative. Technical Consultation on Infant and Young Child Feeding. Geneva-March 13-17, 2000. WHO/UNICEF. Background paper 4.
- Viteri, F. E. 1998. Prevention of Iron Deficiency. In Howson, C. P. Kennedy, E. T. Horwitz, A. Eds. Prevention of Micronutrient Deficiencies. Tools for Policymakers and Public Health Workers. PP 45 B 102. National Academy Press, Washington DC.
- World Health Organization. 1995. WHO Expert Committee on Physical Status: the Use and Interpretation of Anthropometry. Report of a WHO Expert Committee. WHO technical report series; 854. Switzerland.
- World Health Organization. 1996. Recommended Iodine Levels in Salt and Guidelines for Monitoring their Adequacy and Effectiveness. Micronutrient series. Nutrition Unit, Division of Food and Nutrition. Geneva.
- World Health Organization. 1998. Complementary Feeding of Young Children in Developing Countries: a Review of Current Scientific Knowledge. Brown, K. Dewey, K. & Allen, L.

- World Health Organization and UNICEF. 1998. Assess and Classify the Sick Child age 2 Months up to 5 Years. In Management of Childhood Illness.
- World Health Organization. 1999. A Critical Link. Interventions for Physical Growth and Psychological Development.
- Yin, R. K. 1994. Case Study Research: Design and Methods. Sage, Thousand Oaks, CA.
- Zeitlin, M. F. & Ghassemi, H. 1986. Positive Deviance in Nutrition: Adequate Growth in Poor Households. In a Workshop Report Proceedings of the 13th International Congress of Nutrition, 158-161. John Libbey, London.
- Zeitlin, M. Houser, R. & Johnson F. C. 1989. Active Maternal Feeding and Nutritional Status of 8-20 Month Old Mexican Children. Paper prepared for the Society for Research in Child Development, Kansas City, MO.

APPENDICES

APPENDIX 1
1/2

TABLE 1. Comments of health care staff members and mothers on nutrition.

Interviewee	Comments on child nutrition by health care staff and mothers
• Village health worker	According to him the biggest health problems of children in his village are worms in belly, Dengue fever and malnutrition.
• Village health worker	This hamlet doctor says that in that area, there are 65 children who are under five years. 10% of them are malnourished, he tells.
• Village health worker	When asked about causes of malnutrition the hamlet doctor says one reason to be the quality of breast-milk. Bad quality of breast-milk is because mothers do not eat enough nutritious food.
• Village health worker	Another cause of malnutrition is diseases caused by dirty hands.
• Male Nurse Commune health center (CHC)	He tells that biggest health problems are 1) Dengue fever 2) pneumonia 3) coughing 4) bronchitis. In his opinion the causes of malnutrition are low living standard and the knowledge of mothers.
• Male Nurse CHC	When asked about malnutrition the male nurse tells that nearly 50% of children are malnourished.
• Nurse District hospital (DH)	The nurse says that there are malnourished children in the area.
• Doctor General Hospital	The doctor told that today they had a vaccination day. In his view, about 50 per cent of those attending children are malnourished; five per cent of all were severely malnourished.
• Doctor General Hospital	According to this doctor the causes of malnutrition are 1) there is not enough food 2) poor economic condition of families 3) parents work too hard 4) there is not enough land for families to cultivate 5) families have no money to invest 6) parents have not enough knowledge 7) soil of cultivation land is poor.
• Nurse DH	In her opinion, the main cause of malnutrition is the lack of breast-milk, as mothers do not eat enough nutritious food.
• Midwife CHC	The midwife tells that in her opinion the main causes of malnutrition are 1) too many children in a family, 2) living in remote areas 3) low economic condition of families 4) not enough land for farming.

<ul style="list-style-type: none"> • Village mother 1 	<p>The mother tells that her children have not had any serious diseases. They have never needed any hospital care. Her opinion on the children's present health is that they are fine, although the younger has been very sleepy recently.</p>
<ul style="list-style-type: none"> • Village Mother 2 	<p>According to this mother there is not so many malnourished children in this area, since PAM-program and JICA-program have helped. In her opinion all her children have grown well.</p>
<ul style="list-style-type: none"> • Village mother 3 	<p>According to the mother the reason behind poor growth of her children she tells being economic. Food is not enough. They harvest only one yield of rice a year in October, which lasts only about three months</p>
<ul style="list-style-type: none"> • Village mother 4 	<p>The mother tells that her children have never had diarrhoea.</p>
<ul style="list-style-type: none"> • Village mother 5 	<p>The children of the village mother have had many health problems but they have no money to take them to the hospital, instead they sometimes buy medicine.</p>
<ul style="list-style-type: none"> • Village mother 6 	<p>According to the mother her children sometimes have stomach problems. When her child has diarrhoea, she feeds him by rice-soup and boiled water. The younger child has got an abscess in his shoulder.</p>
<ul style="list-style-type: none"> • Village mother 7 	<p>When asked about the health problems of her children, mother told that the older one has been very healthy. The younger had skin-problems in his feet. The children never had diarrhoea.</p>

TABLE 2. Comments of health care staff members describing their skills concerning child nutrition.

Interviewee	Comments by health care staff members describing their skills concerning child nutrition
• Midwife, commune health center	She told having no idea how mothers cook or serve food for infants because they live so far away.
• Dr, General Hospital	When he meets a malnourished child he examines the child carefully and in the case of illness gives medication. He also advises mother to continue breastfeeding and provides with supplementary food, which World Food Program donates.
• Nurse 1, District Hospital	When she meets malnourished children, she advises mothers to breastfeed up to 24 months. She tells mothers themselves as well as their children to eat nutritious food, which is: vegetables for vitamins, tomatoes, carrots, eggs, meat and fish.
• Male nurse, commune health center	When he meets malnourished children he advises mothers to feed children nutritious food, for example vegetables, meat, rice and fish. For assisting mothers of malnourished children he only gives advice.
• Village doctor	When he meets malnourished children he prescribes tablets for growing and feed the child with nutritious food like eggs, beans and powered milk. If the child is severely malnourished he advises to eat bigger portions.
• Village doctor	And he advises to wash hands and the baby before eating. For infants he advises mothers to give soft food. He also advises mothers not to work too hard and eat more during pregnancy and also go for examination.
• Village doctor	He goes to commune health center for monthly meetings, where he listens to educational lecture of chosen topic. He showed us his notes of the latest lectures. Last time the topic was Dengue fever. They also discuss of patients who need home-visit.

TABLE 3. Comments of the interviewees on the current child feeding behavior.

Breastfeeding and complementary feeding practices that need attention	Comments on current child feeding behavior
<ul style="list-style-type: none"> • Delay in initiation of breastfeeding 	A midwife working in a commune health center tells that when labor is difficult breastfeeding delays.
<ul style="list-style-type: none"> • Early implementation of complementary food 	Village mother (1) tells that she breastfed her son exclusively for four months and then initiated rice powder, eggs and pork.
<ul style="list-style-type: none"> • Delay in initiation of breast feeding • Late initiation of complementary food. • Inappropriate response to poor appetite in young children 	Village mother (2) tells that she initiated breast feeding only when her baby was 10 days old, because the baby was small, 1,7 kg. She breastfed exclusively 13 months, then she started to give rice powder and sugar water. Occasionally during infancy she tried to give some meat but her baby was very weak and was difficult to feed.
<ul style="list-style-type: none"> • Early termination of breast feeding 	Village mother (4) breastfed the older child until he was one year.
<ul style="list-style-type: none"> • Early termination of breast feeding 	Village mother (5) gave birth in the Commune Health Center and breastfed her presently 2 years old son for 18 months.
<ul style="list-style-type: none"> • Early termination of breast feeding 	Village mother (6) breastfed the younger one (presently 2 years old) for 15 months.
<ul style="list-style-type: none"> • Early initiation of complementary food 	Educated mother (2) initiated complementary food when the baby was four months.
<ul style="list-style-type: none"> • Frequency of meals too small 	Village mother (2) tells that her children's diet consists of rice, fish and vegetables. They eat twice a day 10am and 6pm that is all they eat. The children eat nothing in between the main meals.
<ul style="list-style-type: none"> • Little variety in the diet 	Village mother (4) tells that today the older child, who is two years old (the younger one is three months) as well as all the family has eaten rice and spinach. Sometimes they eat fish, maybe once in ten days.
<ul style="list-style-type: none"> • Frequency of meals too small • Inappropriate response to poor appetite in young children 	Village mother (6) tells that yesterday children (of age four and two years) ate rice, chicken and vegetables. They had three meals. At 6 am, 10 am and 6pm. Between the meals children rarely eat anything, sometimes sugar, orange, apple or banana. Mother told that introducing complementary food was difficult, especially for the first-born.

TABLE 4. Comments of the interviewees that state reasons for the current child feeding behavior.

Reasons stated for the current child feeding behavior	Comments by interviewees that state reasons for the current child feeding behavior
<ul style="list-style-type: none"> • Health staff: difficult labor is a hindrance to initiation of breast feeding 	<p>A midwife working in a commune health center tells that when labor is difficult breastfeeding delays.</p>
<ul style="list-style-type: none"> • Baby being small is a hindrance to initiation of breast feeding 	<p>Village mother (2) tells that she initiated breast feeding only when her baby was 10 days old, because the baby was small, 1,7 kg.</p>
<ul style="list-style-type: none"> • Quality of breast milk is not always good 	<p>Village mother (5) gave birth in the Commune Health Center and breastfed her presently 2 years old son for 18 months. She told that she had enough breast-milk, but the quality of it was no good.</p>
<ul style="list-style-type: none"> • Child's refusal to eat mashed/solid food is a hindrance to initiation of complementary food 	<p>Village mother (2) breastfed the youngest exclusively for 13 months, then she started to give rice powder and sugar water. Occasionally, during infancy she tried to give some meat but her baby was very weak and was difficult to feed.</p>
<ul style="list-style-type: none"> • Grandmother is primary care giver during the daytime 	<p>Village mother (3) tells that she goes to the field every morning and grandmother remains at home with the children (of age four years and another one 6 months) and prepares food for them.</p>
<ul style="list-style-type: none"> • Grand parents primary care givers during the daytime, sometimes no appointed caregiver 	<p>Village mother (5) tells that when the parents work at their field the grand parents usually look after the children (of age four years and two years). Though, sometimes the children hang around by themselves.</p>
<ul style="list-style-type: none"> • Child's refusal to eat mashed/solid food is a hindrance to initiation of complementary food 	<p>Village mother (6) introduced complementary food to the younger one when he was seven months. The first introduced complementary food was rice-soup, fish, vegetables, chicken and meat. Mother told that introducing complementary food was difficult, especially for the first-born.</p>

TABLE 5. Comments of mothers and health staff members on the utilization of growth-monitoring service.

Midwife, Commune Health Center	There is a village nurse in every village. In this commune there are seven villages. She gives an example that in one village the population can be over 5000 inhabitants of which more than 1000 are children.
Midwife, Commune Health Center	Mothers bring their children for growth-monitoring every month up to two years, after that twice a year. She says that there is no problem in mothers bringing the children. One of the reasons for coming is PAM-program, which provides supplementary food for malnourished. The mothers carry with them growth-monitoring card, which also includes information about given vaccines.
Nurse, District hospital	She adds that all mothers are supposed to bring their children for growth monitoring and vaccination. If they do not come, nurses will visit their home. When asked to indicate time of their last home visit, she answers that they do it very rarely.
Nurse, Commune Health Center	All children attend growth monitoring once a month up to 1 year, once in three months between 1 and 3 years and twice a year from 3 to 5 years old. He says that 80% of mothers bring their children for growth monitoring.
Nurse, CHC	Workload in the commune health center is generally low. They have only about ten visitors a day. On the vaccination days the attendance is about 30-40 children.
Village health worker	He weighed children and recorded in a book, which he showed us. There were indicated name, order of a child in a family and a classification of a child's growth to A, B, C and D, where A means normal, B slightly underweight, C malnourished and D severely malnourished.
Village mother 1	For small health problems the mother has used traditional medicine. She has always taken her children vaccinated and weighed when they were smaller.
Village mother 2	They have visited health station many times. Growth of children has not been satisfactory. The mother has taken her children regularly to growth monitoring and they have received all vaccinations.
Village mother 4	These children were born at home. The mother never went to the clinic for antenatal care. The children were never taken to a Health Center or given any vaccinations.
Village mother 5	She also told that her child was vaccinated of BCG, OPV and TPD, all the vaccinations once at the age of one year. Sometimes the mother took her baby to the village hamlet nurse for growth monitoring, but she did not possess a growth-chart.

Village mother 6	The younger child (two years old) was taken twice for growth monitoring. Vaccinations were given at home as follows: at the age of five months BCG, OPV, DPT, at the age of nine months OPV, DPT, at the age of nine months OPV, DPT, at the age of 10 months measles-vaccination. Mother did not possess a growth-monitoring chart for the child.
-------------------------	--

TABLE 6. Comments of health service providers on health education and sources of health information.

Interviewee	Comments by health service providers on health education and sources of health information
<ul style="list-style-type: none"> • Director General Hospital (GH) 	There is no health education program in this General hospital; no group health education is organized.
<ul style="list-style-type: none"> • Midwife Commune Health Center (CHC) 	This year midwives had retraining arranged by JICA (Japanese Co-operation Agency). She told that she gives individual health education to mothers about balanced diet during pregnancy. She does not organize group health education sessions.
<ul style="list-style-type: none"> • Midwife CHC 	Other groups advising mothers are Women's Association, Church people, and chiefs of villages and village nurses.
<ul style="list-style-type: none"> • Doctor GH 	When he meets a malnourished child he examines the child carefully and in the case of illness gives medication. He also advises mother to continue breastfeeding and provides with supplementary food, which World Food Program donates.
<ul style="list-style-type: none"> • Nurse 1 District Hospital (DH) 	At this district hospital they arrange group health education sessions to mothers every Tuesday afternoon. They educate mothers about significant symptoms of malnutrition, about nutrition, children's growth monitoring and vaccinations.
<ul style="list-style-type: none"> • Nurse 1 DH 	In her opinion, Women's Union reaches mothers most easily to provide health education.
<ul style="list-style-type: none"> • Male Nurse CHC 	When he meets malnourished children he advises mothers to feed children nutritious food, for example vegetables, meat, rice and fish. For assisting mothers of malnourished children he only gives advice.
<ul style="list-style-type: none"> • Male Nurse CHC 	Group health education is given to mothers when they bring their children for vaccination. The last session was 6th October. The topic was diet and child care. Those group health education sessions are conducted in a way that a professional talks and mothers listen.
<ul style="list-style-type: none"> • Male Nurse CHC 	Village volunteers are also supposed to health educate.
<ul style="list-style-type: none"> • Male Nurse CHC 	The only health education materials available are some posters on the wall.
<ul style="list-style-type: none"> • Male Nurse CHC 	PEM-program provides additional food for malnourished children, but that food they receive very little and it is available only occasionally.

<ul style="list-style-type: none"> • Women's Union Chair person 	<p>One of the main activities of Women's Union is to promote maternal and child health care. The latest activity assists women to get additional income, by poultry, vegetables and fishponds. The average attendance of Women's Union meetings is 100.</p>
<ul style="list-style-type: none"> • Dr GH 	<p>When asked about VACVINA (Government's program to support household food security) Dr Tung and the nurses laughed telling that in this sense they have not been lucky in this area.</p>
<ul style="list-style-type: none"> • JICA 	<p>Their project benefits of co-operation with Women's Union of Vietnam because this has a long experience and support at village level and thus reaches village people easily.</p> <p>Their project involves retraining of midwives and assistant doctors. They have used trainers from Secondary Medical School and some doctors from hospitals as well as Japanese experts. She also mentioned experienced that the local authorities need support in skills to monitor projects. Their project has paid special attention to training of local staff in co-ordination and monitoring.</p>

TABLE 7. Comments of mothers on health education and sources of health information.

Comments of mothers on health education and sources of health information
<p>Educated mother (2) is a Women's Union activist. Women's Union arranges meetings once in a month for educating mothers. Nutrition has been a subject many times. Another is to help village women to get additional income.</p> <p>Education is usually arranged in a way that women listen to doctor's presentation, however, they also discuss afterwards. She has a view that besides advising, women need practical training. In addition, she continues, health knowledge is attempted to spread to women through village headmen. However, it is difficult, many women still do not reach the message.</p>
<p>Mother (1) is a Women's Union activist. In the Women's Union meetings she has learned about family planning and nutrition.</p>
<p>Village mother (2) knows Women's Union, but she has attended only once a year. Last time the topic was family planning.</p>
<p>The mother (3) tells not having attended any health education sessions about nutrition.</p>
<p>Once in three months the mother (5) listens health talks at a health center. This is always group health education, where a nurse health educates and mothers listen.</p>
<p>Health advice the mother (6) has heard at the meetings of Women's Union. During the passed year she attended meetings twice. Then the topics were not about nutrition. Then the topics were not about nutrition. There was another, older woman in the room who wanted to tell the topics she had heard, they were health of a mother, child-care and breastfeeding.</p>

TABLE 8. Ranking of different health concerns by health service providers in Nghê An Province, Vietnam (STAKES 1999, annex 6).

	GROUP 1 Finnish Supportive Team	GROUP 2 Provincial Group	GROUP 3 Others	GROUP 4 District Representatives	GROUP 5 Nghê An Children's Hospital
A	Low priority for health \$\$	Mortality rate of children is still high \$	Poor knowledge of mothers and communities about child care & nutrition \$\$\$\$	Knowledge & practice on maternal / child care of community is limited \$\$	Weakness in preventive activities in areas of common illnesses (malnutrition, respiratory infectious diseases)
B	Low education level of people \$	Pediatric staff is weak	Insufficient capacity of health staff in child health management \$\$	Lack of health staff & professional capacity of health staff is limited \$\$\$\$	High level of attendance (in hospitals) of mothers & children - high mortality rate of children within 24 hours of admission
C	High malnutrition rate	Poor & insufficient facilities, equipment & budget \$	Weakness in knowledge & skills of health workers at grassroot levels regarding child & pregnant women care \$	Poor quality of health care due to lack of necessary equipment & appropriate facility	Lack in number & quality of health care staff in child care \$
D	Insufficient management skills	Poor knowledge of mother & child health	Lack of coordination & integration of programmes on child health care \$	Infant / Under-5 mortality & morbidity rates are high/ high rate of malnutrition	Lack of facilities, materials, equipment in diagnostics & treatment. Lack of budgets. \$\$\$
E	Insufficient skills of health workers \$	Socialization of mother & child health care is still under develop	Lack of emergency & diagnostic facilities at all levels	Community participation in maternal / child care is limited \$	Insufficient integration & coordination among programmes in child & mother care

(Note: Higher ranked health concerns are indicated by larger number of dollar signs.)

TABLE 9. Background of the Interviewees.

UNICEFr (UNICEF representative)	He works as an assistant project officer in the Health and Nutrition section.
JICArep (JICA representative)	She works as a project manager of a reproductive health project supported by Japanese international co-operation agency.
DirGH (Director, General Hospital)	
DrGH (Doctor, GH)	He is a pediatric doctor in Yen Thanh since several years.
WU, gl (Women's Union, group leader)	District Hospital, Yen Thanh.
Mn1 (Male Nurse 1)	Commune Health Centre, Nghi Loc. A young male nurse, who has studied for three years and worked for two years. During his studies he had some courses on nutrition. He has not had any retraining since he graduated. There is no doctor in this health centre.
N1, DH (=Nurse 1, District Hospital)	District Hospital, Yen Thanh. A 25 years old nurse working at children's ward. She says having nine years working experience, one year at this hospital.
Mwchc (=Midwife, Commune Health Center)	Commune health center, Yen Thanh. After secondary medical school she has worked for six years. Last June she had retraining of two weeks.
Vd (=Village assistant Doctor)	A Village Assistant Doctor in Nghi Lam-village, Nghi Loc. He graduated as a nurse in 1960. In 1975 he was re-educated for one and a half-year to be an assistant doctor. Now he acts as a hamlet doctor in a village and receives patients at his home. He has never attended retraining since he graduated, because in his opinion only nurses need retraining.
Em2 (=Educated Mother 2)	District Hospital, Yen Thanh. A mother who is a dental nurse. After secondary school she had three years of education in Army Health Institution in Hue and was graduated as a dental nurse. This mother is one of the eight active organising members of the local Women's Union. She has three children who are eleven, eight and four years old.
Vm1 (=Village mother 1)	This mother has two sons of 10 and 5 years old. She is a Women's Union activist. In the Women's Union meetings she has learned about family planning and nutrition.

Vm2 (=Village Mother 2)	Nghi Loc District. A village mother. The age of this mother is 25 years. She has gone to school for three years. She got married when she was 14. The following year she gave birth to her first baby. Now she has three children.
Vm3 (=Village Mother 3)	A mother who has her child at Children's hospital, Vinh. She is 25 years old. She has got two children, four years old girl and a son of six months. The younger was born in the health center, 70 kilometres from Vinh.
Vm4 (=Village Mother 4)	A 20 years old mother who lives in an urban shanty compound. She has two children. The first born is two years old and the second born three months.
Vm5 (=Village Mother 5)	A village mother in Nghi Lam-village, Nghi Loc. She is 30 years old. She has two children of four and two years old.
Vm6 (=Village Mother 6)	A village mother in Nghi Lam-village, Nghi Loc. This mother is 26 years old. The mother went to school for seven years. She has two children who are four and two years old.

Categorization of the Interview Data.

HCS	Health Care Services Supporting Child Growth
HCS1m	Mothers Opinion on Health Care Services
HCS2he	Health Education by Health Care Staff Given to Mothers
HCS3oo	Other Organizations Supporting Health Care Services
HCS3ooHe	Other Organizations Supporting Health Care Services/Health Education
HCS4mtm	Means for Tackling Malnutrition
HCS5schs	Skills of Health Care Staff
HCS6gd	General Description on Health Care Services
HCS7rtv	Radio and TV Ownership by Parents
CCP	Child Care Practices
CCP1nc	Number of Children in a Family
CCP2br	Breastfeeding
CCP3mauhs	Mothers' Activity of using Health Services
CCP4pcfp	Parents' child Feeding Practices
CCP6pkn	Parents' Knowledge on Nutrition Issues
MS	Malnutrition Situation
MS1moch	Mothers' Opinion on Child's Health
MS2lwh	Latrine, Well, Hygiene Situation
MS3hfs	Household Food Security
MS4hcsv	Health Care Staff's View on Malnutrition
MS5mv	Mothers' View on Malnutrition
MS6gv	Government View on Malnutrition Situation
IW	Interviewees' Background