KNOWLEDGE AND PERCEPTION OF MOTHER ABOUT NUTRITIONAL STATUS OF CHILDREN UNDER FIVE YEARS OF AGE IN BAHU HEALTH CENTER, MALALAYANG SUBDISTRICT, MANADO CITY, NORTH SULAWESI PROVINCE, INDONESIA

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ABSTRACT

A cross-sectional study was conducted to describe the socio-demographic factors of mothers, mothers' knowledge and mothers' perception of nutritional status of children under five years. Data was collected from 210 mothers of children under five years of age at Bahu Health Center, Manado City, North Sulawesi Province. The study used a structured questionnaire during January 2008. Chi square test and Fisher's exact test were employed for statistical analysis of the variables.

The results showed that the children's nutritional status were at a normal level (87.1%). There was not a statistically significant association between age of mothers, status of mothers, educational level, and have children more than one of under and over five years with nutritional status. There was a significant association between family income and occupation of mothers with nutritional status of children ($p<005$).

The findings of this study are important for understanding nutritional status of children under five years of age and are a milestone for improving quality of nutritionist service at health centers. Government should need more nutritionist, provide professional training to enrich knowledge and skills of nutritionist and increase extra benefits.

KEY WORDS: KNOWLEDGE PERCEPTION/NUTRITIONAL/STATUS/
CHILDREN UNDER FIVE YEARS

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CHAPTER 1
INTRODUCTION

1.1 Rationale and justification

"The World Food Problem" is a phrase familiar from the 1970s, but one that has largely lain dormant for the last decade: throughout the 1980s, concern was less with world food supplies and prices than with the problem of hunger and with individual access to food. The International Conference on Nutrition in 1992 was a high-water mark for this perspective. Now, although hunger and malnutrition remain grave problems throughout the world, issues to do with world food supplies have re-emerged on the international agenda (1).

Nutritional problems worldwide fall into two categories; those due to insufficient intake relative to needs and infections, and those due to excessive or unbalance intake of food. For developing countries, the highest nutritional priority is related to deficit food intake that affected nutritional deficiencies such as protein energy malnutrition, anemia, iodine deficiency disorders, vitamin A deficiency and other micronutrients. On the other hand, excessive and unbalanced intakes of food associated with changes in lifestyle are now becoming nutritional issues related to increasing number of overweight and obesity (2).

Children, as one of our most vulnerable populations face unusually high health risks as they grow. This shows most clearly and especially in children, they are under 5 years old. Most brain development happens before a child reaches three years old. In the past almost people were not understandable that all cognitive, psychological and functioning of brain will enlarge rapid growth and change during the first three years of life. In the first three-year period of life, children develop their abilities to think and speak, learn and reason and lay the foundation for their values and social behaviors as adults. With brain connections proliferating during the first three years of life, children are detecting new things helpful every waking moment. At birth a

child has about 100 billion brain cells. Most of them cannot connect to each other. These connections are wonders of the human body, depending partly on genes and on the events of early life. Many kinds of experiences affect how young brains develop, but nothing is more important than early care and nutrition (3).

Health today is determinant by situation health while children, have campaigned UNICEF and destiny child for future, determinant by mother how she give food now (4). A study in Bangladesh showed that when a woman dies in childbirth, her surviving baby is 3 to 10 times more likely to die within 2 years than a child who is living with parents (5). Thus, mother is the most important person for child development both physical and mental development.

In Cali, Colombia in 1974-76 Expenditure was a significant determinant for literate and illiterate mothers, and not well educated mothers. The impact of maternal education was largest on the length of babies and declined with the age of the child. Father's education had not impact of length of babies. The effect of parents' education was complementary. The effect of father's education was largest when mothers had some education. Better educated parents had healthier children. Maternal rather than paternal height had an impact of the length of a baby. In the community models, prices had a significant effect on child height, in both urban and rural areas, in all age groups, and for all levels of maternal education (4).

The children’s nutritional status of present the importance is not well recognized, therefore malnutrition in children has remained a big problem worldwide among developing and developed countries.

Table 1 Malnutrition in 5 years old children in developing countries, 1999

Regions	**Malnutrition of 5 years old (%)**
South Asia	51
Latin America and Caribbean	10
Middle East and North Africa	18
East Asia and Pacific	22
Sub-Saharan Africa	32

Source: The State of the World Children, 2000.

From table 1 indicate that currently, in developing countries, the rate of under weight found among children 5 years old is still high in some regions. In South Asia, malnutrition of 5 years old is the highest in the world, 51% compared to Latin American and Caribbean 10 %, the Middle East and North Africa 18%, East Asia and Pacific 22 % and Sub-Saharan Africa 32% (5).

Despite adequate food supply, Malnutrition is widespread in Pakistan and remains a serious obstacle to efforts to improve health and reduce infant and tinder five mortality. The nutritional status of the population has not improved over the past ten years (8). Only 43% of children fewer than five years of age were found to be of normal nutritional status, while 42% were stunted (low height for age), 11% were wasted (low weight for height) and 4% were both stunted and wasted. Unusually high rate of wasting occurs among Pakistani infants under one year of age. One child in five is wasted oven before six months of age, and the prevalence remains high in older children (9).

Indonesia is an archipelago in Southeast Asia consisting of 17,000 islands (6,000 inhabited) and straddling the equator. The total area is 741,096 sq mi (1,919,440 sq km). The largest islands are Sumatra, Jawa, Kalimantan, Sulawesi and Papua. Until 1999, the country was divided into 27 provinces, 296 districts/municipalities, 3625 sub-districts, and 67,033 villages. Starting in the year 2000 some areas split into new provinces, districts, sub-districts and villages. Indonesia is currently divided into 33 provinces, 440 districts, 5117 sub-districts and 72,000 villages. The total population based on 2000 census data was 203.4 million people (214.6 million in 2004), which had increased 41.39% from the 1971 census. The adult population (15-49 years old) comprised more than half (55.07%) of the country's population while children 0-4 years old comprised 8.88% of the total population. The proportion of children (0-14 years old) is declining, just as the proportion of older persons (those age 50 years or over) is increasing. In 2003, 42% or 90 millions people are live in the cities. With an annual growth of 1.3%, the total population is estimated to reach 280 million by 2025. The latest rank of Indonesian Human Development Index was 111 from assessment of 177 countries. This rank is better than previous year indicated the improvements in literacy, life expectancy, and

income per capita as well as reduction in poverty. Between 1999 and 2002, the proportion of people living in income poverty fell from 23% to 18%. Despite general improvements in health and social services, health and nutrition problems still exists in some form in almost every district in Indonesia. The existing health infra structure which is consists of: a) 987 hospitals (government, army, state owned enterprise, and private); b) 32,955 primary health facilities (health centre, sub-health centre, mobile health centre); and c) 267,883 community based health facilities (integrated services post, maternity post, and drug post) still create a programmatic intervention gaps because of geographic and demographic variations (10).

Indonesia as the world's fourth most populous country after China, India, and the United States, is full of contrasts. About 50% or more than 100 millions of the people are still suffering from various forms of nutritional deficiencies. In terms of women and children's physical and human development, the economic crisis experienced by Indonesia in the late 1990s has had terrible adverse affects. Women and children under five are most vulnerable to the social and economic shocks associated with this economic crisis. The health and nutritional status of Indonesia's street children is of particular concern. All street children are at extremely high risk of increased health and nutrition problems given their precarious living and working conditions. It is estimated that following the economic crisis, the number of street children has risen from around 12,000 in 1996 to more than 40,000 in the 12 largest cities (11).

Hunger and malnutrition remain the most devastating problems facing the majority of the Indonesian, especially for the poor. Despite general improvements in food availability, health and social services, hunger and malnutrition exist in some form in almost every district in Indonesia. At present, about half the population is iron-deficient and one-third is at risk of iodine deficiency disorders. Vitamin A deficiency disorders still affect around 10 million children. In 2003, 27.5 percent of children under five in Indonesia suffered from moderate and severe underweight, or only 10 percentage points lower than in 1989, and nearly half are stunted (12).

Most nutrition and nutrition related studies were conducted during the nineteen nineties and consequently, are now outdated. Compounding this problem is the fact that there is currently no nutrition surveillance system in the country. Available statistics show that severe under-nutrition is present in only 6.25 per cent of children under five years old. Other data for underweight and wasting suggest that these are not a major cause of concern. However, stunting among school aged children was found to be a problem. A national height census of school children ages six to nine years, conducted in 1996 showed that 15% of our children suffer from growth retardation with levels as high as 39% in the Toledo District (13).

Health centers in Indonesia are design to provide comprehensive, integrated health services; these include curative, promotive and preventive care, and community-base rehabilitation. There are also responsible for health development in their respective catchments area through community activities and innovative approaches. Depending on the population density, geographical area and local infrastructure, a health center catchments area is either a sub district or a part of one. Each health center serves an average population of 30,000. They operate under the administrative authority of district administration and the district health office. The function of health center is expended through several subordinate units that include sub-center, posts for trained midwifes in village, and subordinate init that integrated services unit (posyandu). This health center was linked to the “Village Community Resilience Body” (LKMD) to support village-based development activities (14).

Manado City has 9 Sub Districts and had 13 health centers. Bahu was one of the model of urban health center services in Manado district which responsible for 9 villages with number of population 41.417 from 13.170 household and the average of patient visit was 200 people per day and number of population of children under five years of age 2.465 (15).

This study is an assessment of existing information from the records of children attending Bahu health center. It was found that according to weight for age, 12.5% of children were under nutritional, 81.25% of children were of normal nutritional and 6.25% over nutritional (16). WHO standard for under nutritional status

was 0.5 % (17). According to the data, nutritional status is problem that affects quality of human in the Bahu health center. To address this important issue to improve quality of nutritional status of children under five years of age in this area. A better understanding of determinant of knowledge and perception of mother should help policy and decision maker to implement program tailored to mother' need as perceived by mother and service provider for all health center in Manado City. Therefore, a cross-sectional study survey was interested to study at Bahu Health Center in Manado City, North Sulawesi Province , Indonesia.

1.2 Research Questions

What is the knowledge and perception of mother with children under five years of age about nutritional status at Bahu Health Center, Manado City, North Sulawesi Province, Indonesia?

1.3 Research Objective

1.3.1 General Objective

To identify the knowledge and perception of mother with children under five years of age about nutritional status.

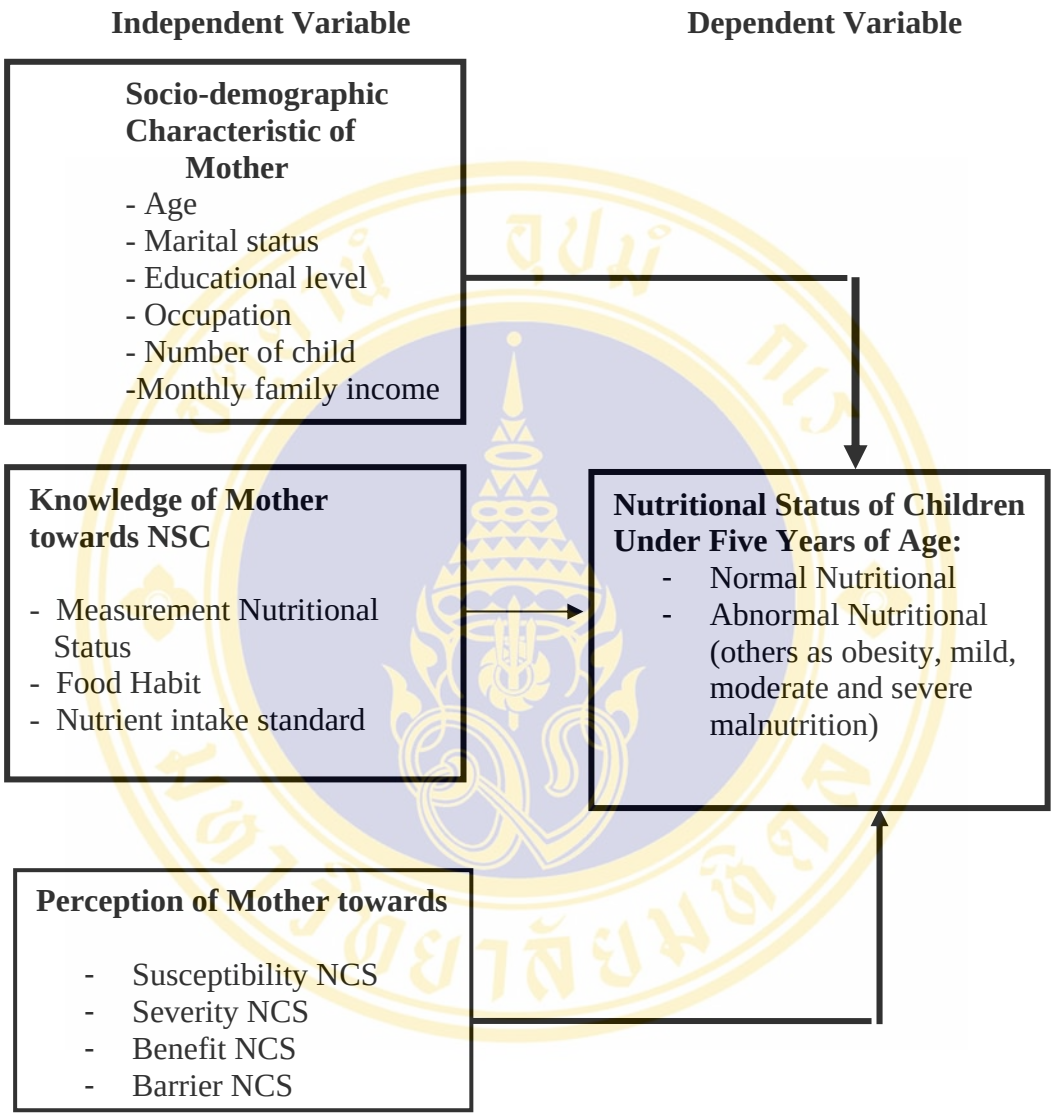
1.3.2 Specific Objectives

1.3.2.1 To identify the nutritional status of children under five years of age.

1.3.2.2 To describe socio-demographic characteristic of mothers, the knowledge and perception of mother with children under five years of age about nutritional status

1.3.2.3 Todetermine the relationship between socio-demographic characteristics of mother with nutritional status and nutritional status with knowledge and perception of mother towards nutritional status of children under five years.

1.4 Conceptual Framework



By Theory Health Belief Model (68)

1.5 Operational Definitions

Nutritional Status of children under five years referred to the state of a persons health in term of the nutrients in his/her diet and as measured by Anthropometrics with indicators of nutritional status were ranked in 3 scales as over (>120 % Median BB/U Baku), normal (80%-120% Median BB/U Baku) and under (< 70% Median BB/U Baku). Nutritional Status measured by Anthropometrics using weight for age indicators by using as reporting at Bahu Health Center, Manado City

and Anthropometric refers to the measurement of living human individuals for the purposes of understanding human physical variation.

Socio-demographic factors: Socio demographic factors of respondents can be measured by age, marital status, education, occupation, number of children, and family income.

Age will be determined as complete years of the respondent at the time of interview.

Marital Status referred to whether the respondent is married (living together), separated, and widowed.

Education level referred to the academic or study qualification of respondent. In this study, education levels were categorized into 6 groups: un-educated, primary school or below, secondary school, high school and college, diploma and higher such as bachelor/master.

Occupation was defined as the main job of respondents for income. It was categorized into: housewife, government servant, non-government servant and others.

Number of child was number of child have of respondents in family.

Family income referred to the total family income of all family members per month. Total family income is categorized in 6 groups: < Rp. 1,000.000, Rp. 1,000.000 – 2,000.000, Rp. 2,000.050– 3,000.000, Rp. 3,000.050 – 4,000.000, and > Rp. 4,000.000.

Perception meaned receiving, collecting, action of taking possession, apprehension with the mind or senses toward nutritional status children under five years of age. This measured in mother perception of susceptibility, severity, benefit and barrier of nutritional status of children.

Knowledge of mother towards nutritional status that meaned understanding of measurement nutritional, food habits, and nutrient intake standard.

1.6 Limitation of the study

The study limits only the groups of mother having children under five years in Manado city and information have been recorded at Bahu Health Center. The target population just concerned to the number children under five years had registered at the Bahu Health Center of Manado City.

CHAPTER 2
LITERATURE REVIEW

2.1 Concept of Nutrition

Improving nutrition contributes to productivity, economic development, and poverty reduction by improving physical work capacity, cognitive development, school performance, and health by reducing disease and mortality. Poor nutrition perpetuates the cycle of poverty and malnutrition through three main routes direct losses in productivity from poor physical status and losses caused by disease linked with malnutrition; indirect losses from poor cognitive development and losses in schooling; and losses caused by increased health care costs. The economic costs of malnutrition are very high-several billion dollars a year in terms of lost gross domestic product (17).

2.1.1 Nutrition for Child Growth and Development

The economic contribution of good nutrition is another of his important contributions to the understanding of this complex topic. Whenever governments invest in programs such as nutrition, the most commonly used rationale is that it is part of the effort to meet the basic needs of the population, or generally the equity considerations. However, there is an economic argument, though less understood, for investing in nutrition, as Behrman points out. That is, that better nutrition increases the productivity of populations. Behrman concludes that these studies tend to show that the returns to nutrition are even higher than the returns to education, although most education programs tend to have been much more emphasized in the literature. For example, studies in control of iron deficiency anemia have shown extremely high benefit-cost ratios, although he questions the assumptions related to the benefit side of the calculations. Nonetheless, the question is the order of magnitude of the benefits (18).

Essential nutrition actions of mother to nutritional status of children's are well-baby visits, sick child visits, assesses and counsel on breastfeeding; assess and counsel on adequate complementary feeding (use locally adapted recommendations). Check and complete vitamin A, iron, and ant malarial protocol. Screen, treat, and refer severe malnutrition, vitamin A deficiency, and anemia. Check and complete vitamin A protocol. Assess and counsel on breastfeeding; assess and counsel on adequate complementary feeding (use locally adapted recommendations). Counseling and support for EBF in the first 6 months, counseling and support for adequate complementary feeding from age 6–24 months, continuation of breastfeeding to age 24 months. Use iodized salt for all family meals (19).

The else action of mother to child growth and development:

1. A children should be weighed every month. If a child has not gained weight for about two months, something is wrong.young child should grow well and gain weight rapidly. From birth to age two,

2. Breast milk alone is the only food and drink an infant needs until the age of six months. After six months, the child needs a variety of other foods in addition to breast milk.

3. From the age of six months to two years, children need to be fed five times a day, in addition to sustained breastfeeding.

4. ChiVitamin A can be found in many fruits and vegetables, oils, egldren need vitamin A to resist illness and prevent visual impairments. gs, dairy products, fortified foods, breast milk, or vitamin A supplements.

5. Children need iron-rich foods to protect their physical and mental abilities. The best sources of iron are liver, lean meats, fish, eggs and iron-fortified foods or iron supplements (20).

Iodized salt is essential to prevent learning disabilities and delayed development in children Thailand's community nutrition program has been the most successful in Asia. This paper looks at what made it work from a management and capacity development point of view. Key lessons are identified in the following areas like this (20).Building a strong consensus at national and local levels about the importance of nutrition as an investment in the country's future, rather than as welfare

expenditure. Using national nutrition investment plans, rather than policy statements unlinked to resource commitments, as a way of generating a national vision, giving visibility to nutrition, and giving each implementing agency clear responsibilities.

2.1.2 Nutritional Problem

Many nutritional statistics show the numbers of persons who have overt evidence of a deficiency. However, "at risk" populations are not often identified. In nutrition, as in public health, people considered at risk of developing malnutrition should be among the primary concerns. Prevention becomes more feasible and cost effective if groups at risk are identified and the causes of malnutrition are clearly understood. One of the most dramatic aspects of the global nutrition situation is the extent of famine, hunger and starvation. While good progress has been made in averting famine, especially in Asia, these horrifying conditions persist throughout the world. Their occurrence is commonly attributed to drought and other natural disasters, but war, civil unrest and political instability have far greater importance. In the mid-1990s, hunger and malnutrition resulting from civil strife are serious problems in many parts of the world including Europe (particularly former Yugoslavia), Asia (for example, Afghanistan), the near East (Iraq) and most extensively Africa. Tragically, civil strife often affects not only the countries in turmoil but also those that provide hospitality to the refugees who flee their homes in terror. In mid-1994, the United Republic of Tanzania accepted about 500 000 refugees from Rwanda, most of them in less than one week. Their arrival more than doubled the population of the resource-poor region, which welcomed them as best it could. The influx placed overwhelming pressure on local resources and necessitated a major international effort to prevent an increase in nutrition and health problems among the local people as well as to contain these problems among the refugees (21) .

Some food problems are not obvious and may not be recognized; these include major, pervasive biological disturbances from inappropriate food choices, food excesses, nutrient deficiencies, food allergy, and chemical toxicity from food additives and contaminants. Topics include infant feeding, problems with breast

feeding, asthma, eczema, hives, colic, digestive disorders, food allergy, learning and behavioral problems. Food and the environment are key determinants of health. We know that food causes more than half of all serious and chronic diseases in North America. We know that these are optional diseases and offer self-help solutions. Food-related problems appear in infants and develop through childhood and adolescence into adult disease. There are many ways for food problems to interfere with a child's normal functioning and to promote disease (22).

Human nutrition in the developing world covers the most important nutritional problems of developing countries and suggests appropriate programmers and policies to address them. It provides sound science-based information on food, nutrients, and the causes of malnutrition, nutritional disorders and their prevention. It emphasizes three prerequisites of good nutrition: food security, good health and adequate care. Special stress is given to applied and multidisciplinary approaches for the alleviation of malnutrition. Food-based approaches are emphasized as the only sustainable way to improve the nutritional status of all. In developing countries better development of agricultural resources can improve food supplies, employment and incomes and thus enable adequate diets (23).

Why malnutrition persists in many food-secure households, the answering are: Pregnant and nursing women eat too few calories and too little; protein, have untreated infections, such as sexually transmitted; diseases that lead to low birth weight, or do not get enough rest; Mothers have too little time to take care of their young children or themselves during pregnancy.; Mothers of newborns discard colostrums, the first milk, which strengthens the child’s immune system; Mothers often feed children under age 6 months foods other than breast milk even though exclusive breastfeeding is the best source of nutrients and the best protection against many infectious and chronic diseases; Caregivers start introducing complementary solid foods too late; Caregivers feed children under age two years too little food ort chough food is available, because of inappropriate household food allocation, women and young children’s needs are not met and their diets often do not contain enough of the right micronutrients or protein.; Caregivers do not know how to feed children

during and following diarrhea or fever; Caregivers' poor hygiene contaminates food with bacteria or parasites (24).

2.1.3 Global Nutrition in Indonesia

Each sub-district in Indonesia has at least one health centre headed by a doctor, usually supported by two or three sub-centres, the majority of which are headed by nurses. Most health centres are equipped with four-wheel drive vehicles or motorboats to serve as mobile health units and provide services to underserved populations in urban and remote rural areas. Mobilization of internal and external resources to support development programmes is under the responsibility of the National Development Planning Board. At the village level, the integrated Family Health Post provides preventive health services. These health posts are established and managed by the community with the assistance of health center staff.

Basically the effort to improve community nutrition is meant to handle the nutrition problems faced by the community. Based on the supervision, the several nutrition problems mostly found in community groups are: protein calorie deficiency, Vitamin A deficiency, iodine deficiency disorders and iron nutrition anemia.

The supervision of the under-fives' nutrition status is focused to the supervision of the weight growth. It is implemented through monthly measuring weight in Posyandu, and observation to the under-fives' performance in the health care services. According to the collection of the indicator/data of the Minimum Services Standard (MSS) in the health sector from districts/municipalities, the illustration of the under-fives' growth showed that the coverage of the weighted under-fives in 2004 was insignificantly increased (0.22%). 65.86% of it increased in weight, though it was lower than the previous year (66.15%). Meanwhile, the under-fives with below-the-borderline increased significantly from 3.88% in 2003 to 11.67% in 2004. The detailed weighing results of under-fives by province during 2004.

2.2 Function of Nutrient

A genius is built into every human brain. We are all benefactors of a long lineage of survivors who have made the journey of life on planet earth. The abilities built into us are wonders. Vision, hearing, skilled movements, social interactions are innate wonders. While information is the pedagogical input to the student's brain, food and air may be regarded as the main input of chemical information into the student's body-brain system. You could get a badly constructed car and be disappointed or you could be dealing with the wrong gas -- in technical terms, the food supply and environment that determines how well the child's brain is going to work (29).

2.3 Nutritional Status of Children

Nutritional status is the balance between the intake of nutrients by an organism and the expenditure of these in the processes of growth, reproduction, and health maintenance. Because this process is highly complex and quite individualized, nutritional status assessment can be directed at a wide variety of aspects of nutritive. These range from nutrient levels in the body, to the products of their metabolism, and to the functional processes they regulate. Nutritional status can be measured for individuals as well as for populations. Accurate measurement of individual nutritional status is required in clinical practice. Population measures are more important in research. They can be used to describe nutritional status of the group, to identify populations or population segments at risk for nutrition-related health consequences, and to evaluate interventions (30).

2.3.1 Over Nutritional

Overweight and obesity are increasing at an alarming rate in Europe. Obesity is one of the most serious public health problems in Europe because it increases significantly the risk of many chronic diseases such as cardiovascular disease, type 2 diabetes and certain cancers., Today, these diseases represent the biggest burden of

diseases and are the leading cause of mortality in Europe as well as worldwide. The increase of childhood obesity is particularly worrying. Lifestyle factors, including diet, eating habits, levels of physical activity as well as inactivity, are often adopted during the early years of life. As childhood obesity is also strongly linked to obesity in adulthood, the best time to address the problem is early in life (31).

Overweight and obesity put individuals at higher risk for dyslipidemia, hypertension, hyperinsulinism, insulin resistance, and diabetes, all of which substantially increase the risk for cardiovascular disease. Obese individuals may also suffer from respiratory disorders and certain types of cancer. In 2001, it was estimated that chronic diseases contributed to approximately 60 percent of the 56.5 million total reported deaths in the world and to approximately 46 percent of the global burden of disease. Reflecting this trend, the World Health Organization (WHO) has recently made a call to action to put overweight and obesity at the forefront of public health policies and programs (32).

There are many potential reasons for the strikingly high prevalence of overweight and obesity and their co morbidities in developing countries. Behavioral factors, including dietary intake, physical activity, and sedentary behaviors, have been important contributors to the development of obesity. Intakes of total fat, animal products and sugar are increasing simultaneously with decreases in the consumption of cereals, fruits, and vegetables. Decreased energy expenditure, due to an increasingly sedentary lifestyle and a reduction in labor-intensive occupations, is a second and equally important explanation for the increased rates of overweight and obesity in the developing world. Major changes in lifestyle have occurred over the past several decades, and have caused an “biogenic environment” because of the easy availability of high-energy food combined with an increasingly sedentary lifestyle (33).

Although obesity is the result of a complex interplay between genetics and environment, obesity and chronic diseases are largely preventable. There is compelling evidence for the power of societal and environmental factors to contribute to weight gain. Beyond the medical treatment necessary for the people who are

already overweight or obese, there is an underutilized opportunity for primary prevention through cost-effective and sustainable interventions. Given the limited resources of the developing world in particular, it is clear that obesity prevention needs to be incorporated into existing nutrition programs. Unfortunately, little is known about the prevention and treatment of overweight and obesity on a population level, particularly in developing countries (34).

Interventions addressing obesity span from clinic-based, one-on-one consultations with a primary-care physician to large-scale policy or social marketing initiatives. Clinical interventions target adults and children who are already overweight or obese. There are several possibilities for clinic based interventions, which include dietary management, exercise programs, pharmacological treatment, psychotherapy, behavior modification, and surgical treatment. Most successful programs have combined diet and exercise approaches with behavior therapy However, it is very difficult to capture any changes in individual-level behavior or health status change (35).

2.3.2 Normal Nutritional

Maintaining normal weight is challenging nowadays. The environments people live in are very obesity favorable. There is an abundance of energy-rich food that is often poor in nutrients, and decreasing needs and opportunities for physical activity both at work and at leisure time. The food portion sizes grow year by year, even though people actually need less and less energy due to the shift towards sedentary life styles (36).

2.3.3 Under Nutritional

A new World Bank report warns unless action is taken within the first two years of a child's life to improve nutrition, children will suffer irreparable damage, ultimately adversely affecting the country's economic growth (37). The report, Repositioning Nutrition as Central to Development, says malnutrition remains the

world's most serious health problem. Poor nutrition is implicated in more than half of all child deaths worldwide – a proportion unmatched by any infectious disease since the Black Death. "Malnutrition is among the most serious health problems in the world today that has not been tackled, "says Meera Shekar, the report's lead author. "Roughly 30% of children in the world are undernourished and in fact 60% of children for example who die of common diseases like malaria and diarrhea would not have died had not they not been malnourished in the first place" While criticizing the lack of large scale action internationally and within countries to tackle malnutrition, the report says improving nutrition could add two to three percent to the growth rates of poor countries (38).

2.4 Nutritional Status of Children and Responsibility of Parent

Parents are generous people who sacrifice personal goals and pleasures in favor of caring for their children. Good parents provide resources that their children need in a strategic and judicious manner so their children grow into self-reliant adults with responsibilities, careers and incomes. Parents can guide their children by feeding them the correct food and by selecting the best community, the best peer group and the best schools they can identify and afford (42).

There are many ways for food problems to interfere with a child's normal functioning and to promote disease. We assume that several problems interact in a complex manner to produce the symptoms and dysfunction that we seek to remedy. It is always necessary, therefore, to correct nutritional problems by complete diet revision. All children are special. All children need devoted parents, care and good nutrition. Some children do well in a variety of circumstances even when conditions are not ideal. Some children do not do well even when conditions are favourable and these children need extra special care. The best parents are pragmatic and not theorists. They stay involved with their children, follow some basic guidelines they learned and tend to do whatever works. Good parents improvise childcare with a combination of innate generosity, common sense, love and concessions to the demands of modern life (43).

If infants and children are not doing well when conditions are favorable, we think first about problems in their food supply. They develop problems even with regular foods and need carefully chosen foods and sometimes need nutritional help with our low allergy, complete nutrition formulas. Learn how food choices play an important role in determining children's health (44). The observed improvement in mothers' knowledge of health and nutrition, particularly the latter, is encouraging. This however was not reflected adequately in child nutrition though some improvement in moderate and severe malnutrition in children 6-24 months old was seen. Impact of Women Health and Nutrition Entrepreneurs and Mobilizes on Health and Nutrition of Rural Children and Mothers' Knowledge and Health-related Practices is important for child growth and development (45).

Jere Behrman has been one of the most active scholars in the field of economics of nutrition and human capital in developing countries. He had has opinioned if the economic productivity gains to households from better nutrition are extremely high, as the studies would argue, why aren't households investing in these foods? Is it due to lack of specific nutrition knowledge? Behrman concludes that governments have the likely comparative advantage in assuring adequate information about nutrition, its nature, and its effects, given the public goods aspect of the information. This publication is an important contribution to the state of knowledge of the relationship between nutrition and productivity in developing countries (46).

In the words of James Grant, Executive Director of UNICEF in the foreword to this 40 page booklet "this publication offers the UNICEF perspective - from the point of view of the children of the developing world, in particular - on the critical problem of nutrition: the dimensions of the problem and doable goals and strategies for combating it, at surprisingly low cost, during the 1990s". In a section called "the ethical imperative" of the booklet "this publication offers the UNICEF perspective - from the point of view of the children of the developing world, in particular - on the critical problem of nutrition: the dimensions of the problem and doable goals and strategies for combating it, at surprisingly low cost, during the 1990s" goes on to point out that knowledge is available to alleviate the problems - nutritional goals such

as those laid down at the 1990 World Summit for Children are not simply ethical goals but are, UNICEF believes, achievable (47).

A growing body of empirical and theoretical literature from various disciplines has pointed out that the costs and benefits of different policies are borne disproportionately by some individuals within households, according to their gender, age, and relationship to the household. These argued that the very success of development policy is likely to be undermined by a failure to view the household and the family in a holistic manner. For instance, since patterns of food consumption within households differ, programmers targeted to certain household members may be wide of the mark, with heavy leakages. Or programs that are intended to increase employment may reduce school enrollment because adolescents may be required to stay at home to care for infants while their mothers are at work. Most analysis of programmers stop at the door of the household (48).

In the Health of Women book: A Global Perspective is essential reading for topics to include in a women's health agenda in developing countries. The strength of this book is the depth of its perspective. Much more is included than the medical aspects of maternal morbidity and mortality. As one of the all titles of the chapters indicate, the health of women in developing countries is placed in a comprehensive context: Mother and More: A Broader Perspective on Women's Health, Women's Mental Health: A Global Perspective, Access to Care: More than a Problem of Distance, Quality of Care: A Neglected Dimension,. Health Women's Way: Learning to Listen (49). Cunningham, etc asked that breastfeeding is “one of the most important things a mother can do for her child, anywhere in the world” they acknowledge that it may occasionally be hazardous to an infant. Thus, whilst rare, articles that report such circumstances are also included (50).

This well presented report (just over 100 pages) was commissioned by USAID to examine the state of art of breastfeeding in Ghana in order to identify those factors which support optimal breastfeeding practices as well as those which obstruct such practices. Drawing on existing studies and research the report is an excellent synthesis

of young child health and nutrition in Ghana and as such serves as a valuable reference document. The report concludes correctly that serious problems exist in Ghana with current breastfeeding knowledge, attitudes and practices (51).

Mother is often the leader when a child needs help. You cannot isolate one person in a family and change their diet while everyone else continues to eat all the old foods. The whole family has to be involved to help one child. One way to view your child's illnesses, emotional and behavioral disturbances is as a failure of adaptation - a mismatch between the biological properties of their body and the kind of food and environment you are offering him or her. Each child has individual needs to find the best-fit food choices for biological requirements (52).

2.4.1 Assessment of Nutritional Status

Several techniques exist for collecting dietary data with which to estimate nutritional status. Anthropometric approaches are, for the most part, relatively noninvasive methods that assess the size or body composition of an individual. For adults, body weight and height are used to evaluate overall nutritional status and to classify individuals as at healthy or no healthy weights. In children, growth charts have been developed to allow researchers and clinicians to assess weight-and height-for-age, as well as weight-for-height. For children, low height-for-age is considered stunting, while low weight-for-height indicates wasting. In addition to weight and height, measures of mid-arm circumference and skin fold measured over the triceps muscle at the mid-arm are used to estimate fat and muscle mass. Anthropometric measures of nutritional status can be compromised by other health conditions. For example, edema characteristic of some forms of malnutrition and other disease states can conceal wasting by increasing body weight. Head circumference can be used in children 36 months and younger to monitor brain growth in the presence of malnutrition. Brain growth is better spared than either height or weight during malnutrition (53).

To interpret anthropometric data, they must be compared with reference data. The choice of the appropriate reference has been discussed by Johnston and Ouyang. Because well-nourished children in all populations follow similar patterns of growth, reference data need not come from the same population as the children of interest. It is of greater importance that reference data be based on well-defined, large samples, collected in populations that are healthy and adequately nourished. Reference growth charts (54) have been compiled from cross-sectional data collected from population surveys of U.S. children. These have been adopted as international standards by the World Health Organization. By far the most precise way of measuring dietary intake is to gather data on individuals. These methods depend on identifying a period of time for which data are needed, measuring food quantities consumed, and then translating these into nutrient amounts, either through direct chemical analysis or (more commonly) using food composition tables (55).

Table 2 The Health Department of Republic Indonesia classification of nutrition status on weight-for-age standards

Classification	Cut of point
Obesity	> 120 % Median BB/U Baku
Normal	80 % - 120 % Median BB/U Baku
Mild malnutrition	70 % Median BB/U Baku
Moderate malnutrition	60 % Median BB/U Baku
Severe malnutrition	< 60 % Median BB/U Baku

This classification makes a distinction between current and past influences on nutritional status. It helps the examiner assess the likelihood that supplementary feeding will markedly improve the nutritional status of the child, and it gives the clinician some clue as to the history of the malnutrition in the patient. It also has advantages for nutritional surveys and surveillance. In general, stunting is more prevalent than wasting worldwide (55). Deals with assessment of nutritional status, it

is now generally recommended that malnutrition be judged on the basis of SD below the growth standards of the United States National Center for Health Statistics (NCHS) as published by WHO. In country reports published based on weight for age alone, "underweight" is commonly used to denote weight below 2 SD of the NCHS standards in children up to five years of age. In a normal distribution it is expected that 2 to 3 percent of children will fall below the -2 SD cut-off point. Prevalence above that level suggests that there is a nutritional problem in the population assessed. If measurements are also taken of length or height, then the children can be further divided into those who are wasted, stunted, or wasted and stunted (55).

One of the goals of the World Summit for Children for the year 2000 is to reduce the level of underweight prevalence amongst children by one-half of the levels in 1990. This recent publication of UNICEF is one of the significant contributions towards a reliable assessment of the progress made to date. Significant increases in availability of reliable national data have improved the process of assessing the performance of countries in terms of the goals set forth in the Child Summit. Since 1985, the number of national anthropometric surveys, either as modules of national health surveys such as those done by the Demographic and Health Surveys, or by national household budget surveys done for example in the World Bank, and by national governments, have doubled to around 75 countries. At least 28 countries now have at least two data points with which to determine trends in nutrition. The acceptance of malnutrition data as indicators of social well-being has provided much of the impetus towards the increasing number of national data sets that encompass anthropometric measurements (56).

The standardization of anthropometric data (with respect to growth standards, cut-off points, and age), has considerably improved the interpretation of underweight data being reported by many United Nations agencies. Thus, this UNICEF publication reports information that are in accord with the data compiled by WHO and the ACC/SCN, and which were also reported in the ACC/SCN Second Report on the World Nutrition Situation (1993). The data tables presented in the report are very clearly laid out, differentiating three alternative measurements: prevalence of

underweight children; stunted children; and children with low weight for height (or wasted). This is important since many users are interested in distinguishing between long term nutrition (stunting) and short term nutrition (underweight). An important feature of this report is also the breakdown of data by three important characteristics, namely: by prevalence by age group; by gender; and by urban-rural residence (57).

Several countries reported at least two data points, which could potentially assess changes over time. One potential problem in such comparisons is the reliability of data on the age of children. Since indicators such as weight for age are dependent on age, the misreporting of age could confound the interpretation. Stunting Failure to reach linear growth potential because (measured as of inadequate nutrition or poor health. It implies height-for-age) long-term under nutrition and poor health, measured as height-for-age two z-scores below the international reference.Usually a good indicator of long-term under nutrition among young children (58).

2.4.2 Food Habits Pattern

Some food problems are not obvious and may not be recognized; these include major, pervasive biological disturbances from inappropriate food choices, food excesses, nutrient deficiencies, food allergy, and chemical toxicity from food additives and contaminants. Topics include infant feeding, problems with breast feeding, asthma, eczema, hives, colic, digestive disorders, food allergy, learning and behavioral problems (59).

In developing the new daily food pattern, the nutrient content of preliminary patterns was compared to the new nutritional goals. If the goals were not met at a given calorie level, amounts from food groups or subgroups that were higher in the nutrients in question were increased, and corresponding changes were made in other groups to maintain total calories at the goal level. The adjustments were made in an iterative manner, to bring the pattern closer to its nutritional goals (60).

Most of the nutritional goals for the USDA food intake pattern, as identified in the Federal Register Notice, were met by making relatively modest changes from the pattern used in the original Pyramid (61) Changes included:

- Increasing the number of calorie levels from 3 (1,600; 2,200; 2,800) to 12 (every 200 calories from 1,000 to 3,200).

- Separation of discretionary fats into solid fats and oils and soft margarines, and a shift in the proportions recommended to 40 percent solid fats, 60 percent oils—The original Pyramid patterns did not distinguish among types of fats, and the proportions were therefore the estimated intake proportions of 58 percent solid fats, 42 percent oils.

- Increasing the amounts of vegetables for some calorie levels—To meet nutritional goals, the overall amounts of vegetables recommended were increased for several calorie levels.

- Change in the relative amounts of vegetable subgroups—the nutrient profiles of dark green vegetables and legumes were relatively high in the nutrients needed to meet unmet nutrient goals. Therefore, amounts of these vegetables were preferentially increased and amounts of the remaining vegetable subgroups (starchy, orange, and other vegetables) were held constant or decreased.

Increase in the amount of whole grains, to one-half of the total amount in every pattern—Enriched grains were proportionately decreased. At least 3 oz of whole grains are provided for the calorie levels equal to and above 1600 kcal per day (62).

Food habits and behaviors are often formed early in life, and nutrition education of children can have a major role in ensuring appropriate dietary patterns and good health. In Poland, most children attend primary school, and the primary classroom is particularly well suited for teaching nutrition. The experimental lessons included the following subjects: nutrients and their main sources; nutritional requirements; maintaining proper body weight; and observing principles of hygiene (63).

2.4.3 Intake Nutrient Standard

In the two decades since the World Food Conference of 1974, the questions of how much food the world grows and how that food is distributed have rightly remained at the centre of international debate and concern. For most of that time, the main emphasis has been on access to food and on distribution, rather than on supply. We believe that emphasis was correct. It directed discussion to questions of food entitlement, household and individual food security and matters related to the quality and safety of food for human consumption. These concerns have been prominent in international statements, most recently the International Conference on Nutrition in 1992. International policy commitments have in turn been associated with modest increases in resource flows to nutrition and related fields, not just to save lives in famines, but also to help achieve food and nutrition goals in the longer term (64).

Most recently, an alternative set of concerns has re-emerged, which has begun to direct attention back to food supply. Rising population, increasing urbanization, doubts about the sustainability of intensive farming and irrigation systems and an apparent slow-down in the rate of increase of yields of the major food staples, are factors which have led some observers to argue for a higher priority to be given to agricultural research and to investments designed to increase agricultural productivity and production. The case is said to be strengthened by structural changes in the world economy, including the changes in Eastern Europe and the former Soviet Union and the effect of the GATT agreement on world food trade (65).

Our continuing concern about under nutrition and household food security leads us to conclude that agricultural research and investment will have their greatest impact on reducing hunger if they are planned specifically to take account of the changing geographical and socio-economic characteristics of hunger in the world, and of poor people's perceptions of their malnutrition-related problems. In the immediate future, this will mean increased attention to the production potential of poor people living in resource-poor areas, to the promotion of secure and sustainable livelihoods in Africa, to the needs of female-headed households and per-urban populations and to

measures which will mitigate the appalling effects of severe drought and conflict on food supply, food prices and the command over food by poor people. Because it is imperative to assure a sustainable and sufficient world food supply, it is necessary to keep under review investments in agricultural research, agriculture and other components affecting supply. We believe that increased investments in these areas are entirely in concert with the massive programmers of action required to achieve the goals set by the International Conference on Nutrition. At the same time, and in a world where aid resources are increasingly scarce, the additional resources required to address issues related to world food supply should not be sought at the expense of those needed to strengthen the effective demand of the deprived for food, health and household care. In our analysis of the world food problem, household access to food remains one of the most urgent food problems for the foreseeable future (66).

At least 34 nutrients are needed for growth and normal body functioning. Nutrients function in many ways to build, maintain, and protect body structures and systems and to promote health. For example, some nutrients provide substrates or structure for various body tissues. Others serve as antioxidants, counteracting oxidative damage to bimolecular. Many nutrients are necessary for the production and functioning of compounds necessary for health such as hormones, enzymes, or coenzymes and for homeostasis of physiological systems. Some nutrients can be used as an energy source and others are necessary in various stages of energy production Reported dietary intakes of the following nutrients are low enough to be of concern:

- For adults: vitamins A, C, and E, calcium, magnesium, potassium, and fiber
- For children: vitamin E, calcium, magnesium, potassium, and fiber.

Efforts are warranted to promote increased dietary intakes of vitamin E, potassium, and fiber regardless of age; increased intakes of vitamins A and C, calcium, and magnesium by adults; and increased intakes of calcium and magnesium by children age 9 years or older. Efforts are especially warranted to improve the dietary intakes of adolescent females. During an illness, children need to continue to eat regularly. After an illness, children need at least one extra meal every day for at least a week (67).

2.4.4 Health Belief Model

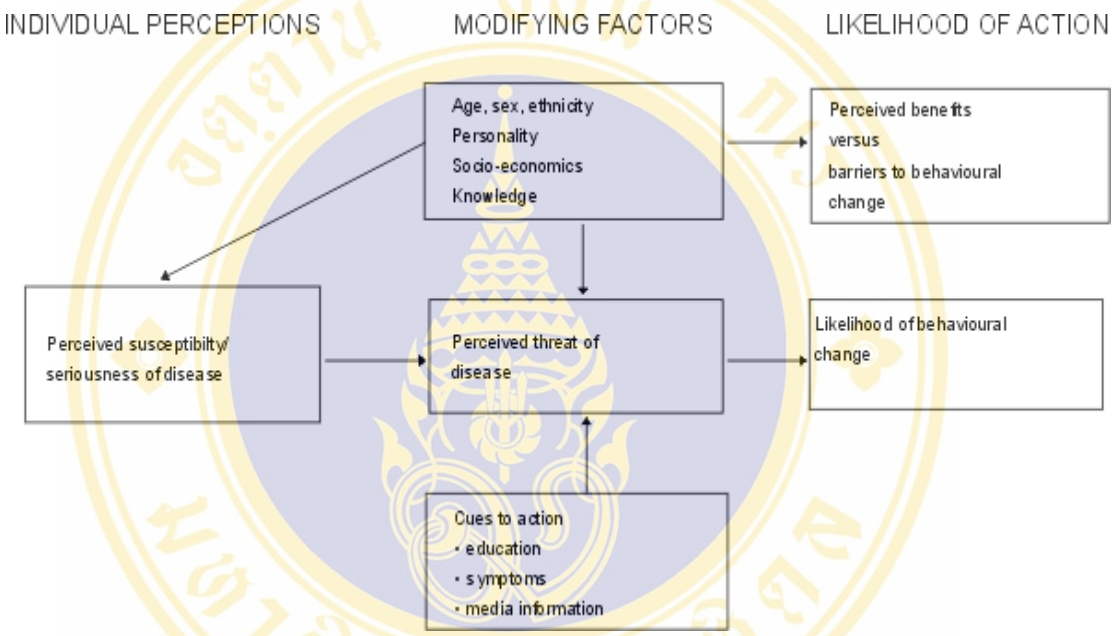
The Health Belief Model (HBM) is a psychological model that attempts to explain and predict health behaviors (54). The HBM was spelled out in terms of four constructs representing the perceived threat and net benefits: perceived susceptibility, perceived severity, perceived benefits, and perceived barriers.

Table 3 Concepts, definitions and applications of Health Belief Model

Concept	Definition	Application
Perceived Susceptibility	One's opinion of chances of getting a condition	Define population(s) at risk, risk levels; personalize risk based on a person's features or behavior; heighten perceived susceptibility if too low.
Perceived Severity	One's opinion of how serious a condition and its consequences are	Specify consequences of the risk and the condition
Perceived Benefits	One's belief in the efficacy of the advised action to reduce risk or seriousness of impact	Define action to take; how, where, when; clarify the positive effects to be expected.
Perceived Barriers	One's opinion of the tangible and psychological costs of the advised action	Identify and reduce barriers through reassurance, incentives, assistance.
Cues to Action	Strategies to activate "readiness"	Provide how-to information, promote awareness, reminders.
Self-Efficacy	Confidence in one's ability to take action	Provide training, guidance in performing action.

Source: Theory at a Glance: A Guide for Health Promotion Practice (1997)

These concepts were proposed as accounting for people's "readiness to act." An added concept, cues to action, would activate that readiness and stimulate overt behavior. recent addition to the HBM is the concept of self-efficacy, or one's confidence in the ability to successfully perform an action. This concept was added by Rosenstock and others in 1988 to help the HBM better fit the challenges of changing habitual unhealthy behaviors, such as being sedentary, smoking, or overeating (55).



Source: Glanz et al, 2002, p. 52.

Figure 2 Conceptual model of Health Belief Model

But in this research, Health Belief Model was not used for develop research conceptual framework according to the difference of dependent variable that should be used (not behavioral change but disease occurrence). But it was adopted only four concepts of health belief model to describe mother's perception about nutritional status.

There were:

- Perceived susceptibility means mother's perception of her children risk to getting nutritional status.

- Perceived severity means mother's perception of the seriousness of the nutritional status condition, and its potential consequences.

- Perceived barriers mean mother's assessment of the influences that facilitate or discourage adoption of the promoted behavior according nutritional status prevention and assessment.

- Perceived benefit mean mother's assessment of the positive consequences of adopting the nutritional status assessment and prevention.

CHAPTER 3
RESEARCH METHODOLOGY

3.1 Study Design

This study is designed as cross-sectional descriptive study.

3.2 Study Area

This study is carry out at Bahu Health Center, Malalayang Sub District, Manado City, North Sulawesi Province.

3.3 Study Population

The study population is mother of children under five years of age that registered at the Bahu Health Center, Malalayang Sub District, Manado City, North Sulawesi Province. The total of mothers are 2465.

3.4 Sample Size

The sample size is computed by the following formula (Lemeshow, 1993)

$$n = \frac{Z^2 pq}{d^2}$$

$$n = \frac{1{,}96^2 X (0.5) X (0.5)}{(0{,}07)^2} = 196$$

Where :

n = Estimated sample size (196)

q = 1 – p

p = Anticipated proportion of individual in the population processing the characteristic of interest when know (0.5)

d^2 = Absolute precision value of the study, it was set at 0.7%.

However, taking info account regional variations and in case of any dropouts or incomplete data, a sample of 210 mothers together with their children under five years were selected for the study.

3.5 Sampling Technique

Manado city has been purposely selected for the conducting study. Bahu Health Centers has been taken as study area because it is secondly high nutritional status problem of all Health Center in Manado so responsible for the implementation of knowledge and perception of mothers about nutritional status of children under five years of age and sample has taken from data Bahu Health Center by using simple random sampling. Simple random sampling technique ensures that bias is not introduced regarding who is included in the survey. With simple random sampling, each item in a population has an equal chance of inclusion in the sample.

3.6 Research instruments and data collection

3.6.1 Questionnaire

Nutritional status of children was taken from the record of Bahu Health Center. The questionnaire was prepared in English and was translated in to Indonesia language. The questionnaire had been tested for its validity by the experts before pre testing. Pre testing was conducted at Ranotana Health Center which respondents had similar characteristics with Bahu Health Center on January 5 , 2008. The result showed that Kuder-Richardson formula (KR) 20 coefficient was 0.818 for mother's knowledge and Cronbach's alpha coefficient was 0. 754 for mothers' perception.

The questionnaire contained 3 parts as bellow:

Part 1:

Socio demographic factors of respondents can be measured by age, marital status, education, occupation, number of children, and family income.

Part 2:

Knowledge of mother towards nutritional status that means understanding of measurement nutritional, food habits pattern, and nutrient nation standard. To measure the knowledge each correct answer has given score of 1 and 0 for incorrect answer. Total score was 34 for 34 questions. A criterion of knowledge level will makes based on percentage of knowledge scores. The low knowledge is <60% of total scores, moderate knowledge is between 61% - 80% and high knowledge is >81% of totality scores.

Part 3:

The perception part consisted of 22 questions. This measured in mother perception about susceptibility, severity, benefit and barrier of nutritional status of children. The score was given in positive statement, 3 scores for an agree answer, 1 scores for the answer not sure and 0 score for disagree answer. In negative statements, 1 scores for an agree answer, 2 scores for the answer not sure and 3 scores for disagree answer. Finally, the total scores were summarized. Total score of 22 correct answers was given as 64. Using Best Criteria (59), total score for each respondent was calculated and was labeled based on 3 categories. It was used class interval, minimum score and maximum scores as the guidance score to determine the categories. For class interval (CI) can calculated based on formula:

$$\text{Class Interval (CI)} = \frac{\text{Maximum score} - \text{Minimum score}}{\text{Levels of categories}}$$

Those were categorized as good perception for total score more than minimum score + (2 x CI value); fair perception for total score between minimum score + CI

value and minimum score + (2 x CI value); and poor perception if the total score of each mother was less than minimum score + CI value.

After completion of data collection, cleaning, editing and coding are applied by following coding instruction. Then collected data will verify and analyze by Epidata and MINITAB.

3.6.2 Data collection procedure

Data collection started from January 2008 by using the questionnaire and interview among mothers who have children under years old in communities by making appointment with them before coming to see them in their houses. They would not be informed about the objectives to prevent possible bias in interview process.

3.7 Data analysis procedure and statistics used

After be collected completely, the data was recorded. Standardized procedures were used for data recording and analysis. Data was entered into computer using Epidata, and then it was processed and analyzed using Minitab. For mother's knowledge and perception, the total score foe each mother (respondent) was calculated based on the scoring method and it was categorized as 3 categories according to the calculated total scores and measurement method. Then it was calculated to find frequency and percentage of each category.

Chi-square test was performed to determine associations between the nutritional status of children under five years and both mother's knowledge and mother's perception. Fisher exact test was used if one or more expected frequencies of each cross tabulation were found less than 5. Association was determined as significant with 95 % confidence if p value < 0.05 based on statistical value $\alpha = 0.05$.

CHAPTER 4
RESULTS

This research was conducted in Manado district, North Sulawesi Province, Indonesia. The 200 mothers who had children 5 years were collected by structured questionnaire. The data collection started from 11th January to 30 January 2008. The results from the study were presented in 5 parts as following;

Part 1 Nutritional status of children.
Part 2 Socio demographic characteristics of mothers.
Part 3 Mother's knowledge about nutritional status.
Part 4 Mother's perception about nutritional status
Part5 Relationship between children nutritional status and independent variables.

The study was not only described by number, percentage, maximum, minimum, mean and standard deviation but also tested the association between them and nutritional status of children.

4.1 Nutritional status of children

Nutritional status of children was determined by measuring weight for age. According to weight for age classification 87.1 % of normal and abnormal (mild malnutrition, obesity and severe malnutrition) were twelve point nine percentage (12.9 %) (table 1).

Table 4 Number and percentage of children by nutritional status by weight for age (Depkes RI classification)

Nutritional status of children	Number (N=210)	Percentage %
Normal	183	87.1 %
Abnormal (Mild malnutrition, Obesity and Severe malnutrition)	27	12.9 %

4.2 Socio-demographic characteristics of mothers

The results of socio demographic characteristics of mothers consisted mother's age, marital satus, education, occupation, family income and number children under and over five years were presented in Table 3.

Among 210 mothers**,** majority of them (30.95% and 54.76%) were found between 30-39 and 20-29 years respectively, 12.38% was less than 20 years and only 1.90% were age 40-49 years old (mean 28.067 and SD 6.462).

According to marital status of the mothers, 95.24 percent stayed together and there was only 4.76 percent were single.

The result of this study also showed the education levels of mothers. Most of them completed high school 74.29%, 28 mothers (13.33%) graduated from secondary school, 7 (3.33%) from primary school, 2 (0.95%) were uneducated, 16 (7.62%) graduated.

More than 73.81 % of mothers were housewife, 9.52 % work as government servant, 9.52 % non government servant and the others were 7.15 %.

The classification based on standard salary in Indonesia,less than 1000000 rupiahs was 38.10 %, 1000000-2000000 rupiahs was 44.29%, 2000025-3000000 rupiahs was 15.24% and 3000025-4000000 rupiahs was 2.38 % (Mean =1.8190 .SD=0.7737).

Table 3 showed that there were 64.29 percent of respondents had one child under five years, 33.81% 2 and 1.90 % of respondent had children respectively.

Table 3 also showed most of respondent (62.86%) did not have the number of children over 5 years of age (23.81%).

Table 5 Number and percentage of mother by socio-demographic characteristics

Socio demographic characteristic	**Number (N=210)**	**Percentage %**
Age in years		
< 20	26	12.38
20 – 29	115	54.76
30 – 39	65	30.95
40 – 49	4	1.90
Mean =28.067 SD=6.462 Median=28.000	**Min=15**	**Max=45**
Marital status		
Married / living together	200	95.24
Divorced/separated/widow	10	4.76
Education		
Un-educated	2	0.95
Primary school or below	7	3.33
Secondary school	28	13.33
High school and College	156	74.29
Diploma	1	0.48
Higher such as Bachelor/Master	16	7.62
Occupation		
Housewife	155	73.81
Government servant	20	9.52
Non government servant	20	9.52
Others	15	7.15
Family income (Rupiah/month)		
< 1.000.000	80	38.10
1.000.050 – 2.000.000	93	44.29
2.000.050 – 3.000.000	32	15.24
3.000.050 – 4.000.000	5	2.38
Mean =1.8190 SD=0.7737 Median=2.0000	**Min=1**	**Max=4**

Table 5 Number and percentage of mother by socio-demographic characteristics (cont.)

Socio demographic characteristic	Number (N=210)	Percentage %
Number of Child Under Five Years		
1	135	64.29
2	71	33.81
3	4	1.90
Mean =1.3762 SD=0.5235 Median=1.0000 Min=1 Max=3		
Number of Child Over Five Years		
0	132	62.86
1	50	23.81
2	19	9.05
3	6	2.86
4	1	0.48
5	2	0.95
Mean =0.5714 SD=0.9214 Median=0.0000 Min=0 Max=5		

4.3 Mother's Knowledge on nutritional status

Mother's knowledge on nutritional status contained 3 dimensions. It can be described seperately as measurement nutritional status, food habit and nutrient intake standard. In each question, there were 2 choices, which were true and false.

89.65% of mothers answered correctly the question of weight according as age shows nutritional status of children is normal and lowest 41.43% answered correctly for question about nutritional status has 3 classification from item of measurement nutritional status. There were only 31.90% answered correctly for question about sources of carbohydrate food are meal, butter, chocolate and oil and the same as percentage 79.05 % for 3 question from food habit item are questions about frequency of breastfeeding is any time the children wants/no have limit, the sources of calorie foods are combination of fats, carbohydrate, protein, vitamin and

mineral, and children need breakfast as example: rice, bread, or milk. This study found highest percentage to correct answer of nutrient intake standard item were 82.86% from question of if over nutrition so food intake usually 2 plate of rice, must take less than its and there were lowest percentage of question about over nutrition food intake must less especially vegetables and fruit only 21.90 %. For negative questions, highest percentage was 72.86% of mothers gave correct answer (answer no) in term of measurement nutritional status and 21.90% term of nutrient intake standard. For details, the result of mothers knowledge can be seen at Table 3.

Table 6 Distribution of answer in term of knowledge among 210 mothers

Knowledge statement	**Correct answer Number**	**Percentage**
Measurement Nutritional Status		
1. The under red line in your child KMS describe under nutritional status of children under five years.*	153	72.86
2. The green line in your child KMS describe normal nutritional status of children under five years.	164	78.10
3. The yellow line in your child KMS describe over nutritional status of children under five years.	150	71.43
4. Nutritional status has 3 classifications	87	41.43
5. Over, normal and under nutritional status are classifications of nutritional status of children	107	50.95
6. Measuring of Weight/Age to assess nutritional status in children under five years of age is correct way of doing.*	100	47.62
7. If weight the same as age shows nutritional status of children is normal.	187	89.05

Table 6 Distribution of answer in term of knowledge among 210 mothers (cont.)

Knowledge statement	Correct answer	
	Number	Percentage
Food Habit		
8. Eating 2 times/day is considered complete.*	77	36.67
9. 2 times snacks per day are adequate.	101	48.10
10. Give breastfeeding only eating time.*	107	50.95
11. Frequency of breastfeeding is any time the Children wants/no have limit.	166	79.05
12. Under 6 months of children can not be given Any other food/milk, breastfeeding is enough	134	63.81
13. The sources of carbohydrate food are meal, Butter, chocolate and oil.*	67	31.90
14. The sources of vitamin and mineral food are fruits Vegetables.	156	74.29
15. The sources of calorie foods are combination of fats, carbohydrate, protein, vitamin and mineral	166	79.05
16. The sources of fatty foods are rice, potato and noodle.*	113	53.81
17. The sources of protein foods are eggs, fish,milk and peanut. and peanut.	147	70.00
18. Slogan of “4 health and 5 complete” was conducted for eating of 4 parts : rice. vegetables, fish/meal, fruit, and last adding 5 excellent the milk.	165	78.57
19. Children need breakfast as example: rice, bread, or milk.	166	79.05

Table 6 Distribution of answer in term of knowledge among 210 mothers (cont.)

Knowledge statement	Correct answer	
	Number	Percentage
Food Intake		
17. If over nutrition so food intake usually 2 plate of rice, must take less than its.	174	82.86
18. If over nutrition food intake must less especially vegetables and fruit.*	46	21.90
19. If under nutrition must food intake more sources carbohydrate and fat.	126	60.00
20. Food consumption of carbohydrate is ¾ of total food number per days consumption.	133	63.33
21. Good food intake is food have sources of energy, controller and builder.	167	79.52
22. Sources of energy: rice, root and flour.	164	78.10
23. Sources of controller : vegetables and fruit.	129	61.43
24. Sources of builder : combine sources food of Animals and plant.	123	58.85

Table 4 showed the level distribution of mothers according to their knowledge score on children nutritional status. Three levels of knowledge based on the criteria cut-off point (22) as;

More than 80 % of standard score was good, this group accounted for 6.19%.
From 80 – 60 % of standard score was fair, this group accounted 46.67%.
Less than 60% of standard score was poor, this group accounted for 47.14%.

Table 7 Number and percentage of mothers by level of knowledge on children nutritional status

Level of knowledge	n	%
High	13	6.19
Moderate	98	46.67
Low	99	47.14

High : > 80%, Moderate : 60 % – 80 % and Low : < 60%

4.4 Mother's Perception about Nutritional Status

In this study it was measured 4 dimensions those build mother's perception about nutritional status. It can be described separately as perceived susceptibility, perceived severity, perceived barriers and perceived benefits. The total statements of mother's perception were 22 statements. For each statement, there were 3 choices of opinion, which were agree, disagree and not sure.

The highest percentage was 72.86% of mothers, they agreed with positive statements (showed agreement) about under intake of nutrient caused under nutritional status too in susceptibility term, 55.24% for question of children with over nutrition will have long time to develop good food habit in severity term, 81.43% for question of intake food according formula create normal nutrition in benefit term and 77.62% in term barrier for question of under nutrition needs more of standard food intake. For negative statements, around 61.43% of mothers disagreed for question of fat is better while still children than thin but only 29.05 of mothers answered correct opinion about question of eating according to standard (Table 5).

The mother's perception of perceived susceptibility showed small number to not sure opinion 5.24% for question of over nutritional status in children is healthier than normal nutritional status and question of child of bad food habit is easy risk over

nutritional status, disagree opinion 12.38% for question of under intake of nutrient can cause under nutritional status too and agree opinion 43.33% for question of if child of normal nutrition becomes sick, he has no better immune than over nutrition child.

Small number in perceived severity to agree opinion 20.95% for question of fat is better while still children than thin, 14.76% to disagree opinion for question of over nutrition can not effect until adult and 8.57% no sure opinion for question of eating according standard no need while still children age.

The mothers gave small number in perceived benefit 36.67% to agree opinion for question of eat more rice is good nutrition, 11.43% to disagree opinion for question of intake food according formula create normal nutrition and not sure opinion 7.14% for the same question.

The perceived barrier small number there were 7.62% disagree opinion for question of under nutrition needs more standard food intake, 11.90% not sure opinion for question of good nutrition needs according of standard food intake and agree opinion for question of performance of good nutrition as under nutrition.

Table 8 Distribution of opinions in term of perception among 210 mothers

No.	Items of perception	Opinion		
		Agree (%)	Disagree (%)	No Sure (%)
Susceptibility				
1.	Over nutritional status in children is healthier than normal nutritional status.	62.38	32.38	5.24
2.	If child of normal nutrition becomes sick, he has no better immune than over nutrition child.*	43.33	39.05	17.62
3.	Child of over nutrition is more easy to get diseases than child of normal nutrition	66.67	26.19	7.14
4.	Child of bad food habit is easy risk over nutritional status.	72.38	22.38	5.24
5.	Breakfast habit is not good because can add children weight.*	51.43	26.67	21.90
6.	Under intake of nutrient can cause under nutritional status too.	72.86	12.38	14.76

Table 9 Distribution of opinions in term of perception among 210 mothers

No.	Items of perception	Opinion Agree (%)	Disagree (%)	No Sure (%)
Severity				
7.	Over nutrition in childhood can not effect until adult.	47.14	14.76	38.10
8.	Fat is better while still children than thin.*	20.95	61.43	17.62
9.	Eating one kind is better so not poison.*	28.10	51.90	20.00
10.	Children with over nutrition will have long time to develop good food habit.	55.24	26.67	18.10
11.	Eating according standard no need while still children age.*	62.38	29.05	8.57
Benefit				
12.	If poor so good nutrition was get with more eating rice.*	36.67	43.81	19.52
13.	Child of normal nutrition will have better growth and development till adult.	65.24	23.33	11.43
14.	Normal nutrition status is difficult be attacked by diseases.	70.00	15.24	14.76
15.	Performance of good nutrition is better than over nutrition.	60.95	12.86	26.19
16.	Intake food according formula create normal nutrition.	81.43	11.43	7.14
17.	Good food habit can create good nutrition status.	73.33	13.33	13.33

Table 10 Distribution of opinions in term of perception among 210 mothers (cont.)

No.	Items of perception	Opinion		
		Agree (%)	Disagree (%)	No Sure (%)
Barrier				
18.	Over nutrition is very difficult to avoid fat, food instant, cookies, and ice cream.	60.95	24.76	14.29
19.	Performance of good nutrition like as under nutrition.*	42.86	34.29	22.86
20.	Under nutrition needs more of standard food intake.	77.62	7.62	14.76
21.	Over nutrition needs bellow of standard food intake.	67.62	16.19	16.19
22.	Good nutrition needs according of standard food intake.	70.48	17.62	11.90

Note:* negative statement

The minimum score of mother's perception was 22 and the maximum score was 66. Using Best Criteria, this study found that 50.5 percent of mothers was por perception. The mothers (49.5%) was good perception toward nutritional status.

Table 11 Number and percentage of mothers by level of perception of 210 mothers

Perception	n	%
Good	104	49.5
Poor	106	50.5

Good : total score >min score + (2 x CI value)
Fair : total score min score + CI value – min score + (2 x CI value)
Poor : < min score + CI value

4.5 Relationship between nutritional status of children and independent variables

Table 7 shown that normal nutritional status of children most had older mothers than abnormal nutritional status (> 20 years). Among groups of children whose mothers were alone, abnormal nutritional status no has (0%). Compared with parents who were living together have 12.9% abnormal status. The result did not show any relationship between nutritional status of children and marital status (p>0.05) (table 7).

More most (12.4%) abnormal nutritional status children were from mothers who had level higher than primary school compared with mothers who had uneducated or just complete primary 0.5%. The table 7 showed there was not relationship between nutritional status of children and education of mothers (p=0.873) (table 7).

Housewife had less abnormal nutritional status of children and more normal children than the other groups (1.9% and 65.7%). To the people who work outside such as government servant and others, they had more abnormal cases of nutritional status than housewife, also there was a significant relationship between nutritional status of children and education of mothers (p=0.000) (table 7).

The abnormal nutritional status of children (12.9%) most had of mothers has family size less than two person under five years has compared with above five years 11.4%. However, the result did not show any relationship between nutritional status of children and children number in living with mother's (p>0.05) (table 7).

For family income, the higher percentage (11%) of abnormal nutritional status had higher income than lowest income (2.3%). The table 7 showed there was a significant relationship between nutritional status of children and family income (p=0.014) (table 7).

Table 12 Relationship between socio demographic characteristics of mothers and the nutritional status of children by weight for age

Socio demographic Characteristics	Nutritional status of children				
	Normal	%	Abnormal	%	p-value
Age					
Under 20 years	24	11.4	2	0.9	0.401
Over 20 years	159	75.8	25	11.9	
Marital status					
Living together	173	82.4	27	12.9	0.295
Separated/divorced/ Widowed	10	4.7	0	0	
Education level					
Un-educated/primary School or below	8	3.80	1	0.5	0.873
Higher than primary	175	83.3	26	12.4	
Occupation					
Housewife	138	65.7	4	1.9	**0.000***
Employee/others	45	21.4	23	11	

Table 13 Relationship between socio demographic characteristics of mothers and the nutritional status of children by weight for age

Socio demographic Characteristics	Nutritional status of children				
	Normal	%	Abnormal	%	p-value
Number of children Under Five Years					
Less than 2	179	85.2	27	12.9	0.602
More than 2	4	1.9	0	0	
Number of children Over Five Years					
Less than 2	174	82.9	24	11.4	0.196
More than 2	9	4.3	3	1.4	
Family Income					
Under 1 million	75	35.7	5	2.3	**0.014***
Over 1 million	108	51	24	11	

This study also determined association between the nutritional status of children and both mother's knowledge and mother's perception.

By combining fair and good categories, mothers knowledge was modified into 2 categories. By using Fisher Exact test to analysis, this study found no significant association between the occurrence of nutritional status of children and mother's knowledge ($p>0.05$).

Table 14 Percentage of nutritional status of children and mother's knowledge

Level of knowledge	Nutritional status of children				p-value
	Normal		Abnormal		
	n	(%)	n	(%)	
High	95	45.2	16	7.6	**0.475****
Low	88	42	11	5.2	

Note: ** Fisher Exact test

Mother's perception was also modified to 2 categories by combining poor and fair categories. By using Fisher Exact test for analysis, this study found no significant association between the occurrence of nutritional status of children and mother's perception ($p>0.05$) (table 9).

Table 15 Percentage of nutritional status of children and mother's perception

Level of perception	Nutritional status of children				p-value
	Normal		Abnormal		
	n	(%)	n	(%)	
Good	94	44.77	10	4.76	0.164**
Poor	89	42.38	17	8.09	

Note: ** Fisher Exact test

CHAPTER 5
DISCUSSION

The aims of this study were to describe mother's knowledge and mother's perception about nutritional status and analyzed association between the nutritional status of children under five years and both mother's knowledge and mother's perception.

5.1 Socio-Demographic Factors in Family

This study showed almost mothers who were involved 20-29 years old (54.76%) and did not find any significant relationship between age of mother and nutritional status of children because of mothers were over 20 years old most more (11.9%) and had abnormal nutritional status of children than mothers under 20 years old (the same study was done in Thailand in 2001 by Basri (22) and Shaikh in Pakistan in 2007 (23).

Regarding marital status, 95.24% of mothers take care their children with their husband. It is possible that the husband could help his wife to do the house work and the wife had more time to pay attention on child feeding, even though the statistical relationship could not find in this study but among separated/divorced/widowed groups the prevalence of normal children was lower than a half (4.7%) and had no abnormal nutrition of children. The mother living alone was not interested in cooking, she often gets fast food from food shops, which was not enough basic nutrients for children development. The mother living alone has to work hard to ean income, so she did not have time to look after her child. Therefore the children suffer from malnutrition or abnormal nutrition.

Concerning mother's occupation in nutritional status, it also had statistically significant relationship with nutritional status of children indirectly (p=0.000) (table 7). Mothers worked as government servant equal who non government servant (9.52 %) then followed by mothers who worked in self companies.

The lowest prevalence of normal children (3.80%) was found in children whose mothers had primary school or below, an educated and the highest rate of abnormal children was also found in that higher than primary school level (12.4%).

In this study, the mother's education was not significantly association with children's nutritional status (p>0.05) (table 7). It was indicated that formal education is not affect this …….... The more education people get by non formal. A study conducted by the International Food Policy Research Institute had also found that half of the reason why malnutrition fell from 40% to 23% in East Asia over the period of 1970 – 1995 was attributable to improvement in woman education (36). Information revolution is one of the hallmarks of this country. Use of satellites for radio, television are helpful to mothers even in remote geographically area. Innovative programs through these media have provided dissemination of scientific information, including health related information. Thus education is thought to be important. It also helps the mother to have more chance to identity a good job and more income.

Moreover, they stilled to have misconception and belief toward child caring. She would has never accepted any change in her life style unless she is convinced by the health hazards, which affected in her life directly.

In this study the family size was not significant relationship with nutritional status. The children in large family and poor family trend to suffer from the malnutrition problem, the children in the large family with low income faced more problem than those from small family.

Family income was significant and successful to reach the relationship to nutritional status. In this study, the population was rural, so mostly people occupied land to plant and raise livestock. As the result, the land provided enough food for each family in this area. The children in large family with low income may have more problem in children's nutritional status. Around 80 families (38%) were in middle income level according to this study's criteria. This study found wide variation of average family income of family per month.

5.2 Mother's Knowledge about Nutritional Status

This study found that 46.67 % of mothers had moderate knowledge about nutritional status, 6.19% had high knowledge and 47.14% of the mothers had low knowledge about nutritional status. These result showed that even though mother's knowledge about measurement nutritional status, food habit and food intake were quite stagnant for a long time but almost its level was found at high levels (the mean score was 63.1% of the maximum total score). Socialization and transfer knowledge between health personals to community seemed not successful beside other nutrition program so it means almost mothers had enough knowledge about nutritional status.

Around 64.49 % of mothers answered all the questions correctly in term of measurement nutritional status. There were only 62.10% of the mothers gave correct answer about food habit and 63.25% of the mothers gave correct answer about the number of family members in children's room. So it means they had equal proportion of level knowledge from each item.

This study found almost mothers (89.05 %) answered all the question correctly in term of measurement nutritional status and also around 82.86 % of the mothers gave the correct answers for all the question in term of food habit. That show mother's knowledge about that's item of measurement nutritional status and food habit more than other item.

There were only a few mothers answered questions correctly in term of measurement nutritional status (41.43%). Around 31.40% of the mothers gave correct answer about the source of carbohydrate food and only 21.90% of the mothers gave correct answer about food intake if over nutrition. This result showed that this study seems more specific to determined mother's knowledge about nutritional status by using more variation of questions.

5.3 Mother's Perception about Nutritional Status

This study found that around 49.5 % of mothers had good perception, 50.5% of mothers had poor perception. These results showed that mother's perception about children health especially nutritional status has not increased for more than 16 years. Only half number of mothers had good perception about nutritional status. Health policy reformation in Indonesia becomes the crucial factor beside all of nutritional status programs those supported the better changes of perception about nutritional status in community.

After the result of mother's perception had been analyzed separately according to each dimension, this study found 57% of mothers answered correct opinion for all statement in term of perceived susceptibility and around 49 % of mothers answered correct opinions for all statements in term of perceived severity. Almost mothers (66%) answered correct opinions for all the statements in term of perceived benefits of nutritional status prevention and assessment. But there was only a small number of mothers who answered correct opinion for all statements in term of .perceived barrier, which was only 62.19% of all the mothers. There were 29% of the mothers answered correct opinion in term of eating according standard and 27% of the mothers answered correct opinion about breakfast habit.

5.4 Associations between The Nutritional Status of Children Under Five Years and both Mother's Knowledge and Mother's Perception

This study found there were no significant associations between the occurrence of nutritional status of children five years and both mother's knowledge and mother's perception. Using Fisher Exact test, this study found p values more than 0.05 in all associations. If the mother has changed the traditional belief, then she will accept how to improve her behavior appropriately, rejected Junk food and select adequate nutrient food for her child. So mother's Knowledge and Mother's Perception were not affecting nutritional status of children in this study. The result in this study is the same as the study done by Yaho Tada (2001)

There was no significant association between mother's knowledge and mother's perception by Fisher Exact ($P>0.05$). This means mothers who have poor knowledge of nutritional status have no poor perception of nutritional status and also mothers who have good knowledge of nutritional status have no good perception.

To establish significant associations among the occurrence of nutritional status, mother's knowledge and mother's perception due to small sample size and homogeneous in sample's characteristics. There also influenced the statistical power to establish the significance of those associations.

CHAPTER 6
CONCLUSION AND RECOMENDATION

6.1 Conclusion

This study was a cross sectional study. It was conducted at Bahu Health Center, Malalayang Sub District, Manado City, North Sulawesi Province, Indonesia from January 5-30, 2008. The objectives of this study were to describe socio demographic factors of family, mother's knowledge about nutritional status, mother's perception about nutritional status and the occurrence of nutritional status. It also tried to find associations between the occurrence of nutritional status and both mother's knowledge and mother's perception about nutritional status. According to the limited amount of mothers who took their children under five years to this health center , there were collected around 210 mothers of children under five years by using simple random sampling. They were interviewed by using structured questionnaires that had been standardized, pre-tested and modified before data collection. Using computer software, all collected data was proceed and analyzed.

The result showed that even though almost parents of children under five years with high education level, can do to cared their children very well. Among 210 families represented by mothers, there was wide variation of average family income of family per month. Majority of families in this study had small family size and lived with less than 5 family members per house.

The lower occurrence of nutritional status among children under five years was found in this study. Based on it, this study found that there were no significant associations between the occurrence of nutritional status and both mother's knowledge and mother's perception. No significant association was also found between mother's knowledge and mother's perception.

Most mothers had not enough knowledge and also had not good perception about nutritional status. Socialization and transfer knowledge between health personals to community seems to be not successful beside other nutritional status prevention programs and not make the knowledge about nutritional status spread widely in community. Health policy reformation in Indonesia became the crucial factor beside all of nutritional status prevention in the community but not work according with objective.

This study still found there were a lack of knowledge among mothers about nutritional status, especially in terms food habit. Otherwise, the low perception of perceived severity became the dominant aspect of perception found by the study. There were only a few mothers who gave correct opinion about perceived susceptibility (56.67%).

6.2 Recommendations

The community based public health education should be promoted to increase knowledge and perception for better assessing and preventing nutritional status and other dangerous diseases in community. The main points that must be strengthened in the community are signs and symptoms of nutritional status, causes and factor related with nutritional status and also the perception of perceived severity of nutritional status. Training of health providers at all levels is recommended in for correct and applicable prevention and assessment of nutritional status and other dangerous diseases to ensure better transfer knowledge, better perception and better health practices in the community.

6.3 Recommendation for further study

Further study should prepare a larger population with enough amounts of children having nutritional status to get more reliable and meaningful results which can be used to formulate better health policy in larger population. In depth interview also can be used to get further results of this kind of study.

Further studies, perception of mothers about nutritional status in term barrier as commercial , good knowledge and food nutrition in the age can be depth research.

Finally, this kind of study also can be conducted for other diseases as long as there are enough samples with enough characteristics to support it.

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APPENDIX

APPENDIX A

Mothers who take care of children under five years of age should be interviewed to finish the set of questionnaire

QUESTIONNAIRE

Knowledge and Perception of Mother About Nutritional Status of Children Under Five Years Of Age in Bahu Health Center, Manado City North Sulawesi Province.
House hold/respondent information;
Respondent's identification (ID).....……

House hold no

……..

Name of

interviewer…….

Date of

interviewee……/January/2007

A. I: SOCIO-DEMOGRAPHIC FACTORS OF MOTHERS:

Please put your answer in the blank column or put (√) mark in the check box.

1. Age :……years

2. Marital Status:

☐ 1. Married ☐ 2. Divorce
☐ 3. Widow ☐ 4. Separated

3. Educational Background:

☐ 1. Un-educated ☐ 2. Primary school
☐ 3. Secondary school ☐ 4. High school
☐ 5. College/Diploma ☐ 6. Higher such as Bachelor/Master

4. Occupation:

☐ 1. House wife ☐ 2. Salon

☐ 3. Teacher ☐ 4. Non government officer

☐ 5. Government officer ☐ 6. House keeper/maid

☐ 7. Trader or self employed ☐ 8. Other ……..

5. Number of Child under Five ……persons

6. Number of Child over Five: …… persons

7. Family income: …… rupiahs/bulan.

A. 2 Knowledge of mother towards Nutritional Status of Children

No	Knowledge of mother towards Nutritional Status of Children	True	False
1	The under red line in your child KMS describe Normal Nutritional Status of Children under five years.		x
2	The green line in your child KMS describe Under Status of Children under five years.		x
3	The yellow line in your child KMS describe Over Nutritional Status of Children under five years.	x	
4	Nutritional status has 2 classifications.		x
5	Over, normal, and under nutritional status are classifications of Nutritional Status of Children.	x	
6	Measuring of Weight/Age to assess nutritional status in children under five years of age is correct way of doing.	x	
7	If weight the same as age shows nutritional status of children is normal.		
8	Eating 2 times/day is considered complete.		x
9	2 times snacks per day are adequate.	x	
10	Frequency of breast feeding is any time the child wants /no have limit.	x	
11	Give breastfeeding only eating time.*		
			x

12	Under 6 months of child can be given any other food/milk, breastfeeding is enough.		
13	The sources of carbohydrate food are meal, butter, chocolate and oil.		x
14	The sources of vitamin and mineral food are fruits and vegetables	x	
15	The sources of calorie foods are combination of fats, carbohydrate, protein, vitamin and mineral.	x	
16	The sources of fatty foods are rice, potato and noodle.		x
17	The sources of protein foods are egg, fish, milk, and peanut.	x	
18	Slogan of "4 health and 5 complete" was conducted for eating for 4 parts: rice, vegetables, fish/meal, fruit and last adding 5 excellent the milk.	x	
19	Children need breakfast as example: rice, bread, or milk.		
	Food Intake		
20	If over nutrition so food intake usually 2 plate of rice, must take less than its.		
21	If over nutrition food intake must less especially vegetables and fruit.*		
22	If under nutrition must food intake more sources carbohydrate and fat.		
23	Food consumption of carbohydrate is ¾ of total food number per days consumption.		
24	Good food intake is food have sources of energy, controller and builder.	x	
25	Sources of energy: rice, root and flour Sources of controller : vegetables and fruit. Sources of builder : combine sources food of Animals and plant.	x	
26	Sources of controller : vegetables and fruit.		
27	Sources of builder : combine sources food of Animals and plant.	x	

A. 3 Perception of mother towards Nutritional Status of Children

No	Perception of mother towards Nutritional Status of Children	Agree	Not sure	Dis Agree
	Susceptibility			
28	Over nutritional status in children is healthier than normal nutritional status			x
29	If child of normal nutrition becomes sick, he has no better immune than over nutrition child			x
30	Child of over nutrition is more easy to get diseases than child of normal nutrition	X		
31	Child of bad food habit is easy risk over nutritional status.	X		
32	Under intake of nutrient can cause under nutritional status too.	X		
33	Breakfast habit is not good because can add children weight.*			
	Severity			
34	Over nutrition in childhood can not affect until adult .			x
35	Over nutritional is good for performance of children.	x		
36	Fat is better while still children than thin.*			
37	Children with over nutritional status will have long time to develop good food habit.	x		
38	Eating one kind is better so not poison.*			
39	Eating according standard no need while still children age.*			
40	Under nutrition in children is because of lack of nutrient intake in the body	x		
	Benefit			
41	Child of over nutritional will have better growth and development till adult			x
42	Normal nutritional status cannot easily be attacked by diseases	x		

43	Over nutritional has better performance than under nutritional children			x
44	Intake nutrient according standard can have normal nutritional status of children	x		
45	The good food habit can create normal nutritional status of children	x		
	Barrier			
46	If your child have over nutritional, it is difficult to avoid source of fat like as papaya, banana, lemon, etc.			x
47	Performance of normal nutrition is looking as under:			x
48	If your child have under nutritional status and intake nutrient over standard need/calorie	x		
49	If your child have over nutritional status and intake nutrient under standard need/calorie	x		
50	If your child have normal nutritional status and intake nutrient normal standard need/calorie	x		
51	If your child have normal nutritional status and intake nutrient normal standard need/calorie	x		
52	If your child have normal nutritional status and intake nutrient normal standard need/calorie	x		

BIOGRAPHY

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