FOOD AND MAN: ANTHROPOLOGICAL PERSPECTIVE ON NUTRITIONAL STATUS OF INTHAR COMMUNITY IN INLE LAKE, NYAUNG SHWE TOWNSHIP, SHAN STATE (SOUTH)

PhD DISSERTATION

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ABSTRACT

This research intends to find out the nutritional status of *Inthars* in their culture context from Nutritional Anthropological point of view. Nutritional anthropology refers to a field of study at the interface of anthropology and nutritional sciences focused particularly on understanding how the interactions of social and biological factors affect the nutritional status of individuals and populations. The general objective of this research is to explore food and nutrition related socio-cultural perspectives in *Inhars*. Specific objectives are (1) to describe socio-cultural attributes of food in Inle; (2) to identify food availability, food accessibility and food acceptability (availability) of people living in Inle; (3) to assess food practices and nutritional status of Inthars; (4) to find out relationship among socio-cultural attribute of food, food practices and nutritional status. A cross-sectional survey was conducted involving and total study population of 300. Data collection methods involved application of self-administered questionnaires, weight and height measurements, and qualitative methods like ethnography, focus group discussions, in depth interviews, and key informant interview. Key finding showed that Inthars' foods have been studied according to Helman's food classification: food versus non-food, sacred versus profane food, parallel food classification, food used as medicine, and medicine as food, and social food. A significant feature found among Inthars is the pairs of food which should not be eaten together, according to the traditional belief. Measurement of nutritional status shows the underweight are 23.3 %, normal 62.3 %, and overweight 14.3 %. By gender, women are 29.0 % underweight, a greater proportion than men who are 16.7 % underweight. Perhaps female have a greater proportion of underweight among them because more taboos in food customs regarding women exist. The above 40 years group has 23.1 % overweight, a greater proportion than other age groups. Perhaps Inthars have a greater percentage of overweight because in moving about, they are forced by circumstances to use boats rather than walk. Measurement of energy coming from food shows carbohydrate is 65.8 % of total energy, protein 16.8 % and fat 17.2 %. Recommendations are made basing on the finding.

Key words - adaptation, horticulture, intensive agriculture, food habit, food classification, taboo, nutrition, underweight, overweight.

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LIST OF ABBREVIATIONS

BMI	- Body Mass Index
CHO	- Carbohydrate
FAO	- Food and Agriculture Organization
FGD	- Focus Group Discussion
Kcal	- Kilocalorie
NGO	- Non-Governmental Organization
PEM	- Protein Energy Malnutrition
SD	- Standard Deviation
SEA	- South-East Asia
SEAR	- South-East Asia Region
SEARO	- South-East Asia Region Office
UNDP	- United Nation Development Program
WHO	- World Health Organization

CHAPTER (1)
INTRODUCTION

1.1 Background of the study

All living beings have to depend on the nourishment obtained from food for their life. Having full nourishment and eating properly helps to lengthen man's life and keeps him healthy. Man has three basic needs, namely food, clothing and shelter. Of these three, food is the most essential need. Man can survive without other needs but it is not possible for him to survive without food. In society, food is needed not only for survival but in other sectors such as social, religious, and economic aspects of everyday life.

For people in all societies food also carries with it a range of symbolic meanings, both expressing and creating the relationships between man and man, man and his deities, and man and the natural environment. According to Brown (1999), the environment often determines what sorts of foods are available and also influences which foods are culturally preferred and which are prohibited. Culture is the final arbiter of what is acceptable to eat. Anthropologists used to point out how cultural groups differ markedly from one another in many of their beliefs and practices related to food.

According to Helman (1991), there are five types of food classification system. They are: (1) food versus non-food (2) sacred versus profane foods (3) parallel food classification (4) food used as medicine, and medicine as food (5) social foods (which signal relationships, status, occupation, gender or group identity).

The relationships of food, nutrition, society, and culture are highly relevant for population health and welfare. In nutritional sciences food is mainly viewed in terms of its nutrients composition and effects upon the body's metabolic processes and health status. There has been a special interest in developing methods for measuring nutrient intake and defining essential, adequate, and optimal intakes of nutrients (Gun Roos, 2004).

Access to adequate food is essential to achieve optimal nutrition. Though there has been a considerable increase in the overall availability of food during the past few decades, hunger and malnutrition remain as serious problems.

1.2 Problem statement

About 780 million people in developing countries subsist in inadequate diets and suffer from chronic undernutrition. Micronutrient deficiencies are also widespread, especially among women and children. At the same time, excess dietary intakes with undesirable consequences of obesity and chronic diseases afflict the affluent, in both developed and developing countries (Vinodini Reddy, 1997). There is no country in the world that is free from the nutritional problems. Whether it is rich or poor, every country faces nutritional problems. It may suffer from malnutrition such as deficiency of nutrient, excessive eating habits that are harmful to health and in some cases both problems.

World Health Organization updated the estimates for iodine, vitamin A and iron deficiencies in 1995. One of every five persons in the developing world is chronically undernourished, 192 million children suffer from protein energy malnutrition (PEM) and over 2000 million experience micronutrient deficiencies. In addition, diet-related non-communicable diseases such as obesity, cardiovascular disease, stroke, diabetes and some forms of cancer exist or are emerging as public health problems in many developing countries (Latham, 1997).

In South Asia, malnutrition is a social problem of staggering dimensions. Preschool children and women in this region suffer from malnutrition. Among children in South Asia, the prevalence of PEM is the highest in the world and women suffer from iron deficiency anaemia.

Southeast Asia has witnessed tremendous socio-economic developments over the past thirty years, bringing about significant changes in the lifestyles of communities, including food consumption patterns. There has therefore been a significant change in the food and nutrition issues facing countries in the region. Most countries reported marked declines in morbidity and mortality and decreases in nutrient deficiencies, although the extent of the undernutrition problem is still large. Of growing concern is that significant proportions of the population are now faced with the other facet of the malnutrition problem, the diet-related chronic diseases such as obesity, diabetes, cardiovascular diseases, hypertension and certain cancers. Because of the different stages of development, the extent of the undernutrition and overnutrition problems varies considerably between the different countries in the region (Tee, 2003).

Myanmar, like other developing countries, is suffering from the double burden of nutritional problems; undernutrition and diet related chronic diseases, in which

obesity is one. Malnutrition has been identified as a National Health Problem since 1978. Accordingly, extensive studies of growth and nutritional status of Myanmar children and young adults have been carried out in Myanmar. The Department of Medical Research, lower Myanmar with the aim of determining the nutritional standards of Myanmar children, conducted a country wide anthropometric survey during 1982-1986 in 10 States and Divisions comprising a total of over 40,000 children in 43 age groups ranging from 0.25-19.5 years. The major nutritional problems in Myanmar are protein energy malnutrition leading to failure in growth, nutritional anaemias, and iodine deficiency disorders. Only in certain regions xerophthalmia is identified as a nutritional problem. All these nutritional problems could affect the growth of foetuses, infants, children and adolescents.

1.3 Justification

Malnutrition may manifest itself as a health problem, and health professionals can provide some answers, but they alone cannot solve the problem of malnutrition. Agriculturalists, industrialists, demographers, economists, politicians and health personnel all have important roles in controlling malnutrition. Nutritionists, food scientists and others work across all these lines, and in a properly functioning national food and nutrition strategy they will collaborate with professionals in several of these disciplines as well as others. Achieving good nutrition may also require experts in anthropology, sociology and community development, it requires a good transport and marketing system, it benefits greatly from an education system, it benefits greatly from an education system that provides school for all, especially females, and guarantees the highest levels of literacy and it may involve many other actors (Latham, 1997).

Anthropological perspectives, which are broad and holistic; tend to look at food and nutrition in populations as complex systems influenced by many factors, including the environment, genetic inheritance, culture, and socioeconomic circumstances (Gun Roos, 2004). In Myanmar, there are a lot of medical researches on nutritional problems such as iodine deficiency, iron deficiency, protein deficiency, calcium deficiency, and vitamin A deficiency etc. But there is no anthropological approach to nutritional problems.

Inle Lake in Shan State (South) is chosen as a field locality. *Inle* Lake, which is situated within Nyaung Shwe Township, is the second largest lake in Myanmar and

unique for *Inthar* lifestyle. The economy of the villages in *Inle* region is different from one village to another though they live only in the same habitat. For study site, villages are selected from Anthropological' perspective based on the possibility that cultures can go different if economic activities are different. The three villages selected for this study site are Hea-Yar Ywar Ma, Kay Lar, and Inn Paw Khone which are mainly engaged in goldsmith's and silversmith's works, floating respectively. One other reason for selecting them is they are the villages where most of the *Inthars* dwell. The floating garden agriculture, practiced in *Inle* Lake differs from other places.

1.4 Aim and objectives

This research aims to explore food and nutrition related socio-cultural perspectives in *Inthar* ethnic group, who live in Shan State (South) in Myanmar.

Specific objectives are

(1) to describe socio-cultural attributes of food in *Inle*;
(2) to identify food availability, food accessibility and food acceptability of people living in *Inle;*
(3) to assess food practices and nutritional status of *Inthars;*
(4) to find out relationship among socio- cultural attribute of food, food practices and nutritional status.

1.5 Conceptual framework of the study

According to the figure 1, man obtains and produces food through the use of resources found in their surroundings, leading to the creation of his lifestyle. The items of food in his lifestyle have correlation ship with the environment. After various methods to gather food have been developed by him food availability is reached. Based on food availability it is shared in two categories; cultural food and social food. Nutrition arises based on food consumption, but it is also found to be connected with food practice and cooking. To know about nutrition status requires a study of the 5 factors contained in the conceptual framework. They are (1) Environment and lifestyle of people, (2) Sources of food, (3) Food availability, (4) Food habits in lifestyle, (5) Food practices.

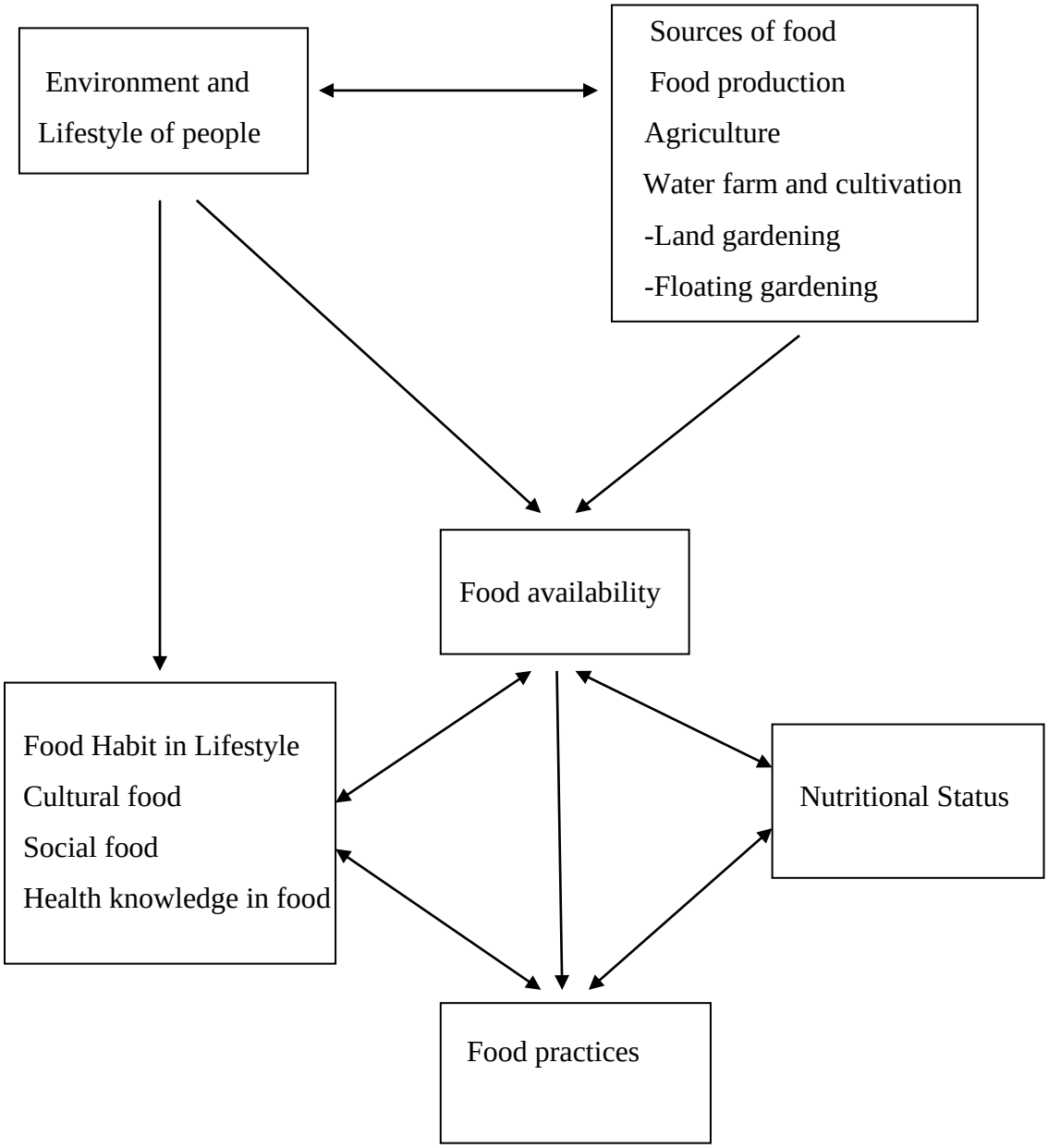

Figure 1. Conceptual framework of socio- cultural factors and nutritional status

The main questions of this research are (1) What are their concepts on food? (2) What is the basic and necessary food in their daily life? (3) What factors in the socio cultural factors affect their nutritional status?

1.6 Composition of the thesis

This research is composed of 9 chapters. Chapter 1, introduction was described. Chapter 2, literature review was discussed. In this chapter, nutritional anthropological approach to food, the anthropological problems in nutrition was discussed. It was

reviewed briefly on previous findings. The main purpose of this research was considered through the previous findings. Chapter 3, materials and method was described. Chapter 4 is historical aspects of food. In this chapter, the connection between migration and food was traced. Then it was described how their lifestyle that is adapted to the nature and characteristics of the environment in this distinctive region.

Chapter 5 is food production. In this chapter, the evolution of food production, technological advanced in food production was fully explained. Chapter 6, food habit is directly affected on nutritional status. In this chapter, ways of food consumption, food preferences, food ideology, and socio-cultural parameters were identified. Chapter 7 is nutritional status. In this chapter, anthropometric and human calorimetry studies were done to find out nutritional status of *Inthars.*

Chapter 8 is discussion. In conclusion, or Chapter 9, how their traditional beliefs and practices related to food and how *Inthar* nationals define food and nutritional status of *Inthar* was discussed. Then their food habits for the nutrition (or) malnutrition were described and how socio-cultural factors affect nutritional problems.

CHAPTER (2)
LITERATURE REVIEW

2.1 Nutritional Anthropological Approach to food

Food and nutrition within anthropology is a diverse field, which broadly can be divided into two groups based on the main focus: nutritional anthropology and anthropology of food. Nutritional anthropology is a subfield of medical anthropology in which nutritional implications of food intake, food as carrier of nutrients, nutritional status, human growth, and health are the focus. Studies in nutritional anthropology draw on theories and methods from both biological and social sciences. In contrast, anthropology of food focuses on the cultural and social significance of food and eating. Food is studied as a way of understanding social and cultural processes and to reveal symbolic structures (Gun Roos, 2004).

Nutritional anthropology refers to a field of study at the interface of anthropology and nutritional sciences focused particularly on understanding how the interactions of social and biological factors affect the nutritional status of individuals and populations.

2.2 History of Nutritional Anthropology

The early history of nutritional anthropology dates back to studies of food and social organization in non-industrial societies in the 1930s. The British anthropologist Audrey Richards (1939) is often described as the first one who explicitly focused on food. She studied economic and social factors affecting food among the Bemba in central Africa. Her work was part of the British applied anthropology movement, which was associated with colonial governance and welfare.

In the 1940s, studies of nutrition and the culture of eating were stimulated by the circumstances related to World War II. Committees that included anthropologists and nutritionists were set up in the United States and the United Kingdom to plan food rationing and to ensure adequate nutrition for the troops and support personnel. The U.S. Committee on Food Habits was directed by a well-known anthropologist, Margaret Mead (Wilson, 2002). Between 1950 and 1970 food and nutrition related themes were included in some anthropological studies, but nutrition was not in general a central focus of anthropological study.

In the 1970s food and nutrition within anthropology was revived as nutritional anthropology in the United States. Pelto (1986) traces the development of the field to four social forces: the world energy and food crisis in the early 1970s; growing interest in the role of nutrition in health and diseases; the emergence of ethnicity as a social and political phenomenon; and an interest in gourmet food and cooking in affluent societies (Gun Roos 2004). The rise of cultural ecology as a theoretical perspective in anthropology was also central to the development of nutritional anthropology. The American Anthropological Association organized sessions on the biocultural perspective of nutrition in response to the increased interest in the 1970s and this resulted in a widely used publication (Jerome, Kandel, & Pelto, 1980). The Committee on Nutritional Anthropology was established in 1974 as a special interest group within the Society for Medical Anthropology. The committee became the Council on Nutritional Anthropology (CAN), which has been a separate unit of the American Anthropological Association since 1987.There has been and still is a broad diversity of interests within the group ranging from theory to application.

2.3 Environmental Adaptation

Hiebert (1983) described that like other forms of life, human beings are dependent on nature for their livelihood. But unlike the others, which depend on purely biological adaptations to survive, people can and do modify their environments by means of their cultures. The degree to which people control their environments has increased as technologies have become more complex.

Haviland (1999) pointed out that to meet their requirements for food, water, and shelter, people must adjust their behavior to suit their environment. This adjustment, which involves both change and stability, is a part of adaptation. Adaptation means a moving balance exists between a society's needs and its environmental potential. Adaptation also refers to the interaction between an organism and its environment, with each causing changes in the other. Adaptation is a continuing process, and it is essential for survival. An ecosystem is bound by the activities of organisms and by physical forces such as erosion. Human ecosystems must be considered in terms of all aspects of culture. A culture area is a geographic region where various societies follow similar life patterns. Since geographic regions are not always uniform in climate and topography, new discoveries do not always spread to every group. Environmental variation also favors variation in technology, since needs may be quite

different from area to area. Julian Steward used the concept of culture type to explain variations within geographic regions. In this view a culture is considered in terms of a particular technology and of the particular environmental features that technology is best suited for.

Haviland (1999) studied that the social and political organizations of a society are other factors that influence how technology can be used to ensure survival. The features of a culture that play a part in the way the society makes a living are its culture core. Anthropologists can trace direct relationships between types of culture cores and types of environments.

Eckstein (1980) stated that the socio-cultural definition of what is food encompasses the various aspects of the ecology of man's social eating within the local cultural context. The terms social and cultural have a number of meanings with important implications that pertain to food and people interactions.

2.4 Food production

Hiebert (1983) mentioned that food-producing cultures of our day may be divided broadly into four types. While there is no sharp distinction between them, these types are useful in general discussions of subsistence patterns. They are horticulture or gardening, animal husbandry, plow agriculture, and industrial society.

According to Park (2006), horticulture means farming using human labor and simple tools. Pastoralism means the subsistence pattern characterized by an emphasis on herding animals. Agriculture means farming using animal or mechanical labor and complex technologies.

Haviland (1999) stated that the reason for the transition from food foraging to food production, which began about 11,000 to 9,000 years ago, was likely the unforeseen result of increased management of wild food resources. One correlate of the food-producing revolution was the development of permanent settlements as people practiced horticulture using simple hand tools. One common form of horticulture is slash-and-burn, or swidden, farming. Intensive agriculture, a more complex activity, requires irrigation, fertilizers, and draft animals. Pastoralism is means of subsistence that relies on raising herds of domesticated animals, such as cattle, sheep, and goats.

Park (2006) showed that perhaps the most important relationships between a species and its environment focus on the processes of food acquisition. For humans, the ways in which societies acquire their food, their subsistence patterns, are so central that we

may use them to categorize types of cultures. Thus, we speak of a society as food collecting or food producing. A synonym for the former is foraging. Within the latter are the subcategories of horticulture, pastoralism, and agriculture.

According to Hiebert (1983), hunting and gathering societies depend on food found in nature; pastoral societies raise their food by tending herds and flocks; agricultural societies develop food by sowing and tending crops; and industrial societies create food by converting their farms into mass production factories.

Haviland (1999) described that one should not conclude that the sequence from food-foraging to horticultural/pastoral to intensive agricultural to nonindustrial urban and then industrial societies is inevitable, even though these did appear in that order.

2.5 Food Habit

2.5.1 Preference and dislike

According to Latham (1997), all people have their likes and dislikes and their beliefs about food, and many people are conservative in their food habits. Food habits differ most widely in regard to which foods of animal origin are liked, disliked, eaten or not eaten in a society.

Podolefsky and Brown (1999) stated that food is a basic biological need, a fundamental ingredient for the survival of a group. The environment often determines what sorts of foods are available and also influences which foods are culturally preferred and which are prohibited. Culture, however, is the final arbiter of what is acceptable to eat.

McElroy (1979) studied that most of the food energy and protein for most of the world's people comes from cereal crops such as wheat, rice, and corn. The peasant agriculturalists tend to have a diet dominated very heavily by a single cereal staple: rice throughout much of South and Southeast Asia, wheat in temperate Asia and Europe, maize in the New World, millet or sorghum in Africa. These are sometimes called superfoods, not because they are superior but because a population is culturally and economically focused on a single staple.

Latham (1997) stated that lobsters, crabs and shrimps are considered delicacies and prized foods by many people in Europe and North America, but are revolting to many people in Africa and Asia, especially those who live far from the sea.

Latham (1997) mentioned that social factors and cultural practices in most countries have a very great influence on what people eat, on how they prepare food, on their feeding practices and on the foods they prefer.

2.5.2 Food way

Eckstein (1980) studied that food way is a genus term referring to internalized beliefs and customary patterns of activities associated with acquisition, preparation, serving, consumption, and storage of food. It includes all relevant factors in the food and people interaction – who, what, when, where, why, and how.

Anthropologists have further pointed out how cultural groups differ markedly from one another in many of their beliefs and practices related to food. The anthropologist Claude Levi-Strauss (1970) has argued that just as there is no human society which does not have a spoken language, so also there is no human group which does not in some way process some of its food supply through cooking. In fact, the constant transformation of raw into cooked food is one of the defining features of all human societies, a key criterion of "culture" as opposed to "nature".

2.5.3 Dietary belief and traditional practice

Helman (1991) pointed out that food is more than just a source of nutrition. In all human societies it plays many roles and is deeply embedded in the social, religious and economic aspects of every life. Food is an essential part of the way that any society organizes itself and of the way that it views the world it inhabits.

Eckstein (1980) showed that food habit is a species term referring to the practices associated with consumption of food, e.g., the usual or customary items preferred and selected, the rituals of eating under variable circumstances, eating territory, eating times and frequency, meal climate.

Eckstein (1980) described that food ideology is a species term referring to the beliefs and attitudes people have that determine their personal definition of food and their activities in relation to food.

2.5.4 Food classification

According to Helman, there may be five types of food classification systems despite several other systems may often coexist within the same cultural group. These five types of systems are: food versus non-food, sacred versus profane food, parallel food classification, food as medicine, medicine as food and social food system.

Food versus non-food- Different kinds of substances may be defined as edible things (food) or inedible things (non- food) by each cultural group. However, such identification of substances as food or non- food is usually subject to the group's perception of something from historical association aspect (Helman, 1991).

Sacred versus profane food- Foodstuffs whose use is validated by religion may be classified as sacred food while those which are forbidden by religious belief as profane food. In one hand, sacred versus profane food dichotomy refers to religious belief of a cultural group. This latter group, this dichotomy may also refer to the separation between natural and artificial food. Likewise, the whole food and junk food can be also categorized under such grouping (Helman, 1991).

Parallel food - Several cultural groups tend to categorize all foodstuffs into two major groups generally known as the hot foods and the cold foods. The terms hot and cold have no link with the actual temperature of certain foodstuffs (Helman, 1991).

Food as medicine, medicine as food - Sometimes this classification system overlaps with parallel food classification when both of them coexist in the same cultural group. In the case of special physiological states such as pregnancy, lactation and menstruation, certain foods are temporarily forbidden to prevent negative effects added to one's regular diet to support a certain physiological process (Helman, 1991).

Social food - Social foods are foodstuffs consumed in the presence of other people and which have a symbolic as well as nutritional value for all those concerned. Whereas a meal or snack eaten in private is not a social food, all eatables of a family meal or all contents of a religious meal are social foods. In every human society food is a way of creating, and expressing, the relationships between people. These many examples of social foods illustrate the multiple roles that food plays in human society; creating and sustaining social relationships, signaling social status, occupation and gender roles, marking important life changes, anniversaries and festivals; and reasserting religious, ethnic or regional identities (Helman, 1991).

According to Helman, the five systems of food classification described above illustrate how food may be eaten for cultural as well as nutritional reasons. From a

clinical perspective, these cultural influences may affect nutrition in two ways: they may exclude much-needed nutriments from the diet (by defining them as non-food, profane, alien or lower-class food, or food on the wrong side of a hot/cold dichotomy and they may encourage the consumption of certain foods or drinks (by defining them as food sacred, medicine, or as a sign of social, religious or ethnic identity) which are actually injurious to health. When both of these influences coexist there is likely to be an increased risk of malnutrition, manifesting either as undernutrition (a deficiency of vitamins, proteins, energy sources or elements) or as overnutrition (especially obesity and its consequences). Other cultural factors can also have an indirect effect on nutrition such as beliefs about the structure and functioning of the body, its optimal size and shape, and the role of diet in health and disease.

McElory (1979) studied that anthropologists are also concerned with the symbolic meaning of foods in different cultures and with the ways in which foods are combined to form culturally acceptable meals. French anthropologist Claude Levi-Strauss is especially well known for his analysis of South American Indian myths that elaborate on the themes of food and cooking. His book "The Raw and the Cooked" has more to do with symbolism and the structure of thought than with nutrition. Yet Levi-Strauss (1969-164) indicated that "the gustatory code," the cultural message communicated by eating habits, occupies an essential and central place in human thought.

Nutritional anthropologist Jerome (1975) used interviews and participant observation to study cultural food patterns in black and white households in the Kansas City area. In a study of the decline in the use of the sweet potato in North Carolina, Fitzgerald (1976) found that sweet potatoes were seen as low-status "country food", despite their nutritional value, especially as a source of vitamin A. Arnott (1975) studies are just a sampling of contemporary anthropologists' interest in studying the food habits, or gastronomy, of our own culture.

2.6 Nutritional point of view

Foods are the natural and usual source of nutrients. But, since they are highly variable in nutrient content, one cannot take it for granted that an uncontrolled intake will meet nutritional needs. To assure consumption of a nutritionally adequate diet, informed control is necessary. Competence and confidence in evaluation of alternate foods as sources of nutrients form the basis for informed control (Eckstein, 1980).

Nutrition may be defined as the science of food and its relationship to health. It is concerned primarily with the part played by nutrients in body growth development and maintenance (WHO1971).

Park (2005) mentioned regarding nutrition that there are four types of food classification systems, classification by origin, by chemical composition, by predominant function and nutritive value. According to the classification system by origin, foods may be divided into two kinds: the foods which originally come from animal and those from vegetables.

Another way of food classification may be made in terms of chemical composition in each type of food. As regards chemical composition, foods may be classified into five different kinds: foods which consist of protein, those which consist of fats, those of carbohydrate, of vitamins and of minerals (Park, 2005).

The third food classification system divides foods in to three main groups according to their predominant functions. These three groups are the foods which encourage body building function such as milk, meat, fish, eggs, pulses, groundnuts and so on, those which gives energy such as cereals, sugar, roots, tubers, fats and oil etc, and those which protect the body such as vegetables, fruits and milk (Park, 2005).

The last classification system is categorizing foods by their respective nutritive value. According to this system, foods may be categorized into ten groups namely cereals and millet, pulses (legumes), vegetables, nuts and oil seeds, fruits, animal foods, fats and oils, sugar and jaggery, condiments and spices, and other miscellaneous foods (Park, 2005). Good nutrition means “maintaining a nutritional status that enables us to grow well and enjoy good health” WHO (1988).

Malnutrition has been defined as “a pathological state resulting from a relative or absolute deficiency or excess of one or more essential nutrients”. It comprises four forms- undernutrition, overnutrition, imbalance and the specific deficiency (Jelliffe, 1966).

According to Chauliac (1984), a diet may be defined as the kinds of food on which a person or group lives. A balanced diet is defined as one which contains a variety of foods in such quantities and proportions that the need for energy, amino acids, vitamins, minerals, fats, carbohydrate and other nutrients is adequately met for maintaining health, vitality and general well-being and also makes a small provision for extra nutrients to withstand short duration of leanness.

A balanced diet has become an accepted means to safeguard a population from nutritional deficiencies (WHO1986). The dietary pattern varies widely in different parts of the world. It is generally developed around the kinds of food produced (or imported) depending upon the climatic conditions of the region, economic capacity, religion, customs, taboos, tastes and habits of the people (Park, 2005).

2.6.1 Assessment of Nutritional Status

The nutritional status of an individual is often the result of many interrelated factors. It is influenced by the adequacy of food intake both in terms of quantity and quality and also by the physical health of the individual (WHO 1978).

Hetzel (1985) stated that the nutritional status of a community is the sum of the nutritional status of the individuals who form that community. The main objective of a "comprehensive" nutritional survey is to obtain precise information on the prevalence and geographic distribution of nutritional problems of a given community, and identification of individuals or population groups "at risk" or in greatest need of assistance.

In nutritional surveys, it is not necessary to examine all the persons in a given community. Examination of a random and representative sample of the population covering all ages and both sexes in different socio-economic groups is sufficient to be able to draw valid conclusions. All surveys should be planned with the aid of expert statistical advice (Park, 2005).

Lewin (1943) also developed a motivational model which attempted to explain food habits as satisfying social needs. In this perspective, food symbolizes human values and social relationships and thus serves several non-nutritive, economic and cultural uses. Food thus becomes not only a biocultural issue but a biosocial one as well.

The most recent classification is to use body mass index (BMI, in kg/m^2). BMI is a simple index of weight-for-height that is commonly used to classify underweight, overweight and obesity in adults. It is defined as the weight in kilograms divided by the square of height in meters (kg/m^2). The classification of overweight and obesity according to BMI, recommended by WHO is:

Classification	BMI
Underweight	<18.5
Normal range	18.5-24.99
Overweight	25.0-29.99
Obese Class 1	30.0-34.99
Class 2	35.0-39.99
Class 3	>40.00

The WHO classification is based primarily on the association between BMI and mortality. Adult BMI increases very slowly with age, so age independent cut-off points can be used to grade fatness. In children, however BMI changes with age, rising steeply in infancy, falling during the preschool years, and then rising again during adolescence and early adulthood. For this reason child BMI needs to be assessed using age-related reference curves.

2.6.2 Energy

Park (2005) stated that energy is a prime requisite for body function and growth. When a child's intake of food falls below a standard reference, growth slows, and if low levels of intake persist, adult stature will be reduced. Similarly, if adults fail to meet their food requirements they lose weight. This may lead to reduced ability to work, to resist infection, and weakened will to enjoy the normal satisfaction of life. This underlines the need for an adequate intake of food which is the source of all energy.

2.6.3 Factors affecting energy requirement

Park (2005) described that energy requirements vary from one person to another depending upon inter-related variables acting in a complex way, such as age, sex, working condition, body composition, physical activity, physiological state etc. All these factors lead to differences in food intake.

2.6.4 Measurement of energy

The energy value of foods has long been expressed in terms of the Kilo- calorie (Kcal). The dietary sources of energy are: protein, fat and carbohydrate. They supply energy at the following rates:

Proteins – 4 Kcal/g

Fat - 9 Kcal/g

Carbohydrate – 4 Kcal/g

In the Indian dietary, they contribute to the total energy intake in the following proportion. They are proteins 7 to 15 percent, fats 10 to 30 percent and carbohydrate 65 to 80 percent (Park 2005).

2.6.5 Nutritional Status of other studies

The Food and Nutrition Research Institute (FNRI) Fourth National Nutrition Survey (1993) produced the first national prevalence report on obesity in the country among adults 20 years old and over. Using the body mass index (BMI) measurement, the survey found that in the male population (n=45686), 12.7% were overweight (BMI>25.0) and 1.7% were obese (BMI>30.0). There were more females (n=4996) who were overweight (15.2%) and obese (3.4%). It may also be noted from the data emerging from this national survey that women were prone to obesity starting at age 40 (4.3%), with higher proportion (9.3%) at age 45 years and above, but lower at age 70 and above (0.4%). Prevalence of obesity among males was lower than that of females, accounting for 3.0% to 3.5% at its highest between the ages of 40 and 45, and 0.2% at its lowest at age 70 years and above. No data are available showing the rate in increase of obesity in the Philippines.

Ismail (1995) showed that BMIs of some 2636 adult males and 2111 adult females from three ethnic groups (Malay, Chinese, and Indian) in an urban area were compiled and the results revealed that in males, 29% were overweight, out of which 5% were obese grade II. In females, 26% were overweight including 8% who were obese grade II. The percent prevalence of obesity in males for all three ethnic groups were apparently very similar. However, in females, the problem of overweight was more serious in Indians and Malays as compared to the Chinese.

Podolefsky and Brown (2007) conducted a study that even in the absence of scientific data about the effectiveness of diet therapy, the diet and weight-loss industry in the United States is remarkably successful in its ability to capture the hope and money of people who perceive themselves to be overweight. This industry thrives because of a complex of cultural beliefs about the ideal body and sexual attractiveness rather than medical advice and the prevention of chronic diseases per se. The American cultural concern about weight loss and the positive valuation of slenderness for women of the

middle and upper classes are difficult to overemphasize. “Chernin (1981) has referred to this cultural theme as an “obsession” and the “tyranny of slenderness”. In this light, it is impossible to claim that obesity is purely a medical issue.

In the United States, Podolefsky and Brown (2007) studied that an estimated 20 million people are hungry because they are on a “serious diet”, generally these people are of the middle and upper classes, and most are women. At the same time in the same rich nation, another estimated 20 million Americans are hungry and poorly nourished largely because they lack sufficient money, generally these people are elderly, homeless, or rural inhabitants. This sad symmetry in the estimates of voluntary and involuntary hunger in the United States is a valuable starting point for a discussion of the etiology of obesity. From an evolutionary standpoint, past food shortages have acted as powerful agents of natural selection, shaping both human genetics and behavior.

Trowell and Burkitt’s(1981), 15 case studies of epidemiological change in modernizing societies conclude that obesity is the first of the “diseases of civilization” to appear. The rapidity with which obesity becomes a common health problem in the context of modernization underscores the critical role of cultural behaviors in the causation of obesity, since there has been insufficient time for changes in gene frequencies. Cultural changes with modernization include the seemingly invariable pattern of diet in industrial countries – decreased fiber intake and increased consumption of fat and sugar. Modernization is also associated with decreased energy expenditures related to work, recreation, or daily activities. From the perspective of the populations undergoing economic modernization, increasing average weight might be seen as a good thing rather than a health problem.

A survey conducted in urban Jakarta (Waspaji et al, 1983) showed an association between each of the following four variables: age, obesity, socio-economic status and occupation, with diabetes mellitus. As mentioned above, the prevalence rate of diabetes mellitus increased from 1982 to 1992/1993 in urban Jakarta. This may have been due to the increase in the prevalence rate of obesity. In the 1982 survey, the prevalence rate of obesity was 4.2% among males and 17.1% among females, while in the 1992/1993 survey the corresponding figure were 10.9% and 24% respectively. In addition, fat intake of the population was also higher according to the 1992/1993 survey (27.6%) as compared to 18.8% in 1982 survey (Waspadji, 1996). Although the study involved two different sub-districts in urban Jakarta, it suggested that changes

in the population lifestyles, such as an increased intake of dietary fat and protein and a change of body weight may influence the occurrence of diabetes mellitus.

Khin Myat Lwin Nyein (2004) reported the results of the anthropometric study of the height and weight of 10-19 years old 250 adolescents from Kyauktada Township, Yangon Division. Out of 250, 11 boys (4.4%) and 8 girls (3.2%) were obese (i.e. BMI ≥25.00). The proportion of obesity was significantly higher in both sexes between 10-13 years age group ($p<0.05$ and $p>0.05$). The higher the family income, and the lesser the number of siblings among the family, the percentage of obesity was found to be significantly higher.

Kay Thi Lwin (2006) studied, a total of (200) middle school students, (98) male students and (102) female students were included. Sixty three percent of students were from urban school (Tamwe Township) and 37% of students were from periurban school (Thaketa Township). Their mean age was 13.09 ± 0.439 years. Bamar students formed the largest studied population followed by Indian and other ethnics. Majority of the students were Buddhist, followed by Islam, Christian and Hindu. The body mass index of urban and periurban students were 17.18 ± 3.6 and 16.91 ± 2.31 respectively. Out of (200) students, (74.5%) of students were BMI below 18.5 and (25.5%) of students were BMI more than and equal 18.5. Among (25.5%) of students, only (4) students had BMI more than 24.9. National Nutritional Report (2005) had shown that the underweight adolescents were about (48.6%).

2.7 Problems of malnutrition

Whyte (1974) said that rural nutrition is primarily determined by ecology and urban nutrition by economics. In these rural settings, the dietary pattern is prescribed by the biophysical and cultural environment. The specific nutritional diseases that occur are related to weaknesses of the staple foods of each cultural region. People who are able to maintain a highly diversified diet tend to have good nutritional health, a finding supported by the health profile of Kalahari Desert hunter- gatherers. Malnutrition in urban areas is more closely tied to economic inequality. Poverty and population growth contribute to protein- calorie malnutrition among the urban disadvantaged.

Kathleen DeWalt reviewed 14 studies of the impact of commercialization conducted at the micro level in various locations in the late 1980s. The review shows that impacts vary because they depend on a mix of intervening variables, such as the

nature of the crop, the control of production and income, allocation of household labor, land tenure, and pricing policies for cash crops and foods. These intervening variables have more effect than crop choice on the nutritional status of rural people. DeWalt suggests that policies and programs that focus on the most vulnerable population instead of commercialization are more likely to have a positive effect on food security and nutritional status.

Sanjur (1982) noted that income is also a major influence on dietary patterns. But beyond these physical and economic determinants, food habits are fundamentally cultural habits. Food habits are cultural determined: that is, the individual's sub cultural background and orientation, as well as his or her personal characteristics and perceptions, ultimately determine what his or her dietary patterns will be.

Baer (1998) studied the social factors related to malnutrition among Cacti households in Sonora in northwestern Mexico, which is an area of contrast between old and new and with unexpectedly high rates of stunted, malnourished children. Data were collected through a combination of qualitative methods (ethnographic and archival research) and quantitative analyses of income, diet, and nutritional status. Baer shows that households with similar available incomes may differ in their food expenditures and consumption due to context and culturally acceptable ways of allocation of available income. She underlines the relevance of identifying the social and cultural variables that have the greatest effects on available income in a particular area in developing food policy and intervention programs.

Messer (1997) compared ethnographic studies in India, Nepal, Madagascar, Mexico, and Peru for an analysis of intra-household allocation of food and health care. Her aim was to clarify the cultural, economic, and biological factors that contribute to discrimination or neglect based on gender and age within households. Messer concluded that household food security might not be a good predictor of adequate individual intake, especially among children and women.

Monckeberg. F (1970) stated that factors conditioning malnutrition and factors conditioning socio-economic underdevelopment are the same ones; low income per capita, illiteracy, low cultural level, bad sanitary conditions, low intellectual performance of the less privileged groups and finally racial or religious prejudices. Children in South Asia are on average more malnourished than their counterparts in other developing or developed countries. One, possibly major, contribution to this problem relates to practices of complementary feeding of infants.

In South Asia, girls and women seem to be generally less well cared for by their families, their partners, and their societies. It is common for the men to eat the most and the best, leaving the women and children to eat the last and the least; the mother will then feed her sons the best of what is left, at the expense of her own and her daughters' nutritional well-being. How do the *Inthar* nationals' food habit?

In the world, malnutrition is the result of (1) poverty; (2) ignorance; (3) prejudice. In this research, the above factors are also going to be considered.

CHAPTER (3)
MATERIALS AND METHODS

3.1 Study Design

The research was conducted by cross-sectional and observational study.

3.2 Study site

Inle Lake, in Shan State South, was purposively selected. It is an important ecological setting and has tremendous significance of its cultural essence with the unique way of life-style of its residents. There were (23020) households with approximately (124783) population in (378) villages (2008-2009). See Appendix V for the map of *Inle* Lake.

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3.3 Study population

Study population in this study was family members of both sex and age above ten years.

3.3.1 Inclusion criteria of study sample

This research takes into account *Inthars* both male and female members of a family, aged 10 and above.

3.3.2 Exclusion criteria of study sample

(1) Those who are non- *Inthars*

(2) Those who are children under 10 years of age.

3.4 Sample size determination

Sample size calculation for quantitative component

Sample size was calculated by using the formula. $n = z^2 pq/d^2$

n = sample size

z = percentage point of the normal distribution

p = proportion of Inthars with normal BMI

d = absolute precision

p = 0.5 q = 0.5

d = 0.06 (6 %)

From above value, sample size "n" was calculated.

$n = (1.96)^2 \times 0.5 \times 0.5/(0.06)^2$

$= 266$

Non-response rate=10%

Require size=1/1-f n

=1/1-.1*266

=295

From calculation, sample sizes of at least (266) were needed. In this study, total sample size of (300) people were studied.

3.4.1 Sampling procedure

For quantitative survey

Stratified sampling was applied as follows.

The sample study site is *Inle* Lake, Shan State South. Most of them are agriculturalist, handcrafters, fishermen, public servants and private company servants. In this study, selection of the three villages was purposive from Anthropological perspective. The economy of the villages in *Inle* region is different from one village to another though they live only in the same habitat. In *Inle* region each village has its own livelihood and produces different things from the other village. So the study sites of three villages for this research are Hea-Yar Ywar Ma, Kay Lar, and Inn Paw Khone (purposive sampling).

Each village produces different types of product and they depend on that specific local product for livelihood. Hea Yar Ywar Ma village is famous for its silver-ware and gold- ware. It is the village where expert gold and silver smiths exit. In the same way, on the floating islands is Kay Lar village famous for its produce of fruits and vegetables. The village of Inn Paw Khone depends on textile weaving. It is the village of weavers. The list of households was prepared by systematic random sampling.

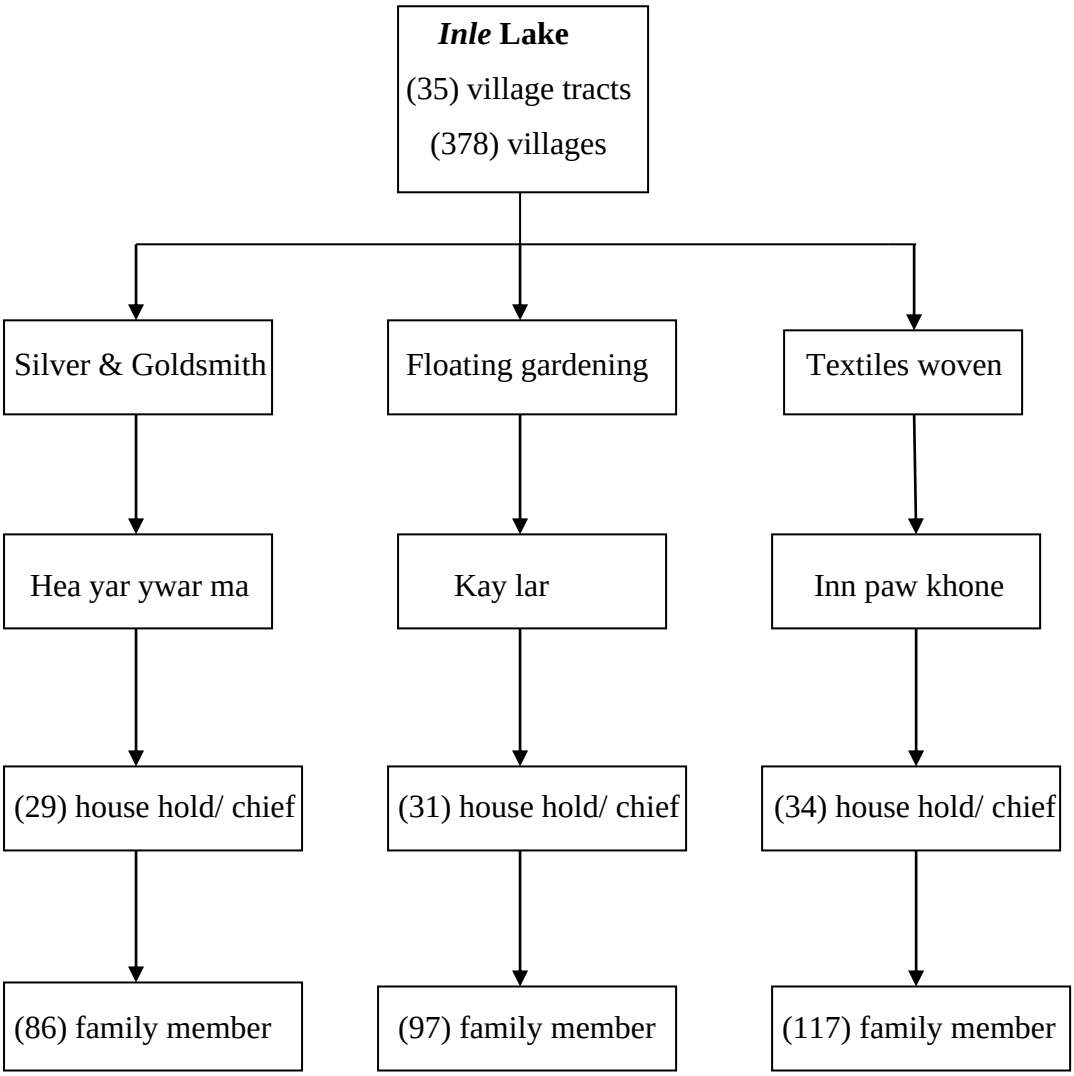


Figure 2. Sample study population

Sampling was made from the following households among identified three villages as follow:

Table 1 The population of three villages (2009-2010)

Village	Housing	Household	Male	Female	Total
Hare-Yar Ywar Ma	736	968	1596	1913	3509
Kay Lar	386	586	1303	1349	2652
Inn Paw Khone	261	341	594	786	1380

3.5 Data collection tools and method

3.5.1 Tools

(1) Structured questionnaires

(2) Weighing machine

(3) Height measuring instrument

3.5.2 Method

Field ethnography, focus group discussion (FGD), in depth interviews (IDI), key informant interview (KII) are used for data collection. Qualitative data was collected first and followed by quantitative data collection to explore relationship among socio-cultural attributes of food, food practices and nutritional status.

For qualitative data, information gathered by key informant interviews, focus group discussion and in-depth interview were transcribed and organized on the basis of emerging themes and sub-themes. All people from three villages in *Inle* region were general participants and the researcher was participated together with them to uncover all events regarding beliefs and practices of food.

The study was done in *Inle*, Shan State South. Field visit was conducted two times (9-1-2009 to 23.1.2009 and 18-5-2010 to 5-6-2010). The first visit was to collect data and information on history of *Inle*, life style of *Inthar*, attitudes towards different food items by *Inthar*, ways of their food preparation and avoidance and acceptance of different food and snacks.

3.5.2.1 Qualitative Data Collection

(a) Focus group discussion (FGD)

One focus group discussion (FGD) was done in each study village to get data on land gardening, floating gardening and agriculture works in detail. Each FGD included 6-8 villagers who work for agriculture (owner, daily wager). Two FGD per each village were conducted in three study villages to get information on taboos, beliefs and food practices during pregnancy among women, parents' guidance and instruction on food practices for their children. Each FGD included 7-8 women who at least have one child.

(b) Key informant interviews (KII)

Three Key Informant Interviews were done in each village of three study villages covering 9 interviewees. Key informant interviewees included senior villagers of the study villages. Observation was done to get insight and information on methods of cultivation, fishing, and preparation of floating land.

(c) In-depth interview (IDI)

In depth Interview (IDI) with two women who delivered at hospital per each village was done to get information on acceptance and traditional way of delivery and food taboos during pregnancy and delivery. In depth Interview with two senior monks, three village leaders and 4 elderly was done to get insight on symbolic and ritual activities regarding seasonal festivals, religious events and novitiation ceremony.

3.5.2.2 Quantitative Data Collection

Second field visit was made on 18-5-2010 to Inlay for qualitative data collection. The total sample size was 295. The first step in sampling was random sampling from list of household from local authority. It was previously planned to get sample with the ratio of 3:2:1 (3509:2652:1380) for Hea Ywar Ywa Ma, Kay Lar and Inn Paw Khone. But there was scarcity of water in the lake at the time of data collection and the communication was not suited to get there particularly for Hea Yar Ywar Ma village. Thus it was not possible to get sampled population from Hea Yar Ywar Ma village. As *Inthar* nationals' food taboos and practice are similar the shortfall in sample population was supplemented with data taken at Inn paw khone which has easy access to transportation.

(a) Face-to-face interviews

In most villages there was very little number of food shops and tea shops on non-market days. Thus *Inle* residents consume food and rice that was cooked at home. Questionnaire was aimed to ask of the housewife (or) chef who prepared food and bought food for the families because majority of family members eat food that is usually prepared by them. It helped get relevant information on food consumption pattern of the whole family. In addition to that questions on knowledge on food and nutrition from the interviewee were also included. The questions were formulated based on the facts that are mentioned in curriculum of primary level school on food

and nutrition. Seventeen questions were set and each correct answer reflects one score. In marking, right answer for a question gets 1 mark, while the wrong answer or don't know gets zero mark. Those who attained the score 12 and above was identified as 70% and was categorized as high score. Low score included those scores less than 11 (less than 70%). The questionnaire was pretested before the actual data collection was done.

It took 4 days in each village to collect quantitative data regarding BMI. Three girls with education of college level were recruited and briefed for data collection and the objectives of the study. They were also trained for methods, dos and don'ts of anthropometry. Surveyors were explaining those interviewees who are illiterate by reading out the questionnaires.

Quantitative data was collected with face to face interview using both structured and open-ended questionnaires which included information on socio-demographic characteristics, nutritional knowledge, perception and their eating pattern. Questionnaire was pre-tested and pre-coded.

3.5.3 Anthropometry

Individual nutritional status was measured with anthropometric methods. Anthropometric data was collected by using weighing machine and height measuring tape. Anthropometric approaches are relatively noninvasive methods that assess the size or body composition of an individual. For children and adult, body weight and height are used to evaluate overall nutritional status. The weight of a person is the most important single anthropometric measurement. The weight of people was measured in kilogram by using bathroom scale without wearing slippers and heavy clothes and the reading was taken for nearest 0.1 kg.

The height of the interviewees measured by using non-stretched type of tape. Firstly the interviewees were asked to stand without shoes while the following criteria were applied to make get more accurate height: (1) the person stands against the hard wall, (2) The heels, buttocks, shoulders and back of the head touching the wall in upright position (3) The head must be erected (4) the hands comfortably loosened at the sides with the eyes looking at the horizontal plane (5) the reading was taken for nearest 0.1 centimeters.

Height- Weight Index is commonly referred to as Body Mass Index (BMI) and is a validated measure of nutritional status. Body mass index calculated by weight in kg, divided by the height in meter square (19) years above.

BMI-for-age cutoffs of (10-19) years were calculated by using WHO Anthro Plus software 2007. BMI-for-age was assessed by using classifications which were derived from WHO reference 2007 (5-19 years), as follow:

BMI-for-Age cutoffs by z score

underweight < -2SD

normal -2SD to +1SD

overweight > +1SD

The most recent classification is to use body mass index (BMI, in kg/m^2). BMI is a simple index of weight-for-height that is commonly used to classify underweight, overweight and obesity in adults. It is defined as the weight in kilograms divided by the square of height in meters (kg/m^2). The classification of overweight and obesity according to BMI, recommended by WHO is;

Classification	**BMI**
Underweight	<18.5
Normal range	18.5-24.9
Overweight	25.0-29.9
Obese Grade 1	30.0-34.9
Obese Grade 2	35.0-39.9
Obese Grade 3	40.0 and above

3.6 Data analysis and management

For qualitative data, in-depth interviews, key informants and FGD were transcribed and organized on the basis of emerging themes and sub-themes. Researcher of the study read over the transcripts from note taker to identify themes before organizing data. Matrix analysis was performed according to main themes and sub-themes. Transcription of data, coding and data analysis were carried out manually.

All the data were checked and cleaned and then coded. Data analysis for quantitative data was done by using SPSS software version 16.0. BMI and BMI-for-age of the *Inthar* were calculated by using WHO Anthro Plus software and categorized as

underweight, normal, and overweight. The frequency distributions of variables were presented as tables and graphs. The data were analyzed by chi- square.

3.7 Variables

The variables measured in the study are as follows.

Dependent variables are nutritional status in this study.

Independent Variables

1. Age
2. Sex
3. Chief education
4. Chief Occupation
5. Ethnic group
6. Religion
7. Family size
8. Income
9. Daily expenditure
10. Use of water
11. Environmental sanitation
12. Nutritional knowledge score of chef
13. Eating pattern

Operational definitions are shown is Annex 1.

3.8 Study period

The study took place from June 2008 to May 2012. The detailed time frame chart for this study is presented in Appendix 2.

3.9 Ethical considerations

Chairmen of the village administrative offices the study area was asked for permission to conduct research. Moreover, informants' consent about the approval of asking questions, studying their traditional dietary concepts and food habits, taking photographs and using their photographs were also got.

3. 10 Limitation

The doer of this research *Inle* area remained unfamiliar with *Intha*r dialect for the first three days and had had to use the services of an interpreter. But it went well after that period.

In regard of *Inthars*' nutritional status, collection of data with selected sample size was first planned, but time was the *Inle* Lake had mostly dried up. Difficulties arose in going around from place to place. To achieve the full selected sample, data from easily accessible villages have been used to fill up the gaps cropping up due to unfavourable transportation. However, *Inthar*' height and weight were properly measured, leading to reliable nutritional status BMI data of them. Other dependable data have been obtained as *Inthars*' food habits have been studied through IDI, KII, and FGD.

CHAPTER (4)
HISTORICAL ASPECT OF FOOD

4.1 Environmental and Lifestyle

4.1.1 Location and Area Extent

Inle Lake, which is situated within Nyaung Shwe Township, Shan State South is the second largest lake in Myanmar. Situated 2915 feet above sea-level, Lake *Inle* lies between parallels of latitude 20˙ 19′ and 20˙ 40′ North and meridians of longitude 96˙ 21′ and 96˙ 58′ East within the Nyaung Shwe Township in Southern Shan State.

According to previous records of *Inle* Lake it was 36 miles long, 8 miles wide and had an area of 288 square miles (184320 acres). At present it is only 11 miles long, 4 miles wide and has 45 square miles (28800 acres).Therefore only 15.6% of the previous area is left. Yearly sedimentation rate is 4 tons per acre and the annual volume is 22 million cubic feet. The depth of water is about 20 feet in rainy season and only 10 feet in summer (Khin Khin U 1970 and Nang Vo Kham 2002).

4.1.2 Geographical condition

Inle Lake is situated in the flat *Baluchaung* valley and there is a wide mire land in the north. There is a plain beach between the *Inle* Lake and mountain ranges. The mountain ranges around the lake are about an average height of 3500 feet and have steep slopes. Therefore it encourages the soil wearing out and more soil sedimentation into the lake.

Inle Lake can be considered as the reservoir for the *Lawpita* Hydroelectric power station. *Nantlet (or) Tarthaw* creek flows from the north into *Inle* Lake. It flows out as the *Ba lu chaung* in the south and flows into *Nampon* creek. There are 29 streams entering the lake – one from the north, 17 from the east and 11 from the west.

The nine main creeks are *Thandaung* creek, *Yepel* creek, *Intein* creek, *Namlatt* creek, *Shwelinban* creek, *Nammaysin* creek, *Thalaeoo* creek, *Magyiseite* creek and *Magyibin* creek. The silt brought by those creeks is sedimented before they arrive at the lake center forming deltas and mire lands (Nang Vo Kham 2002).

4.1.3 Climate

Inle Lake and the environment area have a hot wet temperate climate. The average lowest temperature is 2.8˚ C and the average highest temperature is 36.6˚C. Not only the south west monsoon bring rain to *Inle* Lake area low pressure waves from south Chine sea also bring rain in late rainy season. The average rainfall is 37.6 inches (855mm). (Nang Vo Kham 2005)

4.2 Various descriptions of Inle and his people

Great Myanmar poet Salai U Ponnya (1812-1867) composed about *Inle* Lake as follows.

a&Tjynfod*Fg awmifvufsm0,f
xufpGmjrifhacgif jym&DarSmifonf
oef;awmif*D&d rdk;w&Sdu
jrnSdpdkpdk ajrwcdkwGif
a&ndkysHoif; anmifa&Ttif;vnf;
ewfrif;okH;&ef eE´muef eSifh
o@mefrjcm; a&usufpm;onf
a&om;wHig; pD;yGm;&Smwdk.
uGefcsmyGifh&kyf 0ifhumtkyfí (Myint Maung1984 and Lay Myint1984)

In the golden land of the right southern island
High and upwards in the dark blue shade
Thandaung peak reaches the skies
Green and wet and fragrant with moss
The blue and sweet, smell the Nyaung Shwe Lake
No different from Nanda pool of the celestial beings,
The fisher man throws his net for his living

U Pon Nya, in his poem had mentioned *Inle* together with Nyaung Shwe and so it was also well-known as Nyaung Shwe "*Inn"* (tif;). But earlier historical records have written of the *Inle* region as having four villages. In Myanmar era (999) in the reign of

Tha Lun Min, in the notification of the list of villages to pay taxes, the *Inn* region is listed as four *Inn* villages exactly with number 4.

Again in Myanmar era (1164) in *Inle* study folded manuscript (Parabeik) , it was written as "*Inn* four villages tax collector Nga San Tin is incharge". So it is presumed that Inle must be with reference to the four *Inn* villages. The villages that are supposed to have founded *Inle* village are; *Want - lon* now (Bunpon) village, *Nant - pan* now (Nant – pan), *Naung - taung* now (Naung – taw), and *Haing - ya* now (He Yar Ywa Ma).

Want-lon, Nant-pan, Naung-taung and *Haing-ya* villages are in the Shan language. The Shan call it *Want-lon,* the term *Want* means village and *lon* means big, so it means big village (*Ywa-gyi*). Till today they call it *Ban-pon-ywa-gyi* adding the meaning to the original name. The term *Nant* means water and *pan* means encircled, therefore the meaning of *Nant-pan* is encircled by water (*Ye-lai-ywa*). In Shan language *Naung-taung, Naung* means lake and *taung* means moss, so it means lake full of moss or moss lake. The meaning of *Haing-ya* is clear the land of reeds and found a village. Because of *Haing* means cut or clear and *ya* means overgrown with reeds in Shan language. Till today, in the middle of the lake, there is *(*Hare Yar Ywa Ma) village as conspicuous evidence.

The nationals who have settled in *Inle* region are called *Inthar*. There are many different assumptions regarding their origin among the descendants. The first one is that the original *Inthars* came from northern Dawai. The second is that they were descended from ancient Myanmars of Bagan.The third assumption is they were a group of Tibeto-Myanmars who remained there when the Tibeto-Myanmars came into Myanmar from the north-east (Myint Maung 1984).

The assumption that the original *Inthars* were from Dawai is according to the history of Nyaung Shwe or Nyaung Shwe Palace (a[mfeef;) records, written by U Nyein, the Treasury officer of Nyaung Shwe Sawbwa (Shan chief of former times). The chronicle was dated 3rd December 1929. According to the chronicle in the Myanmar year 721, Sawbwa "*Si Saing Bwa*" was ruling Nyaung Shwe state. At that time there were wars between the Myanmar kings and the Siamese kings in Ye, Dawai and Myeik, destroying the towns. Two brothers, '*Nga Htaung*" and "*Nga Naung*" from Dawae escaped to Nyaung Shwe and served the *Sawbwa*. The two brothers saw the big lake (tif;) and requested the *Sawbwa* for permission to bring their relatives from

Dawai to settle at the lake. The *Sawbwa* gladly granted their request and even gave them money for expenses. Thirty six families moved to the state and the *Sawbwa* settled them near the south side of Nyaung Shwe and named it "*Nant-the*" village. As the population increased more villages grew up; thus *Hea yar* village, *Nant-pan* village, *Naung-taw* village, *Bun-pon* village appeared. Referring to these four villages, which became *Inle* village of today (Myint Maung 1984 & Lay Myint 1984).

Encyclopaedia Myanmarnica, vol. X, p.302 says that *Inthars*, residents around *Inle* Lake in Shan State (South), originally came from Dawei about 600 years ago. Encyclopaedia Myanmarnica, vol. X, p 340 says that *Inthars* are migrants coming via Dawei. Encyclopaedia Myanmarnica, vol. XV, p. 260 says that different opinions exist as to how the *Inthars*, said to have connections with Dawei natives, migrated to *Inle* area; but, according to a hardly authoritative view, when Bagan King Alaung Sithu toured the *Inle* Lake on a royal raft he made a group (two brothers, some said) of Dawei natives settle down there through a royal grant of land, whereby generations of their descendants followed to the present population in villages large and small.

The second assumption of *Inthars* being descendants of ancient Myanmars of Bagan is according to the stone inscription of Shwe-In-Tain pagoda located in *Inle* Lake. It was first built by King Thiridhamma Thawka after the Sasana years 200. In the reign of Bagan King Anawrahta, who continued to build the pagoda, marked out the pagoda land and donated his servants as well to take care of the pagoda. Later kings Narapati Sithu, Saw Mingyi, Monyin Mintayagyi, MinYe Kyaw Swa, Min Khaung up to Sin Phyu Shin Min, all Myanmar kings successively continued to take care and donate servants to the pagoda.

Again, according to Shwe-Than-Taung pagoda stone inscriptions from the time of King Anawrahta, who had built and donated religious edifices in *Inle* region and even donated servants to look after the pagoda to the time of King Narapati Sithu who not only continued to add to the pagoda but also provided land and houses for the people who were ancient Myanmars of Bagan, later like other nationals they began to call themselves *"Inthar*" referring to region they have settled down.

In the third one, *Inthars* were descendants of the Tibeto Myanmar tribes, who descended into Myanmar from the northeast. They had remained in *Inle* region because they may have taken another route as some historical researches assume. According to Dr.Than Htun's Khit Haung Myanmar Yazawun, 1969, he wrote that

Inthars came into Myanmar after the 9th century. They were one of the six groups of Tibeto Myanmars who came down to the hot, dry plains of central Myanmar. This Assam Myanmar group perhaps stayed back and went towards *Inle* region. They became prominent as *Inthars* later.

Just as there is controversy over the linage of the *Inthar*, there are also legends of the *Inle* Lake. King Alaung Sithu toured with his royal raft making a pilgrimage to the pagodas built by King Thiridhamma Thawka. King Alaung Sithu also renovated the pagodas and finally he built at *Inle* the Mine-Thauk Pagoda. Then he built a palace between Mine Thauk and The-le-oo, on the eastern shore (Myint Maung 1984).

The King resided there for three years and seven months. At that time *Inle* Lake was not so full of water. Then the King Alaung Sithu before his return to Bagan made a vow. He asked for a bowl of water and a handful of ash. He mixed the ash and water in the bowl and threw them away, praying and vowing that the *Inle* Lake will always be filled with water. Since then, they say, the lake has always been full of water.

4.3.1 The nature of *Inle* Lake

According to geologists *Inle* Lake is formed by dissolving of limestone, forming a lake or erosion of limestone in that place making it a limestone pool. By examining the crack line on either side of the lake, it may also have been formed by movement of the earth's crust i.e. block faulting as the cracks show the middle may have broken and fallen down, thus forming a lake. *Inle* Lake does not have a hard floor. There are sheets of greenish brown particles which form a marsh. These particles have a lime content which makes it a good fertilizer (Myint Maung 1984).

Man has to depend on the weather in growing fruits and vegetables on the ground. When the weather is unfavorable the farmer can lose his crop. But growing fruits and vegetables in *Inle* Lake one can be sure of the water supply and fertilizer. The people from *Inle* area used to produce the fruits and vegetables for their own consumption in a way suitable for their environment and weather. *Inle* Lake plays an important role area in the Shan State as it gives a variety of agricultural produce for the region. It is also an important ecological setting and has tremendous significance of its cultural essence in the unique way of life-style of its residents. Eighty percent of the inhabitants of the lake live off the lake. The *Inthars* have as neighbours the Pa O, Shan, Danu and Taung Yo.

In the waters of the *Inle* Lake are found algae and weeds and flotsam. On the surface grow all kinds of grass, weeds and reed like plants such *as Taphut, Taphaung, Letsha, Sharlon, Sharpya, Pepya, Peiksee*, and big creepers of the grass species. In the same way *Taw-phyet-zee, Zayit,* wild taro and wild flowers grow all over. All these plants are growing and dying in a continuous cycle. The dead plants and their leaves and roots below and above the water mix and in years form a hard mass and float on the lake surface half submerged in the water without touching the bottom. These small islands are called natural *Kyun-myaw* or foam *Kyun- myaw*. People cut off this foam *Kyun-myaw* and drag it to their house where they make suitable preparation to grow vegetables. So today we find not only natural but also man made floating islands (Myint Maung 1984).

Out of the cultivation methods in *Inle* area, water farming is found only at *Inle* Lake in Myanmar and it is also one of the peculiar features of Myanmar. Since 1907, when one U Po Lone of Pwe sar gon village succeeded crops farming on natural floating islets, the *Inthars* had started growing fruits and vegetables on these patches of floating islets on the lake. The floating gardens and surrounding area is extensively cultivated and produces a wide variety of vegetables, fruit and flowers year round, including tomatoes, potatoes, cabbages, beans, garlic, onion, carrots, cabbage cauliflower, aubergine, chilli, cucumber, pulses, lady's finger, pumpkin, gourd, watermelon, bitter gourd, chayote and more.

4.3.2 The lifestyle of the people

Inle Lake is surrounded by mountain ranges. The famous pagodas, the floating markets, leg rowers and small- scale industries are places of interest for the tourists and Buddhist pilgrims. The *Inthars* are Buddhists by faith, and as such, make elaborate offertories to the Lord Buddha (See Figure 3). Eatables are beautifully arranged on silver catafalques and offered to the Lord Buddha (See Figure 4). And as they are devout Buddhists, they take turns to provide meals for the members of *Sangha* presiding at the village monasteries. The offertory meal containers are packed with the best portion of one’s daily diet and sent for both the first daybreak meal as well as the midday one (See Figure 5). Buddhism pervades every part of *Inthar* life and culture.

Figure 3. Elaborate offertories to the Lord Buddha

Figure 4. Elaborate offertories to the Lord Buddha

Figure 5. Preparation for Offertory Meal

In addition, *Inle* Lake is famous as one of the tourism spots because of its beautiful landscape, scenery, floating gardens, the floating markets, leg rowers and small- scale industries, welcoming and hospitable nature of the *Inle* people and their unique life style and culture.

Inthars speak words through a kind of Myanmar language but with different pronunciation. They speak Myanmar language with the accent of *Inle* and usages used around *Inle* region. Although *Inthars* live only in *Inle* lake region, their usage of words and their accent are slightly different depending on the regions of the eastern part, the western part, the middle and the southern part of *Inle* Lake.

It is found that Myanmar archaic words which are no longer used by Myanmar and borrow words from other natives' languages around *Inle* Lake are spoken mixed with the languages spoken by *Inthars*. The following words are showing that some of the *Inthar* terms are similar to those of Myanmar in regarding food.

Examples

Myanmar	Inthar	English
Htamin	Min	Rice
Hin	Hin	Curry
Seikhahin:gjou	Hinkhaye	Bitter soup
Thayepwakyaw	Sayepwakyaw	Steamed hide chips
Gju:myitthtaung	Gju:myitthaung	Pounded allium tuberosum
Gju:myitthou	Gju:myitlu	Allium tuberosum salad
Khajan:gjinthi:	Chan:si:	Tomato
Khajan:gjinthi:thou	Chan:si:lu	Tomato salad
Yehmothou	Puzunzarlu:	Algae salad
Ngajokethi:	Sathsi:	Chilli
Thakhwar:thi:	Khwar:his:	Cucumber
Pjaun:bu:	Kh:hsi:	Maize
Mounleibwei	Moungiu	Thin large crispies
Zei:	Sei:	Market
Sa:jweimjein thi	Sa:gjouthi	Enjoy the meal

From the above various descriptions regarding with the origin of *Inthar* and terms show that *Inthar* is related to Bamar nationals in the past ethnologically, and then it can be guessed that their diet is also related to the diet of Bamar and Shan.

The available food supply was prepared in their traditional way. Only a minority opts for tea, coffee and snacks in place of the boiled rice which is the staple food of the *Inthars*. The diet of *Inthars* take cooked rice and curry for a meal but they have three meals for the day. Most *Inthars* prefer Inn rice (or) red Inn rice, but some have started consuming milled rice. The favourite dish of *Inthars* and *Inthus* is *Sekhar him* (bitter soup). The whole family sit down for meal together, with a plate of rice for each but a bowl of curry for all to share placed at the centre of the dining table. A 60 year old *Inthu* said,

> *"our family sit down for meal altogether; if a family member is out, we wait for him to have a meal."*

A spoonful or so of curry is first dished out respectfully to elders but the rest is shared equally by all, without regard to seniority or gender. Among *Inthars*, the cuisine does not change because of their economic status; they follow the cultural tradition in this matter.

Some *Inthars* use water coming from mountain streams, ordinary well, of creeks. But the majority of them use water from the lake. Water for a lot of reasons such as cooking, drinking, washing dishes and clothes, bathing, farming and disposing waste materials purposes is taken from these lakes and ponds (See Figure 6). For latrine, some use indirect pit and direct pit into lake water. Indirect pit means human waste goes into a tube well built in the lake waters. Direct pit means human waste directly goes into the lake water. Nowadays, the UNDP (United Nation Development Programme) is constructing water filtering tanks in most villages. Concerning the use of water, one of *Inthars* said as follows:

"I want to say something and it is about water. The people who can afford use the water from the well or that from the artesian well but those who cannot have to carry the water from the lake."

Figure 6. Water from the lake

As for the costume, elderly *Inthars* wear a scarf folded into a turban, topped by a broad rimmed bamboo hat, or ordinary hat. Most of the middle aged and youths follow the hairstyle of cropped hair. *Inthars* wear shirts short or two- third sleeved with baggy *shan* pants or *paso* nether- garment. Elderly *Inthus* wear the jacket with an overlapping flap in front, while young and middle aged *Inthus* use the same costume as Bamar women, ie blouse and sarong or *htamein* (xbD).

The *Inthars*, living just above the lake surface, go about their livelihoods using the lake waters skillfully. They use stilted homes or landfills as housing plots. Their homes are bamboo huts supported by long stilts, or two or three storeyed wooden houses, mostly roofed with galvanized iron sheets. Their house usually covers from 20×30 feet to 25×50 feet (See Figure 7).

Figure 7. Housing of *Inthar*

At *Inle* area they usually go from house to house or from one place to another using boat (See Figure 8). Every *Inthar* can row the boat by one-legged rowing technique and also swim fluently. Thus almost every home has a boat at least.

Figure 8. Using boat

Conclusion

Thus *Inle* region has been able to provide for survival of mankind since ancient times. It has fulfilled the most important basic need of men, i.e. food, cloth, and shelter. *Inthar* has adapted his life to the environment he lives in. He eats the food produced by the natural resources and the climate around him. *Inle* Lake plays an important role in the economy of the area, as there is a variety of agricultural goods produced and are sent to all over the Shan State and beyond. It represents as an important ecological setting, being one of the largest high altitude wetlands in Myanmar and has tremendous significance of its cultural essence with the unique way of lifestyle of its residents. In *Inle* region each village has its own livelihood and produces different things from the other village. *Inthar* culture has developed thanks to their ability to modify the environment to their needs. Again their lifestyle has had an impact on the environment. For example, expansion of human habitat and floating gardening, increased population and human waste and garbage will mean environmental degradation.

CHAPTER (5)
FOOD PRODUCTION

Chapter 4 deals with *Inthars*' adaptation with environment, their lifestyle and its impact on the environment. Chapter 5 deals with their most important need of food: how they grow it, through what techniques are plantations created on water surface, etc.

5.1 Farming

In cultivation of the crops, there are two kinds of cultivation: farming in the lake (growing paddy) and water farming (growing crops). Farming is practiced in amphibious areas at the lake shores. The single-crop form cultivation in *Inle* region is carried out half the year in the *Inle* Lake and the other half year on its banks. The farm site can be close to the cultivator's village of residence or in some cases quite far from it. Apparently cultivation works, and the methods utilized in the *Inle* region are of special interest for the observer. Of the three main types of paddy farming – the full seasonal crop, the medium seasonal crop, and the short seasonal crop - the short seasonal crop paddy farming is the common practice in the *Inle* region so much so, that this type of paddy cultivation comes to be known as *Inn farming*. The full seasonal crop is cultivated on plains of the foothill areas with water from streams, creeks, and rainfall. The medium seasonal crop is cultivated on flat land.

According to *Inthars*, the ethnic group of the *Inle* lake region – farmland can be divided into three categories; dry till (**tajcmufv,f**), manual till **(vufarTv,f)**, and stalk renewal till (**&kd;jyefv,f**). The *Inthar* farmer first prepares paddy dykes on his intended plot for cultivation enclosed in elevated bunds. Then the water inside is drained off. The distinct features of *Inthar* farming is that, as seen above, water has to be pumped out of the cultivation plot, whereas farming elsewhere in Myanmar flatlands and plains, the appropriate irrigation of water into fields is true. In pumping out water, manpower used to be the main force previously. Pedal wheels on long-handle scoops were the only equipments. Nowadays, the job is done by mechanized pumps. For that matter, one 45-year old man noted,

> *"Now it is done by machine, so there is less exertion on the part of the farmer".*

When water in completely drained out of the cultivating plot, the tilling is done by single-bullock ploughshare. This in known as *kjwei kai* (uRJudkif) (to utilize the bullock) in the *Inthar* terminology. The *Inthars* prefer bullocks to cows/ oxen in their farming tasks. Bullocks are locally available for loan and are convenient in securing animal feed for them. Generally, bullocks are available for loan from *Pa-Oh* and *Danu* ethnic groups residing on the hill tracts. These bullock owners also benefit in that the duration between October to January is a period when animal feed is scarce on the hill tracts. Thus, the *Pa-Oh* and *Danu's* loaning out the animals to *Inthar* farmers is a win -win strategy for both parties. The price for one bullock on loan is one bushel of paddy (2010). The conventional *Inthar* bushel consists of 200 tins of rice or 20 pyi /pji/of 10 tins of rice. A single-ploughshare is used because the Shan plateau has very little flatland with a high frequency of high and low ground levels, uphill and down dales and valleys and gorges, so much so that a two bullock ploughshare is difficult to manage, and hence, the single-bullock plough-share was adopted.

The single-bullock ploughshare digs up the soil, the layer underneath is upturned, and dried under the sun. After that adequate water is irrigated into the plot which is tilled again with the single-bullock ploughshare to get finer soil. Then paddy cultivation begins. This type of cultivation is known as “dry farm**”** cultivation.

Some farm plots cannot be dried in a short span because of the excess amount of water they contain. The ploughing cattle find it difficult since they cannot help bogging in the quagmire. Therefore, the farmers themselves have to dig up and harrow the earth with the help of hoes and rollers to get fine soil for cultivation. This type of cultivation is simply called the **“**manual farm” cultivation. In some places of the *Inle* region, the plot is ploughed again right after harvesting and the fallen paddy stalks prop up again as paddy plants. This method of cultivation is known as “renewed-stalk farm” cultivation. Nowadays, hand tractors are used in tilling the land for cultivation. A 68-year old *Inthar* remarks, "The machine can perform thorough ploughing, but not easy to move about."

Generally, the *Inthars* sow paddy in February and transplant in April. When the cultivation plot is ploughed and harrowed, the paddy seeds are broadcast. One *Inle* bushel of seeds per acre is the norm. Those from the flooded areas raise their paddy seedlings on the eastern part of the *Inle* Lake. Adequate water is provided for the emerging young seedlings, irrigate or drain as situation requires.

After about 45 days, the paddy seedlings have grown big enough to be pulled out and transplanted on cultivation plots. On that very day of paddy transplantation, the guardian spirits concerned are called upon to grace their consent on the cultivation work. This is done with offering of meals and a bunch of bananas. This is believed to ensure safety for the farmer, and good harvest.

The most common paddy strains grown in the *Inle* region go by the names of *Shway*, *Manawni*, and *Shweyinaye*. The *Shway* paddy strain is noted for its growth height increasing at par with that of the water level, and its high harvest output. Harvest time has to coincide with the neap tide period of the *Inle* Lake which falls during the months of July and August. Farmers have to work waterborne – swimming or using bamboo stilts in the chest-high (about 4.5 feet) water level – to reap the paddy. On cultivation plots of more than 3 feet depth, boats are used in reaping the paddy. Horizontal rows of bamboo poles supported by shorter vertical ones are set up above the water level to dry the "paddy sheaves". This drying process is called *tan mja tin* (wef;jrSm;wif) in the *Inthar* expression. The dried paddy sheaves are taken home by boat.

The ground floor and the yard are used as threshing grounds on which shelves are constructed for that purpose. Paddy sheaves are threshed on these shelves which are called gu (*l) or *pa pauk sin* (yg;ykwfpif) in the *Inthar* dialect. Paddy grains fall to the threshing ground underneath when the sheaves are threshed on the shelf. This process is known as *kaut sut paut* (aumufqkyfykwf).

Prior to the paddy threshing work, most *Inthars* keep a paddy sheaf as offertory for the *Po thu kjwa nat* (bdk;ol<u,fewf)– the Lord of Prosperity – and this paddy sheaf is always hung on the barn. In addition to this practice, the paddy threshers offer the first scoop of food from their meals as a token of paying homage to the Lord of Prosperity.

The conventional division of labour of the *Inle* region implies that the males till the land and harvest the crop, while the females transplant and thresh the paddy.

One 48-year-old farmer claims,

"The rate of per acre yield is about 60 (Inle region) bushels".

In regard of rice as food, the *Inle* area has a self-sufficiency of about 80% only.

5.2 Water Farm Cultivation

The *Inthars*, as natives of the *Inl*e Lake, are very much adept in aquatic ways of life. They have successfully turned the lake's massive water surface into farmland. Cultivation carried out on the surface of the lake waters is aptly named "water farm" cultivation.

Doing “water farm” cultivation on the surface of *Inle* is done on the floating islands moving along in the lake. These islands do not touch the bottom but stay half submerged on the lake surface. In the local dialect of the *Intha*r these floating islands are called “*Kyun-mhaw-phoat*”. For these islands to form grass and reeds growing at the edge of the lake intertwine with each other and take years of accumulating plants and trees.

The water farm cultivation comprises two types, i.e., land gardening, and floating gardening. Despite the fact that both types of cultivation are carried out in aquatic environs, there are differences in methods of preparing the cultivation beds to the kind of harvest crops. Land gardening is done on a fixed site, while that for the floating gardening can be shifted to any suitable place as required.

5.2.1 Land gardening

As the *Inle* Lake originates from the natural springs, streams, creeks and mountain torrents, changes in water level exists depending on the prevailing climate, i.e., its water level rises in the rainy season, and falls in the hot season. The gap amounts to 10 to 12 feet. The natural floating islands at either side of the *Inle* lake posses various volumes depending on the differing depth or shallowness of the site where the natural floating island exists. These natural floating islands are separate mass of land set apart from the lake bed. In the hot season when the water level falls to its lowest, the floating island comes into contact with the lake bed, but when the water level rises in the rainy season it stays afloat again independent of the lake bed.

The land gardening is done in the environs of the village where the water is only 8 to 9 feet deep. Prospective land gardeners cut up the large floating mass of land at the shores of the lake into parts convenient to tow close to the village of residence. The towing is done either manually using barge poles or by using outboard motors and powered schooners. These blocks of floating island are also available on payment of cash.

There follow various steps of land reclamation. These include piling up of alluvial, mud, and fertilizers whose total weight pulls the floating island-turned-land gardening plot down to the lake bed and makes it stationary. Another land reclamation work calls for digging up the earth using hoes, dredging the lake bed for alluvial soil to landfill the garden plot.

Figure 9. Land gardening

October is the land reclamation time, and November commences the cultivation season. The most common crops are carrots, cabbage cauliflower, aubergine, chilli, cucumber, pulses, lady's finger, pumpkin, gourd, watermelon, bitter gourd, chayote, potato, flowers, onion and garlic, etc. A land gardening plot normally has a length of 40 to 50 feet, and a breadth of 80 to 100 feet, and 3 to 4 feet above the lake's water level (See Figure 9).

5.2.2 Floating gardening

This type of gardening can be done anywhere irrespective of the depth or shallowness of the water level. The existing floating islands are cut up to sizes as required and trimmed, and towed to wherever intended to do the cultivation work. The most common crop for the floating garden cultivation is tomatoes (See Figure 10).

One 56-year-old resident of Kay lar village says,

"Our village produces tomatoes on commercial scale".

Figure 10. Floating gardening

Rows of cultivation beds are prepared for growing tomatoes. These beds are of 6 feet in breadth, between 100 feet and 600 feet in length, and 2 to 4 feet in width. But the conventional measurement practiced by *Inthars* is the Myanmar measurement known as - *alan* (tvH) which is equivalent to 2 yards - (1.8288 m). This measurement is preferable to that of foot. For optimal irrigation purposes, the rows of cultivation beds are arranged in longitudinal direction, 6-feet apart, and are anchored by long bamboo poles.

Tomatoes are grown as biennial crops. The first growing seasonal begins in January. Tomato seeds are sowed in nurseries for one month. The seed grains are of both local and foreign extracts. Seed grains from Thailand, Japan, and Taiwan are mostly used. One 50-year-old *Inthar* tomato grower remarks,

> *"Here, most people use the Airplane brand seed grain packets in market for prices ranging from Kyats 3000 to 7000" (2010).*

Algae, moss and mud from below the surface of the *Inle* Lake are dredged onto boats to build/construct bunds on each side of the floating island. The width of the floating island has to be kept as short as possible so as to make the piling of algae, moss, and mud soil spread to the middle easily. Transplanting begins in February. Two to three seedlings are planted in holes which are 10 to 12 inches apart. Fertilizers, cow dung, and guano are used in growing tomatoes. At 10-day intervals algae and moss are reinforced, weeding is done and fertilizers added up. At the completion of 50-days, posts were erected 2-feet apart, tied to horizontal cross poles 1-foot aboveground.

Tomato plant has soft stem, and such scaffolding is needed to avoid tomato plants from falling down and being destroyed.

After 70-days, and when the plants have reached over the third cross pole of the scaffold, the first harvest is ready. Tomatoes are picked 10-days apart, and 7 to 12 times in one harvest season. Fertilizers - both natural and chemical - are fed every 15 to 20 days. Moreover, pesticides and fungicides are sprayed at 10 day intervals. It is learnt that chemical fertilizers are used at the rate of 2-bags per 600-feet of cultivation bed, despite the fact that nowadays natural fertilizers are used without any limits.

The *Inthars* make use of scientific agriculture methods in their cultivation work. At the same time they do not fail to preserve their traditional precautionary measures. Rice and tea leaves are offered to the guardian spirits on the day they begin their farming work. The purpose for doing so is to obtain a bumper harvest, and to get protection from any unforeseeable dangers. The pick of the new harvest is cleansed and made an offertory to the "Lord Buddha".

A plantation on a 600 feet floating island can produce 50-to-70 bushels of tomatoes in one harvest season. One bushel of tomatoes weighs 32 viss, that is, approximately 52.26 kilograms (1 viss = 1.63 kg). Depending on the market conditions, tomatoes prices rise and fall. In 2010, one bushel of tomatoes fetches Kyats 3,000 to 15,000. The first harvest season ends in June, and the second harvest season starts with sowing work in that every month. The required investment for a 100 lan (**vH)**, or 600 foot cultivation plot is estimated at Kyats 200,000.

Beginning 2002, extension of water farms, and transfers of floating islands were prohibited with the aim of preserving and maintaining a sustainable water level of the Inle Lake. Fertilizers, as well as pesticides, are widely used for the increased output of various crops. Moreover, limited use of chemical fertilizers, to be compensated by the increased utilization of bio fertilizers, natural fertilizers, and neem pesticides as guidelines laid down by the State, have great impact on the cultivators in that their production activities become economically sound, and hence more beneficial to the producers.

Table 2 Types of food product by year

No.	Agriculture	Unit	2005-2006	2010-2011
1.	Paddy	acre	28226	33096
2.	Pigeon pea	acre	1650	1642
3.	Groundnut	acre	2970	3243
4.	Sesame	acre	70	102
5.	Sunflower	acre	1750	3554
6.	Sugarcane	acre	8095	16935
7.	Maize (grain)	acre	3980	4770
8.	Chilli	acre		217
9.	Onion	acre		432
10.	Garlic	acre		2111
11.	Potato	acre		1620
12.	Vegetable	acre		15122

Source; Land Records Department (2010-2011)

In regard of rice as food, the *Inle* area has a self-sufficiency of about 80% only. *Inle* area there is several big 5 day markets at *Khaundaing, Mongthawk, Inntain, Taungtou,* and *Nampan.*

Figure 11, 12. Goods in Nanpan Market

Figure 13. Goods in Nanpan Market

5.3 Fishing

Forty-two percent of *Inle* lake populations live on fishing (See Figure 14). Fishing is one of the main source of food for local people as well as those in the near by towns and villages surrounding the lake. The average temperature is 36.6˚C. Fish food plants grow as there is a constant flow of water. Fish breeding is done in the west bank where there are plenty of moss and planktons. Distribution of fish in *Inle* Lake can be found in three areas: lake bank areas, middle lake areas and between bank areas.

At the lake bank areas water chemistry has changed because of the cultivated floating islands and the base mud and silt produce the smell of raw fish and meat. The fish are attracted by this smell. Moreover the waste discarded by the population around the lake has increased and attracted more marine creatures.

The water is clean in the middle of the lake and only a small number of fish stay there. There are only a small number of fish in between lake or shallow shore area as there are thick plant areas of moss and silt and strong smell. *Inle* Lake is also a place of refuge for 36 species of fish, 3 species of tortoise, and 30 species of water birds. They call the moorhen "*Kadat"*. It can be found plentifully in the cold season.

Figure 14. Fishing

The popular fishes in Inle Lake area are *Ngafein, Nga-yant* (dogfish), *Nga-khoo, Nga-khon-ma, Nga-loo, Nga-taung-nwe, Nga-tha-phwai* or small fish and small prawns. Among the kinds of fish found in *Inle* Lake "*Ngafein*" (kind of carp) **(**See Figure 15) and "*Ngakhrshinma"*(a kind of fish with the head of freshwater catfish and the body of shark like sheat-fish) are the two kinds of fish that are significantly found only in the region of *Inle* Lake. The fish was so plentiful that the surrounding regions depend on *Inle* Lake fish for their food.

Fishing needs high investment. Firstly they have to build a small house called *Inn-eain.* To built that small house bamboo sticks are needed. These bamboo sticks must be tied closely by robes and it is called *hu*. There bamboo robes are set up in circle in the lake. The required space can be used. Apply fish food into the circle to enter the outside fish into circle. At that time outside fish may collect in the circle. The fish food is bean gram. The circle should not be narrow to pile the fish with the fish food. It should be narrow up to 20 yards and closed the circle and collect the fishes by using net and trap.

Figure 15. Ngafein

Fishing is done in *Inle* Lake with the use of other equipment, nets and bamboo fish traps. There are nine types of equipment for fishing. They are net baskets, sait, scoop net, pan sant paung, short basket, talaw, hand puller, arrow, chin soe and large basket. For the equipment needed for fishing are made by the villager's themselves (Nang Vo Kham 2005).

Table 3 Fish Breeders

No.	Fish Breeders	2010-2011 (acres)	pond	Out put (viss)
1.	101	881.26	545	14641000

Source; Livestock and Veterinary Department 2010-2011

In addition, poultry, pig and fish farming were introduced to the region. Poultry farming includes raising chickens for both meat and eggs.

Table 4 Livestock Breeding

No.	Particulars	Unit	2005-2006	2010-2011
1.	Buffalo	head	10148	11805
2.	Cow & Bull	head	29827	34597
3.	Pig	head	20949	29322
4.	Goat	head	637	1667
5.	Poultry (egg/locality)	head	183053	494971
6.	Duck	head	28152	41791
7.	Turkey	head		4705

Source; Livestock and Veterinary Department 2010-2011

Conclusion

Inthars have been able to produce food for subsistence in adaptation with their environment and climate. They plant paddies in summer when lake waters have dried up in areas commonly known as six-month dry land and six-month underwater land. Moreover they successfully carry out water farming of vegetables on natural floating islands which are fashioned and modified to their needs. In addition to wild fish found in *Inle* Lake and they breed livestock such as chicken, duck, and pig to supplement their food.

CHAPTER (6)
FOOD HABITS

After Chapter 4 on *Inthar* adaptation with environment and Chapter 5 on *Inthars'* production of their staple food-rice, this Chapter 6 deals with their food habits which were directly observed, like, how *Inthars* make food choices or taboo, and classify their food, etc.

6.1 *Inthars'* dietary belief and traditional practice

6.1.1 Preference

Primitive communities had to rely on wild nuts, berries, roots, tubers, and honey for their food source because they were hunter-gatherers with no knowledge about cultivation and livestock breeding. In fact, they wandered round the wildernesses to gather fruits, nuts and berries and to hunt wild animals for meat. Such hunter-gatherer communities moved about from place to place where food was abundant. If a place lacked food source, they had to migrate to another place with sufficient food supply. Eventually, there was a great difference among nomadic clans and tribes in their food habits especially in their staple foodstuffs. It was the development of agriculture that enabled them to settle down and live in one place. The more development of farming there was, the more plentiful the foodstuffs. As civilization evolved, the choice of favorite food had first developed in each of all those clans, tribes and communities.

There are about three and a half million species of plants worldwide while edible plants people cultivate count for one hundred only. Likewise, out of about 200,000 species of animals, only fifty species are raised as livestock.

According to the adage in Myanmar language it is said that "one regular serving of rice can extend one's life expectancy for seven more days and water consumption for half day". In other words, being able to eat meals and being able to drink water can enable us to live. Human being will surely die without consuming these two basic things.

As rice plays a major role in *Inthars'* food-source, certain cuisines like medicinal bitter herb soup or *Seikharhin* is popular among them. In fact, it is their traditional dish highly valued by the folk. As its name suggests, this soup is made of a specific medicinal herb with a bitter taste. The powder used in the bitter medicine herb soup

comes from bitter herb (chiretta plant) which is plucked in the cold season and then dried and pounded. This bitter herb thrives on mountainous regions of over 4000 feet. There are two types, the larger one and the smaller one. The one used in the *Inle* region is of the larger type. It is said that Taunggyi district produces the best bitter herb of the region. *Inthars* get powder and cook it with a mixture of various fruits, pulses, grains, fishes and so on.

Other popular dishes are Indian leak salad or Allium tuberosam root *(juu muitthau*), pickled fish salad (*Ngachin)*, tomato curry (*khayanjnthee chet*), pounded soy-bean, mashed fish or pounded fish, braised fried fish or tenderized fried fish curry. The *Inthar's* favourite meat is fishes. The second most eaten meat is pork. For all occasions of joy or sorrow, pork is their favorite choice for entertaining people. Some villages prefer dried salt fish especially dog fish.

Regarding vegetables, *Inthars* usually eat mustard, carrot *(turnip)*, chayote, cabbage, tomatoes. They use such edible oil as groundnut oil, sesame oil and palm oil. They tend to use more garlic than onion as the main ingredient in their recipe. They also use some spices in moderate amount.

It can be studied that *Inthars* always prepare their meals with same dishes for breakfast and lunch. They prepare another separate dish for dinner. For example, if they have had tenderized fried fish curry (braised fried fish) and *Seikharhin* for breakfast and lunch, they will stir fry some vegetables and pound the red chillis for dinner.

There is a variety of snacks such as rice noodles in peppery hot soup (*Inn Montee*), packs of steamed rice flour with leak (*hinhtou)* (See Figure 16), mashed fish mixed with rice (*Nga Haminnè*), packed pickled pork, fried rice grains, *tofu* crispies or dried gram paste crispies, *tofu* salad or dried gram paste salad, glutinous rice crispies or *Kway mohn*, etc in their diet. Most *Inthars* usually treat their guests with fried rice grains, *Kway mohn*, popcorn and roasted sunflower seeds with the accompaniment of plain tea which they call *Alkhar yee*. According to their food ideology, they tend to add a pinch of kitchen salt in each cup of plain tea they drink to prevent potential constipation caused by dried tea leaves.

Figure 16. Preparation for *hinhtou*

6.1.2 Dislike

Food and drink and traditional cultural customs and habits are inseparably connected. The eating habits and ways of man differ according to the country and region he inhabits. There is only a little difference among people in eating fruits and vegetables. The *Inthars* do not much care for the meats like chicken, duck, mutton and beef. They eat them only once in a while. Chicken and duck are sometimes available in the village, but mutton and beef can be bought only on market days.

In cooking their curries, although they use onions they prefer garlic more. Concerning with this, a 45 year-old *Inthar* said,

> *"If there are plenty of onions in a dish it tastes rather sweet and it is not delicious*".

Most *Inthars* do not eat the ridged gourd because of its smell. Most of the elderly *Inthars* do not like the ready made packed fast foods like coffee mix, tea mix, dry noodle packs and vermicelli packs. They prefer their own traditional snacks.

6.1.3 The diets of *Inthar*

The diet of the *Inthar*, the inhabitants of *Inle*, comprises mainly of the local food products of the *Inle* Lake region. Their annual access to six months of land, and the remaining six months to the lake terrain allows them a limited period for rice farming. Thus, the *Inle* region could not produce sufficient rice for local consumption.

A 55 year old man said,

> *"present paddy cultivation at Inle has an output covering only 80 percent of self-sufficiency".*

Later on, the inhabitants prepared water farming for growing tomato, potato, banana, gourd, cucumber, pumpkin, chayote, mustard, and radish. Tomatoes were grown on commercial scale in the region since fifty or sixty years ago. These are native of Peru, with the biological family name of *Solanaceae*, and the botanical one as *Lycopersicon esculentun*.

Currently, tomatoes have become the main cash crop of the region. Thus plantation beds are prepared on such floating islets with the aid of modern machinery. Potatoes are grown only on a small scale in the *Inle* region. Their native is Peru and Chile, belonging to the biological family of *Solanaceae* and the botanical name is *Solanum tuberosum*. However the crops fared better on Inle soil.

Rice is the staple food for *Inthars*. Almost all *Inthars* always have three main meals a day; breakfast at about six a.m., lunch at around about noon and dinner at about five p.m. They eat rice rather than snacks for breakfast because it is the good source of carbohydrate that can provide them with sufficient energy for their physical activities throughout the day. School children carry their lunch to school while workers go back home to have lunch. Dinner time is important for *Inthars* in both social and dietary aspects because all family members can sit and enjoy the meal together after school or work.

Only a minority opts for tea, coffee and snacks in place of the boiled rice which is the staple food of the *Inthars*. It was found that the *Inthar* dietary mode rarely depend on the occupation and the financial status of the family. The available food supply was prepared in their traditional way.

The meal consists of only one to two main dishes of first preference. The common cuisine includes fried fish, tenderized fried fish, various bitter soups (*Seikharhin:)* (See Figure 17) or broth prepared from the seeds of a chiretta plant, pounded fish paste, pounded edible root - *allium tuberosum*, tomato salad, fruits and vegetable, etc. Other meat dishes are seldom taken, and garlic is mostly used in preparing such dishes.

The bitter curry can be prepared with pulses, roast rice, taro, fishes etc., and also with local vegetables such as knotgrass and fig. Pulses that go best with the bitter curry are gram, cow pea, etc. Pulses are boiled and pounded, and then garlic, ginger, salt and

seasoning powder are blended with bitter herb powder in preparing the bitter medicinal curry. For roasted rice medicinal bitter herb curry, garlic, ginger and fish are boiled first. When the broth bubbles, salt, seasoning powder and roasted rice are added. After that the bitter herb powder is sprinkled into it and served. The dish is consumed three to four times per week and it is a traditional *Inthar* cuisine which is believed to protect and prevent the cause of malaria and flatulence.

Figure 17. Bitter soups (*Seikharhin)*

Another cuisine special to the *Inthar* is the tenderized fried fish curry (See Figure 18). A kind of small carp (*ngafein*) is used for that purpose. The fish is cut open from the head part and kneaded with salt, turmeric and seasoning powders. Then, add garlic and ginger to heated oil with a dressing of onion tops and tomatoes. Putting some aside, the gravy is stuffed into the fish, tie it and fry it again. Then the gravy left aside is poured on the fish and served.

Figure 18. Tenderized Fried Fish Curry

Figure 19. Tenderized Fried Fish Curry

The *Inthar's* favorite dish of pounded fermented Soya-bean is made of grilled edible root of the herb *Allium tuberosum*, chilli, salt and seasoning powder. Likewise, the pounded fish curry is also a much preferred dish of the *Inthars*. This is a curry made up of grilled fish with pounded garlic, chili, salt and seasoning powder. A salad of unpolished rice, pickled fish, cooking oil, coriander, onion tops, salt and seasoning powder is part of the *Inthar* diet. Pickled fish (See Figure 20) is bought and sold by weight.

Figure 20. Pickled fish

What the *Inthars* called *Arlukyaw*, the fried potatoes curry consists of cut up potatoes, pounded garlic and onions, tumeric and seasoning powders, tomatoes and cooking oil. The use of seasoning powder, although quite common among *Inthars*, is found to be consumed in moderation. Another dietary item is the duckweed (algae) salad.

Duckweed found in the *Inle* Lake is washed in salt water until it droops, and mixed with onions, sesame, salt and seasoning powder to prepare a duckweed salad. Duckweed salad is thought to have medicinal effects. Watercress, cucumber and other such vegetables are boiled in groundnut and bitter herb powders and served as soup.

For snacks, there are rice noodles in peppery fish soup, rice in bamboo tubes, glutinous rice flakes, steamed hide flakes, glutinous rice crispies (See Figure 21**)**, pop corns, brown sugar slabs, etc., that go very well with plain tea. Salt is sprinkled in the plain tea to avoid constipation as the *Inthars* prefer plain tea to ordinary drinking water. Salt in plain tea is believed to act as a laxative, according to the *Inthars* (See Figure 22).

Figure 21. Glutinous Rice Crispies

Figure 22. Glutinous Rice Crispies and Salt in Plain Tea

Rice noodles in peppery fish soup of the *Inthars* is prepared with the following ingredients; boiled snakehead fish, onion tops, roasted rice, and tomato broth, and

served with rice noodles. For roasted rice in bamboo tubes (*minkyidauk*), the rice is first washed and put into bamboo joints and soaked in water overnight. In the morning the bamboo joints are retrieved, baked, and served. The glutinous rice flakes are prepared by soaking the glutinous rice in water and then roasting it, and after pounding in a mortar, reroasted and served. Steamed hide chips come from the two inner layers of cattle hide which are boiled, and then dried in cut up pieces. Then the pieces of hide are roasted and finally, fried and served.

Besides, according to their traditional custom, *Inthars* never treat the guests to the eel, the mushroom and the moorhen *"kadat"* because they believe that the guests never visit them next time if they treat them to such kinds of food. But, if the natives want to feed the guests with them, they ask the nominal money for the food from the guests. Then, *Inthars* feed the guests as if the guests bought the food from them and ate it.

6.2 Choice of Food in *Inthar*

6.2.1 Choice of food for women during pregnancy and confinement

It is common knowledge that almost all nationalities in the world have their respective dietary restrictions based on their dietary belief in terms of the religion they embrace or traditional practice. *Inthars* are no exception. They have long upheld their traditional practice relating to their diet handed down by their pedigree, which set a guideline in their diet i.e., dos and don'ts. Regarding their dietary belief and tradition, *Inthars* usually divide their foodstuffs. Forbidden foodstuffs can be classified into three different categories: occasionally forbidden ones, completely forbidden ones, and non-edible ones. On the other hand, they have some foodstuffs used as medicine and others for longevity and youthfulness.

Inthars have the habit of forbidding certain foodstuffs depending on the specific circumstances in one's stages of life i.e., infant, child, and adolescence and so on. Their choice of food for some physiological condition such as pregnancy and confinement as well as puberty and adolescence vary according to their traditional obsession.

Married women in *Inle* lake region (*Inthus)* expect that they may become pregnant when they experience no period at regular time. During their pregnancy almost all *Inthus* do not need to follow specific dietary restrictions except *tet-sar*. *Tet-sar* such as bitter gourd and cassia siamea (*mezali*), acacia intsia (*hsoo-poke leaves*), were avoided because these might cause giddiness, stiffness of back and stiffness of

shoulders. They may be allowed to eat some hot and spicy things like chillies in moderate amount. But, some women avoid staying outdoor to enjoy the warmth of the mild winter sunlight and eating *htamingyo* i.e., the hardened flat stock of cooked rice usually stuck at the bottom of the pot resulting from overheating or being burnt a bit. They believe that such practices will make the placenta stick to the womb leading to risk of the mother.

Nowadays, a few pregnant women give birth to their children at hospitals and health centers while most pregnant women do so at home with the help of an experienced midwife or a traditional birth attendant. No matter where a mother gives birth to her baby, she has to consume a special diet according to their belief and tradition. After childbirth, most women eat only the roasted fish, fish soup, or *seikharhin* with rice rather than other dishes. The most common species of fish they tend to use to prepare such a special meal are small carp *(ngafein),* feather back (*ngapha*ì), snake head (*ngayant*) etc. Apart from consuming a special diet, a woman in her confinement needs to follow certain traditional practice to improve her health. In fact, turmeric roots are found to be very useful for a woman during her confinement. She not only consumes turmeric powder as a kind of medicine but also applies turmeric liquid (solution) to the whole body so that her skin can be clean and clear after birth. Some women take alcoholic drinks mixed with Chinese traditional medicine to cleanse their blood and flesh. Some women eat baked salt to prevent allergic reaction if they eat ordinary kitchens salt.

To get good lactation women in confinement consume *seikharhin*, drum-stick tree leaves soup (*Danthalun hinkhar*), cow's tail soup, banana bud soup, tender jack fruit tree leaves soup and etc. They also eat boiled leaves of cotton plant. They believe that the more they drink or have such soups, the more their breasts produce milk. Although they eat such soups to produce milk in abundance, some women eat avoiding edible oil for fear of allergy and cough. Most women in confinement normally avoid eating taro, hilsa *(ngathalau*), small fish (*ngathaphwai)*, fish-paste, prawns, mushroom and bamboo shoots because they believe that these foodstuffs will create allergic reaction. A 75 year old lady with six children said that

> *"I had never eaten mushroom all my life because of the belief that eating mushroom can bring about the previous diseases and ailments".*

Some women consume fish paste and mushrooms when their baby is over one year old. They do not eat tinned fish to prevent their baby's stomach problems. Other

foodstuffs almost all *Inthus* do not eat during confinement include pine apple, jack fruit, common millet and Italian millet (*luu and sutt*). In fact, they have some obsessions and superstition about their diet. For example, they think that if they eat pine apple, the patches like those on a pine apple will appear on the baby's skin. They also fear that prickles will grow on the baby's skin as they grow on a jackfruit if they eat it. According to their traditional belief, they assume that their child will become overly active or peevish if they eat common millet and Italian millet. This is because they are obsessed with the idea of rather strange interpretation on the pronunciation of these words. The word *'luu'* in Myanmar language has literal meaning of more or less equal to overly active or flirtatious while '*sutt*' suggests brittle and its metaphorical meaning is peevish or easily annoyed. For this reason, the mothers eat '*luu'* and '*sutt'* when the baby can say these words. In addition, they avoid eating cucumber and egg-plant so that the baby will not suffer from colic.

Some specific hygienic practices concerning with confinement are mainly based on tradition. Some medicinal herbs are mostly used to heal the injury caused by childbirth. They use small packs of pounded fresh ginger and zingiber barbatum (*Mei tha lin*) to put on the injury. In other words, these packs are used as heating pads. They inhale small packs of sesame and fennel to prevent and relieve terrible headache and giddiness.

During the confinement, most women follow the traditional practice of exposing their body to the warmth of flames from fireplace for three days. Whenever they wash their faces or their hands, they have to thinly apply the ginger liquid on the wet parts before exposing to the fire again. According to their belief they expose the newly born baby to the warmth of fire to prevent from jaundice. If a woman gets toxaemia after childbirth, they make some packs of baked salt and put it on her frontanelle.

Some *Inthars* do not eat meals together with a woman in confinement and they also have specific crockery to be used for her set aside because they think that ill luck has fallen on her. It is assumed that if a husband /a man eats a meal together with his wife in her confinement, ill luck will also fall on him. In olden days, some households used to light a lantern either under the flooring of a house or at the doorway or at the landing. This symbolizes threatening/ driving away the evil spirits approaching the poor, ill luck struck lady.

6.2.2 Choice of food for Childhood

According to *Inthar'* tradition, the mother starts breast feeding as soon as the baby has been born. If the mother cannot give breast feeding to newly born baby very well, they feed the baby some glucose powder and cooled boiled water. Those who can afford, they use milk powder as a substitute for breast feeding.

Most *Inthars* always rub the newly born baby's tongue with a little powdered pepper and let the baby lie on its side. They think that the mucous that are supposed to be collected in the baby's stomach can be thrown out by rubbing powdered pepper into the blade of its tongue. Regarding this traditional practice, a 40 year-old mother with one child said,

> *"Rubbing the powdered pepper on to the blade of a newly born baby's tongue can remove all the mucous in the body and every mother who gives to birth a child at home follows this practice".*

After the mucous has been removed in this way, few drops of honey are put on its tongue. Moreover, the infant is given a little water to drink. A few days after the baby is born, it is fed some banana (pheegyan) grated with a spoon. This practice is typical for those babies whose age ranges from one-day old to seven-day old. Most *Inthars* believe that if they feed the infants some banana, so-called waste matters in their bowels will be cleared up. A 49 year-old mother with two children said,

> *"I fed my baby banana during my confinement to cleanse its bowel by clearing waste matter from its body".*

If the mother cannot feed breast milk to her baby very well seven or eight days after childbirth, they make congee (*htamajei*) mixed with a little sugar for her baby.

Generally, a woman in confinement is ready to return to her typical daily life three days after childbirth. *Inthars* always celebrate a party to mark a significant change in a household and to welcome the new comer in a family. In doing so, an offertory *(kadawpwe*) i.e., a large bowl containing some rice, a comb of banana (*pheegyan*), fresh ginger, garlic and some honorarium is prepared and a silver bowl filled with some soap- nut liquid is put near it. The host and hostess invite the midwife and other people including neighbors who helped to prepare the confinement to their house and treat them to rice and *Seikharhin*. On the part of the guests, kith and kin alike contribute some coins to the event as a symbol of amulet for the baby's good health and good luck. They usually put the coins into the silver bowl before they wet their hands with soap-nut liquid to symbolize cleansing of all filth resulting from

confinement activities. A *kadawpwe* or a collection of various gifts according to tradition is sent to the midwife together with a bowl of soap-nut liquid. Such a *kadawpwe* usually consists of some rice, a comb of *Pheeghan* bananas, fresh ginger, garlic and some honorarium. On such an occasion, all the guests use just a little soap-nut liquid to symbolize cleansing their head but they never use it too much because they assume that if they use too much soap-nut liquid whose nature is very slippery, the same effect will fall on the baby's personal traits. Again, they have an extraordinary obsession with the metaphorical meaning of the nature of soap-nut liquid. According to their interpretation, slippery effect means that the baby will become a trickster.

Most *Inthars* think that two twin brothers or twin sisters can bring good luck to their parents while a boy and a girl born as twins cannot do so. An average baby has to be shaved when it is 30 days old. One whose day of birth is the same as that of the baby or one whose day of birth is congruent with that of the baby has to shave the baby's head. Such a person is given a *Kadawpwa* containing at least a viss of rice, a comb of banana, a pack of pickled green tea leaves and some honorarium.

In terms of their feeding habits, most *Inthars* usually feed a baby boiled rice/gruel when it is 4 month-old, and they feed it rice prepared with a pinch of salt and a sprinkle of edible oil at the age of 6 or 7 month-old. As the baby grows a little older start feeding it the same way they do to adults. The time they usually do so is when the baby is about 8 month-old. If the mother becomes pregnant again when her child still depends on breast feeding, she stops feeding it in case this might upset the child's stomach (diarrhoea). An average mother decides to stop breast feeding to her baby only when it is one and a half year old. The most common thing the mothers use to discourage a baby's craving for breast feeding is powdered bitter herb (*seikhar mohn*). When a child becomes one to three years old, either one of his or her grandparents or the head monk (*sayadaw*) they pay homage to names him/her according to his/her day of birth.

6.2.3 Choice of food for puberty stage and young adults

Inthars prescribe no dietary restrictions for boys at their puberty. On the other hand, young girls in their puberty tend to follow certain guidelines and life style handed down by parents and the elderly especially before and during their menstruation period. Most girls avoid eating sour and bitter things before and during the period.

The forbidden foodstuffs include mint fruit (*pin sein thee*), chebulic myrobalan fruit (*phan khar thee*) and pickled tea leaves etc. This is because these foodstuffs are believed not only to disturb the regulation of period but also cause flatulence and digestive disorders.

Almost all girls are also forbidden from eating taro and prawns which can cause allergic reaction to certain people. Other forbidden foodstuffs include pine apple, jack fruit and water melon. They believe that if a girl eats pine apple during her period she will suffer from patches on her skin like those on a pine apple and if she eats jackfruit, there will be small prickles on her skin just like those growing on a jackfruit. What's more, she will have bad smell. According to their belief, water melon can upset the stomach, and they do not eat it. Likewise, they never eat pickled vegetables and ice lollipop in fear of such diseases.

Relating to their traditional dietary belief, most *Inthars* regard such meat as tortoise, snake and frog as completely forbidden foodstuffs. They think that if they eat tortoise meat, they will become lepers. Another dietary obsession is that some *Inthars* forbid eating snake gourd, towel gourd/luffa, and mint. These foodstuffs may be classified as non-edible for some *Inthars*. Although such vegetables are good for health from the standpoint of dieticians, they forbid eating them because of their traditional belief. Those who have their skin pricked and charmed (tattoo) by means of incantation magic i.e., to free be from being harmed by any kind of weapons or from the danger of snake poison never eat snake gourd. In their opinion, if they eat snake gourd and mint leaves (*pin sein ywet*), the protective power of magic will disappear.

According to a 75 year-old lady with six children, those who have themselves protected by such magic especially those from snake poison never eat snake gourd and mint leaves. It is also said that

> *"Almost all adults over thirty year-old of age in village have our skin pricked and charmed by magic to be free from the danger of poisonous snakes. So we never eat snake gourd and mint leaves".*

6.3 Food classification

6.3.1 An Analysis on the Dietary belief of *Inthar* community

Regarding the meaning of food certain professionals have given some definitions of food from their standpoints. Dr. Kywe Thein gave a general meaning of food in his book titled "Nutrition" published in 1967. According to his definition, foodstuffs are

any substances either in solid or liquid form which can be swallowed by mouth and after being done so which can provide the required nutrition for one's survival.

Another professional gave a different definition. U Tai Oak, the author of the book titled "The Science of Nutrition" published in 1985, gave definition of food as follows; 'According to the science of nutrition, food is a certain substance which can produce the required energy, help the growth of the body, substitute and treat the damaged cells in the body or which can control such mentioned body functions properly and keep them in good regulation. Only if a certain substance can do at least one of these bodily functions it can be defined as food.'

According to Dr Aye Kyaw, who wrote the book titled "Nutrition and Health" published in 2008, what we eat is food. Anything we eat is food may be nutritious or not. The balanced diet or adequate diet contains six basic essential nutrients (carbohydrate, fat, protein, vitamins, minerals and water) in adequate amount and in proper proportion. Likewise, *Inthars* also define the meaning of food as certain substances which are consumed.

Although the definition of food may vary depending on the standpoints of certain people, food is the most important basic needs for our survival. From the part of anthropologists, they have further pointed out how cultural groups differ markedly from one another in many of their beliefs and practices related to food. According to them, all of these stages in food consumption are closely patterned by culture, and are part of the accepted way of life of that community. What's more, foodstuffs people consume daily are found to be related to two factors: social relationship between individuals, and dietary belief and practices of a certain cultural group. Accordingly, the patterns of food consumption of a certain community can not be changed easily.

According to Helman (1991), food may be generally classified into five types.

They are (1) food versus non-foods,
(2) sacred versus profane foods
(3) parallel food classification
(4) food used as medicine and medicine as food and
(5) social food.

In the same way the foodstuffs *Inthars* consume are classified into five types and each type of foodstuffs is studied and analyzed.

6.3.2 Food versus non-food

Myanmar is a country where over a hundred ethnic groups reside together each with its own culture and tradition. Accordingly, such diverse cultural groups may be different in one another from their ways of life such as customs, religious beliefs, clothing style, food habits and so on.

There is no doubt that the patterns of food consumption of a cultural group are mainly prescribed by its culture and partly influenced by traditional practices. Each culture defines which substances are edible and which are not. Members of a cultural group may reject to consume even some nourishing foodstuffs if they are not regarded as food by their culture. *Inthars* are a case in point. They never eat such meat as frog, tortoise, dog, cat, and snake although they are all edible. This is because they are rarely classified as food. Calorie comes from daily consumption of food. It is usually called food and nutrition as nutrition is built with food. Some foods have better nutrients and some food doesn't give any calorie that is non-food.

In this sense, some *Inthars* can be said to consume non-food such as liquor, betel-quid, tobacco and cheroot, which have no nutritional value.

6.3.3 Sacred versus profane food

According to Helman (1991), sacred food refers to those foodstuffs the use of which is validated by religious belief while foodstuffs expressly forbidden by the religion can be termed as profane. Being Buddhists, *Inthars* avoid killing creatures for food. A 65 year old *Inthu* said,

> *"Inthars buy already dead chicken and fish only for food, and no living pig for turning it into pork. In winter they sometimes buy moorhen only if it is dead already. Inthars rarely buy chicken eggs for food because they are thought to be alive."*

So, offertory meal can be classified as a type of sacred food because they are provided to the members of *Sangha* or monks who have to perform numerous religious tasks. Naturally *Inle* villages are located on the water and thus the presiding monks in village monasteries find it difficult to go round for alms food. To solve this problem, *Inthars* take turns to provide offertory meals for the members of *Sangha* presiding at respective village monasteries. In doing so, they tend to prepare a special meal rather than their typical daily meal. The offertory meal containers or tiffin carries are always packed with the top choice of dishes and eatables depending on the sender's or

donor's economic status. In other words, the meals prepared for the monk are those the sender thinks well as far as he can afford.

Here how *Inthars* prepare sacred food and offer it to the *Sangha* or Buddha image will be studied. They buy some meat and fish beforehand especially on the market day to prepare their sacred food. They also buy snacks and fruit to be used as dessert. After packing the containers with the best choice of one's daily diet, they send them to monasteries both for the first day break meal and the midday one.

When they provide meals for the monks, they never fail to offer the alms food to Lord Buddha image at the monastery. Eatables are beautifully arranged on silver catafalques and offered to the Lord Buddha. As *Inthars* are devout Buddhists, they always observe eight precepts (religious conduct) administered by the presiding *Sayadaw* at the monastery on full moon days and on other sabbath days. Almost all villagers go to the monastery on such days every month and they take special care to do so on auspicious occasion like Thingyan or Myanmar New Year festival to keep sabbath. This practice has been common for all members of *Inthar* community since they became mature enough to be able to follow these codes of moral and religious conduct.

According to one of the codes in eight precepts, an individual must avoid eating meals after midday until the day break of the next morning. If one is hungry, he is allowed to consume some soft drinks or palm sugar (jaggery). Accordingly, *Inthars* consume only cold drinks and jaggery after midday on such days.

6.3.4 Parallel food classification

This dietary belief is derived from traditional medicines which mostly use herbs for curing various diseases. It is true that the majority of cultural groups usually classifies their foodstuffs into two main categories: hot and cold foodstuffs. This classification should not be confused with the temperature of foodstuffs. Although they are classified as hot or cold, it does not necessarily mean that they can give the feeling of being hot or cold to touch. In other words, they are classified as hot foodstuffs or cold foodstuffs according to the effects of heat or coldness they cause on food digestion process. Health is defined as a balance between these categories; ill-health is treated by adding hot or cold foods or medicines to the diet to restore the balance. *Inthars* also accept such parallel food classification as they are conservative about the traditions handed down by their lineage of the past. For example, during pregnancy a

woman would avoid hot foods or medications lest her child be born with a hot illness, such as rash.

The most of the respondents from the study area categoried the hot and cold foodstuff as following:

Hot foodstuff	Cold foodstuff
chicken	beef
duck	pork
mollusc	mustard
common moorhen	cauliflower
ginger	cucumber
hydrocotyle asiatica (myin khwar cresses)	gourd
chilly	pulse
turmeric root	onion
garlic	potato
bitter herb (seikhar)	tomato
dregea volubilis	egg plant

6.3.5 Food as medicine and medicine as food

Inthars tend to avoid eating certain foodstuffs at special physiological status such as pregnancy, lactation and menstruation. During pregnancy, women avoid eating pickled vegetables and those foodstuffs which can cause hypertension. They also believe that if they spread turmeric liquid all over the body and if they consume turmeric powder during their confinement, their skin will be clear and their blood cleansed. They have the habit of using the baked salt in packs to relieve headache and high blood pressure. Packed baked salt is used as a kind of heating pad to be put on top of the head. During lactation period, mothers drink either *seikharhin* or soups to be able to produce more milk. Besides they do not eat sour foodstuffs and pickled vegetables in fear of the child's getting stomach problems.

Every food may not contribute to nutrition. Malnutrition follows when one does not get enough nutrition from his food. Then he has to regularly consume nutritious food as medicine. *Inthars* use certain foodstuffs as their medicine. For example, if a child is suffering from diarrhoea, they make him drink the mixture of plain tea and sugar. Some people use small lumps of earth (*myei kyee khai*) to make a solution with hot water and they feed it to the child (See Figure 23). These small lumps of earth are

obtained by digging about 20 meters below the ground in Mei Nei hill in Put Khe village, Hoepong Township.

Figure 23. ***Myei kyee khaì***

If a child gets a cough, most *Inthars* believe that the solution made of some soot mixed with turmeric powder and kitchen salt can relieve it. If a child has measles, they feed him/her a little liquor about half a soup spoon and they also spread the liquor all over the child's body so that all the latent heat can come out. In addition, they feed the child prawns, shrimps and eggs as a special diet. If a child has small pox, a little liquor is used to touch lightly on the scattering damaged parts of skin to heal them completely. If a child has breathing problems as a result of blocking nose, they grind the stalk of a pumpkin with a little water and rub this cream on the child's nose three times in such a manner of pushing it down. When they do so, they must hold their breath. They believe this practice really works.

Another foodstuff used as medicine is garlic. If someone suffers from colic and flatulence they feed him/her baked garlic, which is believed to be very effective to treat these digestive disorders. Some people use baked garlic to relieve dysentery. If adults get diarrhoea, they consume plain tea with sugar. When most *Inthars* have plain tea, they always add a pinch of salt to each cup of plain tea. This is because they tend to drink plain tea much more than cold drinking water and thus they use a little salt to prevent potential constipation caused by dried tea leaves. In addition to these dietary beliefs, they assume that the bitter herb powder (*seikharmohn*), the main

ingredient of their traditional dish, *seikharhin* can prevent malaria and it can also treat digestive disorders manifested by excessive gas. Regarding *seikhar*, a 42 year-old *Inthar* said,

> "*As Inthars settle on the surface of water, they seldom have to move their body vigorously. So, they think eating some hot food stuffs like seikharhim is good for their health."*

However, they avoid eating certain foodstuffs which are believed to cause certain ailments and diseases. These foodstuffs include bitter gourd, cassia siamea (*mezali*), pickled bamboo shoots, preserved vegetables and soy bean etc. they believe that those will cause high blood pressure and giddiness, stiffness of back, stiffness of shouders and muscle pain. If they have high blood pressure, they eat a kind of soup made of drum-stick tree leaves to relieve the ailment. According to their dietary belief, Indian nightshade (solanum indicum), a sort of dips, which goes well with tomato curry (*khayanjnthee chet*) is regarded as medicine to prevent getting paralytic stroke. They also think that eating a large amount of juu roots and soy bean can lead to arthritis of all four limbs.

6.3.6 Social food

According to Helman (1991), social food are those consumed in the presence of other people, and which have a symbolic as well as a nutritional value for all those concerned. A snack eaten in private is not a social food, but the contents of a family meal as religious feast usually are. In every society food is a way of creating, and expressing the relationship between people. No one can deny that serving certain food or having a special meal together creates and expresses the relationship between individuals, between the members of social, religious or ethnic groups or between any of these and the supernatural world.

6.3.6.1 Food as media

Tagu (April-May)- The water festival held in *Inle* region emphasizes on religious practice rather than merry making or splashing water on to one another. Although there may be very few Thingyan revelers, most local people do numerous meritorious deeds such as going to monasteries where they observe the eight precepts administered and take religious sermon delivered by members of *Sangha (Sayadaws*).

Figure 24. Gifts for elders

Figure 25. Paying homage to elders

Inthars have a tradition of paying homage to their elders (Figure 24, 25) such as their relatives, grandparents and suchlike during Thingyan. Their gifts for elders usually include rice, cooking oil, salt, chillies, onions, jaggery and snacks prepared in small packs on a tray. This practice of paying homage to elders starts during Thingyan and it can be done until the first Mynmar New Year Day. Every village in *Inle* region celebrates the New Year day and initiation ceremonies.

Thidingyut (October-November) - Thidingyut is the month for the famous Phaung-daw-U pagoda festival. It is celebrated from the 15th waning moon of Tawthalin to the 3rd waning moon of Thidingyut. The sacred mages of Phaung-daw-U pagoda will make a processional journey along the villages of *Inle* region for the people to adore

(See Figure 26). Connections with social food are observed at Phaung-daw-U pagoda festival.

Phaung-daw-U pagoda festival - The villages which the sacred Images of Phaung-daw-U will pass through for veneration are Kyaye paw kone, Inn tain, He yar ywa ma, Nga phe chaung, Kyaye sa kone, Pwe sa kone, Lin kin, Nyaung shwe, Nan the, Maing thauk, Thale U, Kalar, Zayat gyi, Phaya pauk, Nan pan, Man kyee sait, Kyaing khon, Maing pyoo, Naing taw, In paw khon, Yai tha ywa.

Along the journey wherever the Images sojourned, the local people of that village have to entertain the people who accompanied the Sacred Images, the people who come to meet them and the pilgrims who come to pay reverence with food and drinks at meal times i.e. rice, bitter curry and fried dried fish and plain tea and traditional *Inthar* snacks.

In *Inle* region to commemorate the descent of the Lord Buddha from the celestial world to *Thin ka tha na go* country, from the 14th waxing moon of Thidingyut to the 1st waning moon of Thidingyut, many families build a small shrine in front or at the head of the house in many designs. Then offerings of flowers, water, light and fruits and snacks of rice or glutinous rice are placed there. Traditional paper pennants and lights are also lit at night.

On the 8th waning moon of Thidingyut nearly all the *Inthars* and the other ethnic races Pa o, Danu, Taung yoe living in the neighboring villages come to Inn Tain village. All the monks and novices living in the monasteries in *Inle* region and its environs are invited to the grandest alms giving in the region. This great alms giving (*soon gyi laung*) is celebrated at dawn in the *tazaung*, of the Shwe Inn Tain Mwai Taw pagoda.

Figure 26. Phaung daw U pagoda festival

Tazaungmon (November-December) - The *Kahtain* festival is celebrated in this month. Besides alms giving (soon laung) ceremonies are held at Than taw mwai taw pagoda, Taung ton mwai taw pagoda, Shwe myin tin pagoda, Phaung daw u pagoda etc. In He yar ywa ma village, they hold a festival to create good will among the villages, known as Hare ya myitta paung ku (good will) festival.

Hare ya myitta paung ku festival - This festival is celebrated in Hare yar ywa ma village once a year. It a traditional cultural festival to create friendship and good will among the *Inthars* living in the far flung villages of *Inle* region. The *Inthars* and *Inthus* can meet each other again in this festival. It is celebrated from the 10th moon to the 15th waning moon of Tazaungmoon. All the villages of *Inle* region load their white umbrella shaded raft with all kinds of offerings and come to Hare yar ywa ma village. Then on 14th waning moon of Tazaungmoon, they are all offered at the Ywa U pagoda. They also send off fireworks display. Pilgrims from far and near can put up at any house and are fed with rice and curry meals as well as traditional snacks. Every house is full of visitors.

This "Hare yar myitta paung ku pwe" is called "san khon phwai pwe" by some Inthars. It means "May the bad news disappear and the good news arrive". In other words "it is a festival held once a year to meet and hear the good news, the auspicious message". A 70 year old woman explained,

"Hare yar event is one for relating good news group-wise".

Nat taw/ Pya tho (December-February) - Some *Inthars* celebrate the Intiation ceremony.

Initiation ceremony - The *Inthars* being Buddhists, the boys of 10-12year of age are initiated into the Buddhist order. This custom is practiced as a communal family of relatives or a communal affair of the village. A 50 year old woman said,

"*More collective initiation ceremonies among kinsfolk, rather than those held by individual families, are found at Inle".*

They designate the days to call the would-be novices, the entertaining of the guests' day and the final day of attending the sermon. The children to be initiated are sent to the monastery to learn how to behave, conduct themselves as a novice, and learn to say the prayers in Pali and request the abbot to give them the robe and permission to enter the order. Then the boys have to go round to their parents and elders to pay obeisance. They are accompanied by two ladies who carry the pickled tea leaf tray and popped rice. They have to leave on the lowest rung of the elder's house stairs and near the kitchen stove a small amount of pickled tea and popped rice on a banana leaf. This is to pay obeisance to the guardian spirits or *nats* of the stairs and the stove.

The next day they have the ritual of putting the gift cotton thread rings on the hands of the would-be novice's hands. This ritual is done at the house of the would-be novice. Some do this ritual only for the first born son of the family. The young boy is dressed in regal clothes or like a Sawbwa (shan royalty) (See Figure 27).

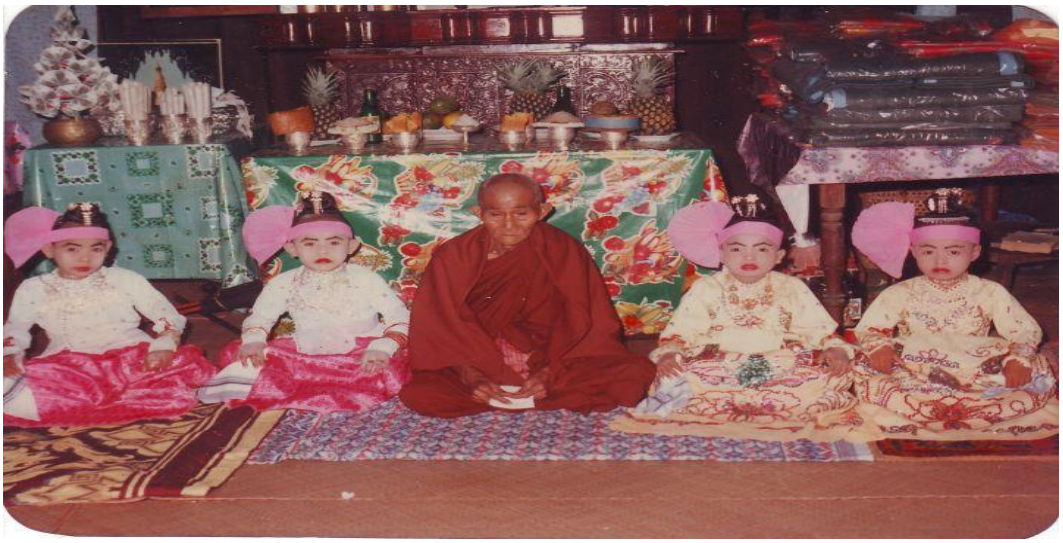


Figure 27. Initialtion ceremony

Figure 28. Offertory of miscellaneous things

The extraordinary thing is that all the preparations are made in the inner hall of the house if it is their own son but if the novice to be is adopted son the ritual is done in the outer room of the house. The guests who come to this ceremony are entertained with rice, pork curry, bitter curry, fried dry fish, fried cattle hide flakes and edible root salad. Sometimes, they give dried dog fish curry as a substitute for pork curry.

In this ritual of putting the cotton thread strands on the novice to be's hands, first of all they have to prepare an offertory of miscellaneous things (See Figure 28). They are white and red rice pancakes, pickled fish, a male fish, a female fish (usually dog fish) edible root salad, flat cake, turned up cake, (9) kinds of fruit preserves, fried sweet rice, glutinous rice, rice porridge, boiled big peas, popped rice and 2 combs of phigyan bananas placed left and right. Five to seven first marriage couples are chosen to prepare this offertory. They feed the novices to be with the food from the offertory, first a small mouthful as a token. Then the parents take the ring of cotton strands placed on the bananas and put one ring each on both hands. Each ring of cotton contains (9) strands. As they put them on the hands, (See Figure 29) they also pray for the blessings of long life and greatness in their lives. The guests also follow suit and

put gifts in the big silver bowls placed in front of the novices to be. The children have a right to own all the gifts.

Figure 29. Thread strands on the novice to be's hands

Pregnant women are prohibited from attending this auspicious occasion as they are considered impure. If they should come, they must not put on the blessed thread ring. Also if a member of a household has gone on a journey, no member of that family goes to a *Shinpyu* (Initiation). The *Inthars* believe that ill luck would befall on that person. It is a taboo.

After the ceremony of putting gift thread bands on the hands of the novices to be the guests are entertained to a good meal. The "*Shin laungs*" novices to be dressed in their splendour are taken and shaded by gold umbrellas are taken in boats to the monastery where they are shaven and the abbot conducts the ritual of admitting them into the *Sangha*. The next day is the great day of the almsgiving and the sermon and the libation. This sort of alms giving is known as '*pwe*' in the *Inle* region. The food served on these occasions include rice, pork, bitter herb (seikharhin), fried cattle hide flakes, fried dried fish, and '*juu*' *allium tuberosum* root salad. Some with limited means do so without pork. Sometimes, they give dried dog fish curry as a substitute for pork curry. The men and women are fed separately.

Food provided for such occasion is measured by the *viss* (1.63 kg). The normal ratio of rice and curry is 100 *viss* of rice and 40 *viss* of curry. Curry in this context means the weight of pork curry served. In the measure for rice, the *Inthar's* '*pyi*' (0.26 litre) is made of 10 tin: of rice (as opposed to that widely used standard measurement of 8 tin: to the '*pyi*'). Thirty '*pyi:*' of rice is needed to obtain 100 *viss* of boiled rice. For

meals with dried fish curry, the proportion of rice and curry is 100 *viss* is to 6 *viss*. These are normal standards and there are variations in terms of differing villages. For instance, in some villages the rice and pork curry ratio is 100 viss to 45 *viss*.

A certain peculiarity is found in *Inthars'* donation ceremony whereon the number and names of invitees are not listed for invitation purposes, but only whole villages to be invited are listed. The population of each of such villages is taken into account for feasting purposes. Therefore an *Inthar* donation ceremony is found to be most generous.

Many monks are invited to the sermon day. In the donor's houses, offertories to traditional spirits (*nats)* are made and on the final day these *nat* offertories are also seen in the Monastery compound. All the monks invited are offered gifts hung on the *"padithabin*" the tree of plenty by the generous donors. The novices too remain in the life of a monk for seven days.

Tabodwe (February-March) - In Tabodwe some *Inthars* prepare the traditional delicacy of *htamane* at home in a ceremonial manner. The ingredients are: glutinous rice, coconut, groundnut, sesame, ginger, edible oil and salt. Some portion of *htamane*, when cooked, is sent as offering to the monastery. Only after that some packets of *htamane* are sent as gifts to village elders, parents, relatives and friends so this traditional delicacy could be regarded as social food.

Taboung (March-April) - Some villages have almsgiving (*soon laung pwe*). At an *Inthar* event or donation ceremony the meal usually includes pork curry, *seikharhin* with beans, and '*juu*' *allium tuberosum* root salad only. For dessert there will be traditional snacks plus bakery foods and fruits which were bought at 5 day markets. These foods are offered to the *sangha* and lay guests.

The offering of food, monastic utensils, monastery, medicines, etc to the *sangha* by *Inthar* nationals is meant to bring them mundane and supramundane happiness, it is learnt.

6.3.6.2 Different messages of food

According to Helman (1991), different types of meal convey different messages to those taking part in them. The economic status of a couple can be guessed by the style of *Inthar's* wedding reception. A wealthy couple will entertain their wedding guests with not only rice, curry and medicinal bitter curry but also a full compliment of desserts such as popped glutinous rice snack, plain tea, betel quids, pickled tea and

cheroots. Some entertain for seven days at a stretch with popped glutinous rice snack and plain tea.

Another popular snack among *Inthars* is *hintous* or packs of steamed rice flour with leek, salt and cooking oil. Such *hinhtous* are packed in banana leaves. Again, we can tell on which occasion they are served by looking at the way they are packed. If a *hinhtou* is packed with a protruding banana leaf wrapping like a head can be classified as one served on as auspicious occasion while one with no extending wrapping sticking out at a funeral.

In *Inle* region language use is different, depending on who is eating it. When rice and curry are offered to the Buddha, they say, "*Soon taw tin or Soon taw cut*" and when offered to the monks and nuns they say "*Soon cut*". For layman, they say "Hta min kyae".

The language also changes depending upon the occasion. When it is breakfast or lunch offered by the wedding couple, then it is called "*mingala u soon*" "1st almsgiving of a wedded couple."

When "soon"is offered on the occasion of death, it is first "*thet pyauk soon*," when the dead person breathed his last breath. Then on the day of his burial, the soon is put into the almsbowl, it is "*mye sin the beik*" and on the 7th day after death is "*yet lai soon*". Food and traditional cultural customs and habits are inseparably connected.

6.3.6.3 The meaning of food in special occasions

Such meal or foodstuffs served on various occasions including auspicious ones such as wedding receptions and novitiation ceremonies (known as '*pwe*') and mournful ones like funerals express a relationship between individuals and between the members of a cultural group. However, the way people prepare the meals or foodstuffs varies according to the nature of occasions. *Inthars* have some specific practices to be adopted in these so-called social functions and occasions. It is the way they prepare the foodstuffs to be served that can identify the nature of an occasion. In other words, how they prepare social food gives us a clue to classify a certain occasion whether it is an auspicious one or not.

Some of the foodstuffs *Inthars* prepare and consume have symbolic value. For instance, the preparation of a dish of *juu* roots (Allium tuberocum) salad served at a wedding reception and that served at a funeral is quite different. *Juu* root salad, served on auspicious occasions such as novitiation and wedding ceremonies is prepared by

separating the cluster of roots by hand in sticks in their original forms whereas that served at a funeral is prepared by cutting up the roots with a knife or scissors. The former type of preparation symbolizes growth, development or increase in their wealth while the latter marks the end of relationship with the dead person or cutting the attachment between the dead person and the bereaved family and or between him/her and every one present at the occasions. Perhaps friend and relatives alike a few people may prepare a dish of stir-fried vegetables to serve at a funeral. They use beans and cabbage to be stir-fried. Such a stir-fried vegetable dish is called '*seinn kyaw*' in Myanmar language. The Myanmar word "*seinn*" has two meanings; as a noun it means green colour and as a verb it means 'to enstrange or to alienate'. *Inthars* seem to serve this dish to symbolize the enstrangement to the dead or to cut out his association/relationship.

It is usual in the *Inle* region that burial follows the day on which a person dies. When the demise occurs on the waning day of the moon, the body is not kept at home but at the cemetery where it will be buried the next day. It is because they do not want the coming lunar month to begin in inauspiciousness. Meals for the *Sangha* (and the laity as well) are offered a week after as meritorious deed for the soul of the departed. However, if the date coincides with the stake driving day for a house to be built, the meals will be offered on the eighth day after the demise. Food offered on such occasions goes in packs which contain kneaded rice powder, onion tops, salt and cooking oil wrapped in banana leaves (*Hinhtou*). The pack is steamed and served. A head or a top part of a *hinhtou* protruding out is a symbol of extending relationship between friends and relatives. On the contrary, trimming the extending banana leaves or no head sticking out of the pack symbolizes cutting the relationship with the dead and it also marks the last feeding for him/her. Such different ways of preparation indicates *Inthars*' symbolic meaning. With regard to *hinhtou* that is fed of funerals, one of Inthars also said as follows:

> *"When we treat the guests to hinhtou, we must not put out its head as it is the last time of feeding. However, for the other times, its head must be larger and longer too. There is a difference between auspicious ceremonies and inauspicious ones."*

Moreover, some people serve the guests *hinhtou* together with fried crispies at funerals. With reference to this practice, there comes another 'don't' for *Inthars* in their eating habit. An average house in *Inle* lake region is usually made up of two or

three families. For example, there may be two or three families; i-e father and mother and unmarried offspring, that of the married offspring, that of uncle's or aunt's family either on father or mother's side etc collectively living under the same roof. As almost all *Inthars* adopt extended family type, a household may consist of two or three families. Despite that, most *Inthar* do not cook meals collectively. Each of the families do the cooking on its own and dishes for daily diet of a family differ from that of another one. Because they think the dish *hinhtou* together with fried crispies is a symbol of a funeral, they always take special care to avoid the coincidence of *hinhtou* and crispies for the same meal in the same house.

Most *Inthars* usually invite the members of *Sangha t*o preside their rituals and religious activities by offering them packs of fresh green tea leaves. Again they pack the tea leaves differently to indicate different purposes. A pack of green tea leaves for an auspicious occasion has a head protruding while that for a funeral has no head sticking out.

Meals can also be used to symbolize economic status. The economic status of a couple can be guessed by the style of their wedding reception. *Inthars*' typical social foods served on various occasions include rice, pork or dried fish, *seikhahin*, *allium tuberosum* roots salad; fried cattle hide flakes and a full complement of desserts. For wedding ceremonies the well-off serve these dishes while those who cannot afford the cost treat their guests to local off beat food called *Pauk choe* (popped glutinous rice snack (*Mayway*)), plain tea, betel quids, pickled tea and cheroots. Some entertain for seven days at a stretch with popped glutinous rice snack and plain tea. According to traditional belief of *Inthars*, invitation cards for wedding ceremonies are usually distributed on the "Market Day" when several people from various villages can meet one another for their shopping. They usually give out wedding reception invitation cards by the time those concerned have finished shopping or selling because they assume that these cards are not the symbol of good luck. On the other hand, invitation cards to a funeral can be given out during the sale time or shopping time as they are believed to bring good luck. Some people even tend to keep betel quid and cheroots given at a funeral as charms for good luck.

In general, food consumption is a basic activity as well as necessary bodily function to satisfy hunger for the survival of an individual. However, man is social animal and no man can be an island. This characteristic is also manifested by the way people eat their meals. People tend to eat meals together with members of family or with

members of a society depending on their purpose and needs. For example, a family meal with everyone in presence is not a mere eating time. It symbolizes not only enjoying a meal together but also a get-together party where family members can discuss matters, get help, advice and counseling from the part of the parents or have a friendly chat together. All in all, a family meal is a symbol of unity, warmth and security for all family members. In the case of *Inthar* community, it is found that family meals play a key role in their ways of life their different and social food have different symbols and meaning. The available food supply was prepared in their traditional way. They usually take three meals a day - breakfast at about 6 a.m., lunch at noon, and dinner at about 5 pm. Only a minority opts for tea, coffee and snacks in place of the boiled rice which is the staple food of the *Inthars.*

6.3.6.4 Sacrifice to the Guardian Spirit

Almost all ethnic groups have traditional belief concerning with foodstuffs. Another ritual of *Inthars* is Nat worship practice or paying respect to *Nats* or spirits. People from each village pay respect to their Guardian spirit of the village with offerings. The shaman or the master of the Nat worship ceremony presides to perform the rituals. To do so, each household has to contribute each quota of offering to this ceremony. The master collects their offerings and he makes arrangements to offer various foodstuffs such as white pan-cakes, red pan-cakes, and fried fish etc to the Nat. He respectfully offered them to the Nat on behalf of all people in this village and prays that all villages may be safe, healthy, peaceful and prosperous. He, then, divides the offerings into equal shares for all households. They all believe that they can be free from dangers and diseases and they will be peaceful and prosperous by eating these above mentioned snacks and foodstuffs being offered to the guardian spirit of the village (Figure 30).

Figure 30. Shrine of village guardian-spirit

6.3.6.5 Prestige food

Some nationals regard some of the foodstuffs as prestige food/ostentatious foodstuffs because they are both rare and costly. As a result, only the rich and the distinguished guest can consume such 'prestige' foodstuffs. In *Inle* lake region the prices of common moorhen and natural small carp (*ngafein*) have soared up. These foodstuffs used to be the hall mark of *Inle* region because they are *Inthars'* favourite foodstuffs. However, the majority of local people cannot afford to consume them owing to their very costly price. Nowadays they can be classified as 'show off' or prestige food.

6.3.7 A pair of foods that should not be consumed together

It was found that food taboos in the study area included belief on a pair of food which were said not to be consumed together. In some study (Zaw Aung, 1981) a similar belief was found for the health reason; if someone eats particular two types of food together he or she will become ill. But in this study area the reason for that belief is not only due to health reason but also for other spiritual and religious reasons. For example, regarding health reason some identified pairs of foods and the health consequences as follow:

Table 5 A pair of foods that should not be consumed together.

Sr	Name of a pair of foods if someone eats	Assuming negative health consequences
1.	Papaya and Turtle meat	Skin diseases
2.	Ginger and Pigeon meat	Skin disease (virtiligo)
3.	Jaggery (palm sugar) and pork	Diarrhea
4.	Mushroom and crab	Muscle tension
5.	Water melon and duck eggs	Vomiting
6.	Ice lolly and ginger salad	Vomiting
7.	Sticky brown rice and peanut snack	Vomiting
8.	Pickled salad and cow's milk	Food poison
9.	Edible tuber and cow's milk	Poisonous leading to death
11.	Mushroom and beef	Leading to death
12.	Mushroom and cow's milk	Leading to death
13.	Pickled tea and water chestnut	Leading to death

Non health reasons to explain their food taboos as follows: (1) *Hinhtoat* and fritters (*Kinpaung Kyaw* in *Inthars* dialect) because they are usually served only on the occasion of funeral ceremony. Another belief in food among studied population is that sour snack is said to be harmful if it is consumed together with any pharmaceuticals because people think that there may be interaction between them.

Conclusion

This Chapter deals with how *Inthars'* food is defined according to socio-culture, that is, their traditional cuisine, food choices and food classification. When Helman's food classification is applied in research they are found to have a certain belief as to some pairs of food which should not be consumed together.

CHAPTER (7)
NUTRITIONAL STATUS

Chapter 6 describes how *Inthars* take their food according to socio-culture. Chapter 7 tries to find out whether there is a connection between their food habits and nutritional consideration. To know about their nutritional status, BMI of different categories of people were taken. Three hundred sample size (n=300) included 94 housewives (or) chefs.

7.1. Socio-demographic Characteristics of Chef

Table 6 Chef by Age and Gender (n=94)

Chef by Age and Gender		**number**	**Percent**
Age	20-40	40	42.6
	Above 40	54	57.4
Gender	Male	3	3.2
	Female	91	96.8

Table 6- shows that out of 94 chefs, (42.6%) were between 20 years and 40 years, (57.4%) were above 40 years. It is found that most chefs were female (96.8%).

Table 7 Distribution of Chef by Village

Village	**number**	**Percent**
Hea yar ywar ma	29	30.9
Kay lar	31	33.0
Inn paw khone	34	36.2
Total	94	100.0

There was 30.9% from Hea yar ywar ma, 33.0% from Kay lar and 36.2% from Inn paw khone as shown in Table 7.

Table 8 Distribution of Chef by Education

Education	Frequency	Percent
Primary	56	59.6
Middle	14	14.9
High	24	25.5
Total	94	100.0

Most respondents were with primary education (59.6%) and the remaining was 25.5% for high and 14.9% for middle level education, see Table 8.

Table 9 Distribution of Chef by Occupation

Occupation	Frequency	Percent
Dependent	23	24.5
Working	71	75.5
Total	94	100.0

About 75.5% of household had working mothers and housewife in the remaining families did not work, see Table 9.

Table 10 Socio-dermographic Characteristics and Nutritional Knowledge of Chef

(n=94)

Socio-dermographic Characteristics of Chief		Nutritional Knowledge		
		low	high	Total
Age	20-40 yrs	11	29	40
		27.5%	72.5%	100.0%
	Above 40	12	42	54
		22.2%	77.8%	100.0%
Sex	male	2	1	3
		66.7%	33.3%	100.0%
	female	21	70	91
		23.1%	76.9%	100.0%
Education	Primary	13	43	56
		23.2%	76.8%	100.0%
	Middle	4	10	14
		28.6%	71.4%	100.0%
	high	6	18	24
		25.0%	75.0%	100.0%
Occupation	Dependent	3	20	23
		13.0%	87.0%	100.0%
	Working	20	51	71
		28.2%	71.8%	100.0%
Village	Hea yar ywar ma	8	21	29
		27.6%	72.4%	100.0%
	Kay lar	9	22	31
		29.0%	71.0%	100.0%
	Inn paw khone	6	28	34
		17.6%	82.4%	100.0%

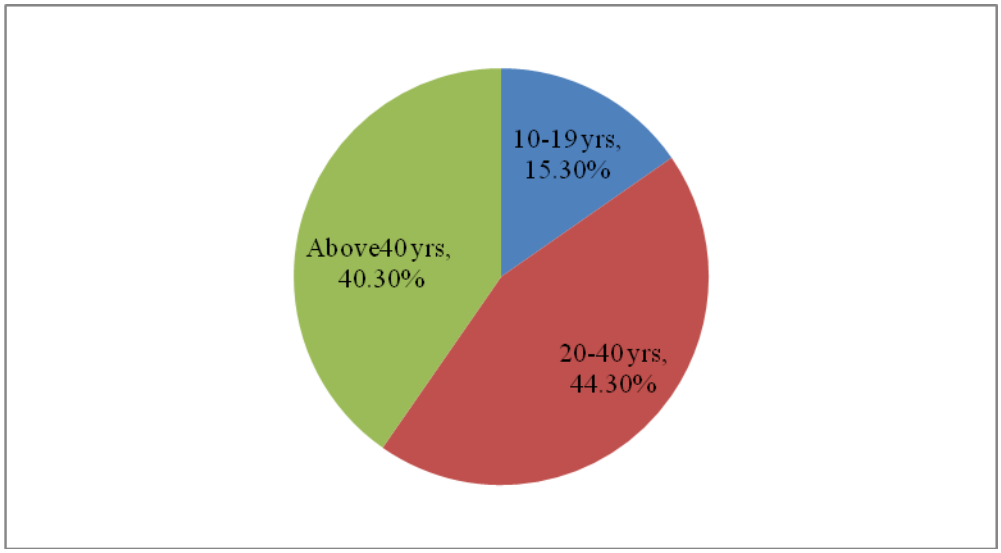
Total 17 items of questionnaires on nutritional knowledge were formulated and asked by face-to-face interview to housewife (or) chef. *Inthars* who could answer one correct question scored one mark each for every item. Total of 17 questions were asked and total score given was 17. Among all questions (12) items of questionnaires

were formulated according to school curriculum. Those Inthars who could answer equal to and more than 12 questions correctly were regarded as obtaining high knowledge score and those who replied and below 12 correct answers were regarded as obtaining low knowledge score.

Among chefs aged 20-40 those with advanced nutritional knowledge were 72.5%, and among those aged above 40 those with advanced nutritional knowledge were 77.8%. By gender, males with low nutritional knowledge were 66.7% while females with low nutritional knowledge were 23.1% only.

Gaps in nutritional knowledge were small when the nationals were taken into consideration by education. By occupation those with low nutritional knowledge were 13.0% only among dependents, while the similar figure is 28.2% among working people. By village those with low nutritional knowledge accounted for 29.0% at Kay lar, 27.6% at Hea yar ywa ma, and 17.6% at Inn paw khone. See table 10.

7.2. Socio-demographic Characteristics of Study Population



(n=300)

Figure 31 Distribution of study population by age

This figure shows the age distribution of the study population. The age of *Inthar* were above 10 years. Out of 300 *Inthar*, majority of people (44.3%) were between 20 years and 40 years, (40.3%) were above 40 years and (15.3%) were between 10 years and 19 years. Mean 36.95, SD±16.590, Range10 - 72 years.

Table 11 Distribution of study population by gender

Gender	Number	Percent
Male	138	46.0
Female	162	54.0
Total	300	100.0

There was 46% male and 54% female in the study population as shown in Table 11.

Table 12 Distribution of study population by village

Village	Number	Percent
Hea yar ywar ma	86	28.7
Kay lar	7	32.3
Inn paw khone	117	39.0
Total	300	100.0

Table-12 shows that the percent constituent of respondents by villages does not differ much (28.7% from Hea yar ywar ma, 32.2% from Kaylar and 39.0% from Inn paw khone). All study population are Buddhist.

Table 13 Number of family member of study population

Family member	Frequency	Percent
1-3	90	30.0
4 – 6	198	66.0
Above 6	12	4.0
Total	300	100.0

About (30.0%) of *Inthars* had one to three family members, (i.e., number of persons lived in the same house), (66.0%) of *Inthars* had four to six family members, (4.0%) of *Inthars* had more than six family members. Mean family members were 4.19 and minimum 1 member and maximum 9 family members see Table-13.

Table 14 Distribution of monthly household income and daily expenditure

(n=300)

	(kyats)	Number	Percent
Household income	0-50000	24	8.0
	50001-100,000	161	53.7
	≤100,001	115	38.3
Daily expenditure	≥2000	199	66.3
	≤2001	101	33.7

Half of the families (50%) earned about 50001-100,000 kyat a month. Only (40%) of the household got more than 100,000 kyat per month as shown in Table 14. Most of the families (66.3%) expenditure less than 2000 kyats per day. But only (34%) of the family spend about over 2000 kyats per day. See Table 14.

Table 15 Distribution of study population by use of water and latrine

(n=300)

		Number	Percent
use of water	Lake	224	74.7
	Well	24	8.0
	Artesian	52	17.3
use of latrine	Direct pit	144	48.0
	Indirect pit	156	52.0

About (75%) of the households used water from lake and about (8.0%) of families used water from Well as shown in Table 18. Each half of the household used direct and indirect pit latrine respectively as shown in Table 15.

Table 16 Distribution of food snack items (one day recall)

Snacks	Yes		No		
	Number	Percent	Number	Percent	Total
Traditional snacks	258	86.0	42	14.0	300
Myanmar snacks	132	44.0	168	56.0	300
Ready made snacks	94	31.3	206	68.7	300
Soft drink	152	50.7	148	49.3	300

Traditional snacks included locally originated food such as Shan Noodle, Soft Warm Tofu, Inn-Hmon-Tee (vermicelli like noodle). Myanmar snacks included popular Myanmar food across the country like sticky rice (Kauk-Nyin-Paung), flour made cake (Hmont-Saint-Paung). Readymade snack included those readily available commercially sold food like biscuit, potato chips. Soft drinks included different accented soda, coffee, tea. Multiple response questions showed most ate traditional food (86%) and (50%) consumed soft drinks. See Table 16.

Table 17 Distribution of eating food per week of study population

Food item /week	Never		1-3days		4-6days		Daily		Total
	f	%	f	%	f	%	f	%	
Meat/fish	4	1.3	217	72.3	70	23.3	9	3.0	300
Eggs	6	2.0	225	75.0	69	23.0	0	0.0	300
Beans	4	1.3	259	86.3	37	12.3	0	0.0	300
Vegetables	0	0.0	64	21.3	191	63.7	45	15.0	300
Fruits	7	2.3	40	13.3	218	72.7	35	11.7	300
Milk/milk products	173	57.7	113	37.7	14	4.7	0	0.0	300

There was only 3.0% of respondents ate meat / fish daily but 72.3% ate these 1-3 days a week. Most people ate meat / fish, eggs, beans 1-3 days a week and majority ate vegetables and fruits 4-6 days a week. See table 17.

Table 18 Distribution of food snack items per week of study population

Snacks	≤3 days		≥4 days	
	Number	percent	Number	percent
Traditional snacks	154	51.3	146	48.7
Myamar snacks	289	96.3	11	3.7
Ready made snacks	212	70.7	88	29.3
Soft drinks	222	74.0	78	26.0

This table shows that most of *Inthars* took traditional snacks (51.3%) and Myamar snacks (96.3%) one to three days per week whereas some *Inthars* took traditional snacks (48.7%) and Myanmar snacks (3.7%) more than four days per week.

Table 19 Reasons of food choice especially snacks

Reasons of snacks	Number	Percent
Clean	15	5.0
Like taste	234	78.0
Nutritious	51	17.0
Total	300	100.0

Majority gave the reason of taste preference to eat snacks rather than due to nutritious as shown in Table 19.

Table 20 Distribution of dietary practice of study population (n=300)

Dietary practice		Balanced diet		
		No	Yes	Total
Age	10-19 yrs	44	2	46
		95.7%	4.3%	100.0%
	20-40 yrs	133	0	133
		100.0%	.0%	100.0%
	Above 40	115	6	121
		95.0%	5.0%	100.0%
Sex	male	134	4	138
		97.1%	2.9%	100.0%
	female	158	4	162
		97.5%	2.5%	100.0%
Village	Hea yar ywar ma	86	0	86
		100.0%	.0%	100.0%
	Kay lar	89	8	97
		91.8%	8.2%	100.0%
	Inn paw khone	117	0	117
		100.0%	.0%	100.0%

In this study, food items such as meat/fish, eggs and beans were categorized as body building foods. Regarding the one week food recall method, eating of these foods (days per week) were given score according to eating days per week. *Inthar* who ate 1-3 days/wk were scored as 1, those who ate 4-6 days were scored as 2, and daily eating *Inthar* were scored as 3, and never eating were zero. Total score given was 9 for those three food items. The people who scored 6 marks and above were regarded as good dietary practice (balanced died) and those who scored below 6 were regarded as bad dietary practice (without balanced diet) (Thiri Win 2009).

In dietary practice by age group, those 10-19 yrs and above 40 without balanced diet were 95%, and those aged 20-40 without balanced diet were 100%. By gender the difference between male and female was small. By village those with balanced died were 0% at Hea yar ywar ma and Inn paw kone, and 8.2% at Kay lar. See Table 20.

7.3. Anthropometric measurements of study population

Table 21 Anthropometric measurements (weight) of study population

Indicators	gender	Frequency	Mean	SD	Minimum	Maximum
Weight (kg)	Male	138	58.0072	11.99543	20.00	84.00
	Female	162	51.2901	12.29184	25.00	100.00

Regarding *Inthar's* gender, mean weight for male and female were 58.0072 kg and 51.2901 kg respectively. Minimum body weight male and female was 20 kg and 25 kg, and maximum 84 kg and 100 kg respectively.

Table 22 Anthropometric measurements (height) of study population

Indicators		Frequency	Mean	SD	Minimum	Maximum
height(m)	Male	138	1.6519	.11290	1.22	1.88
	Female	162	1.5627	.06396	1.22	1.80

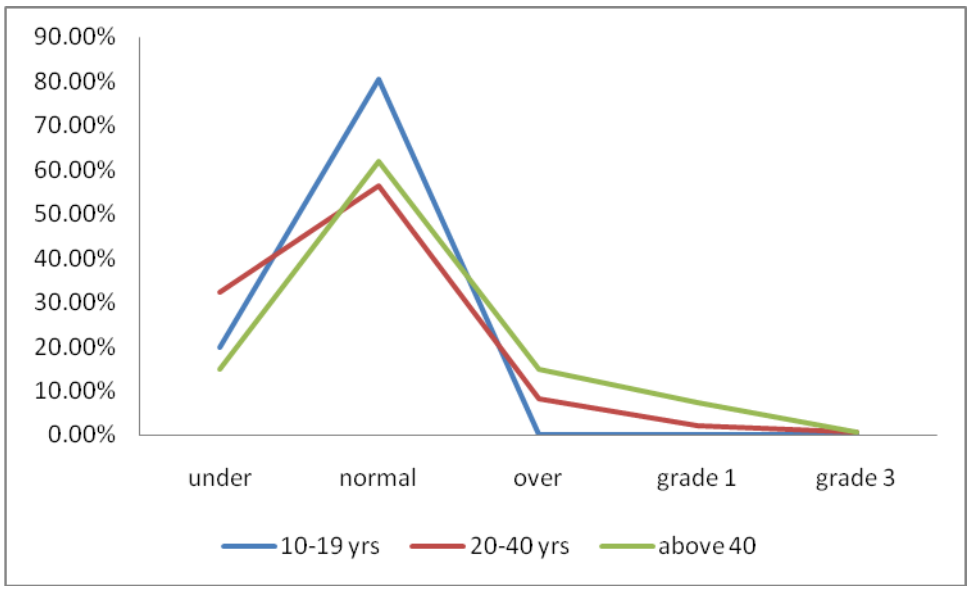
Regarding *Inthar's* gender, mean height for male and female were more or less the same.

Table 23 Anthropometric measurements (BMI) of study population

Indicators		Frequency	Mean	SD	Minimum	Maximum
BMI	Male	138	21.0159	3.38123	11.77	28.72
(kg/m^2)	Female	162	20.9748	4.86603	11.89	40.06

P=0.933

There was a slight difference between the two mean BMI values for both genders.

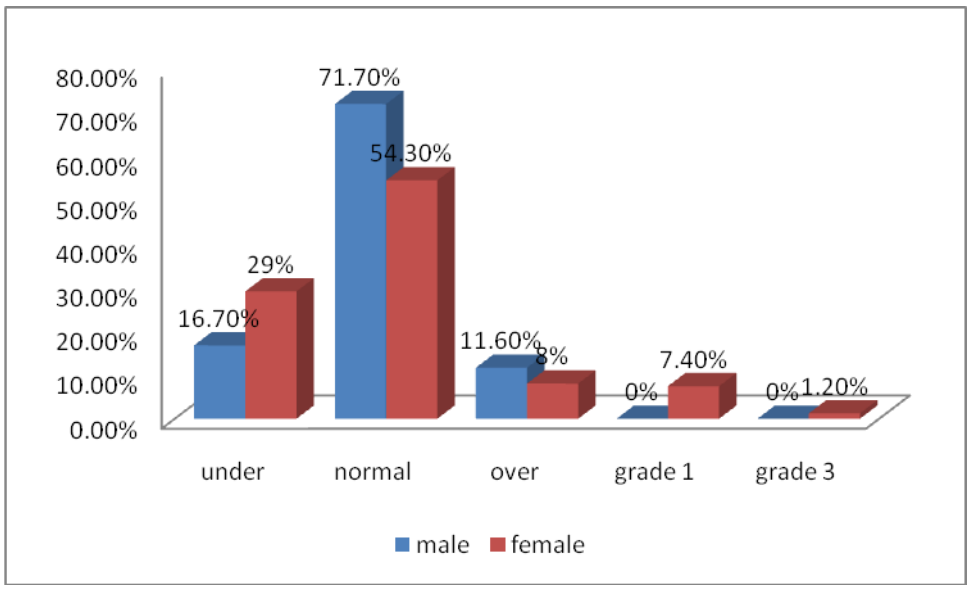


(n=300)

Figure 32. Relationship between age and BMI of study population

Chi-Square=26.684[a] p<0.0001

Figure 32 shows that in all age groups normal was dominant, where in 10-19 yrs age group had the most normal.

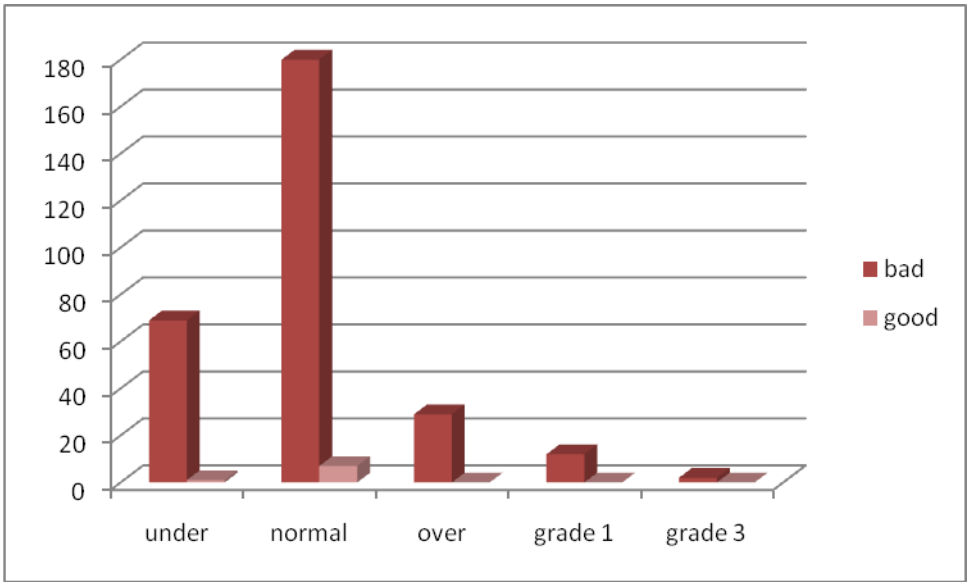


(n=300)

Figure 33. Relationship between gender and BMI of study population

Chi-Square=21.403[a] p<0.0001

By gender male was more numerous than female among those found to be normal. In obese grade 3 female were more numerous than male. See Figure 33.



(n=300)

Figure 34. Relationship between dietary practice and BMI of study population

Chi-Square=2.427[a] p=0.658

Among all *Inthar* nationals those with balanced diet numbered small, those without balanced diet were numerous. See Figure 34.

Table 24 Relationship between age and BMI of study population

Age	BMI			
	underweight	normal	overweight	Total
10-19 yrs	9	37	0	46
	19.6%	80.4%	.0%	100.0%
20-40 yrs	43	75	15	133
	32.3%	56.4%	11.3%	100.0%
Above 40	18	75	28	121
	14.9%	62.0%	23.1%	100.0%
Total	70	187	43	300
	23.3%	62.3%	14.3%	100.0%

Chi-Square=25.785[a] p<0.000

About 62% of all age groups were with normal BMI. Underweight was 23.3% and overweight was 14.3% for all ages. Underweight was high among those with age of 20-40 years (32.2%) and overweight was high among those above 40 years old (23.1%). There is a statistically significant relationship between age group and BMI. There was a certain correlation between BMI and age. See Table 24.

Table 25 Relationship between gender and BMI of study population

Gender	BMI			
	underweight	normal	overweight	Total
male	23	99	16	138
	16.7%	71.7%	11.6%	100.0%
female	47	88	27	162
	29.0%	54.3%	16.7%	100.0%
Total	70	187	43	300
	23.3%	62.3%	14.3%	100.0%

Chi-Square=9.833[a] p=0.007

Statistical analysis showed significant relation between different BMI and gender ($p < 0.05$). See Table 25.

Table 26 Relationship between village and BMI of study population

Village	BMI			
	underweight	normal	overweight	Total
Hea yar ywar ma	6	57	23	86
	7.0%	66.3%	26.7%	100.0%
Kay lar	29	64	4	97
	29.9%	66.0%	4.1%	100.0%
Inn paw khone	35	66	16	117
	29.9%	56.4%	13.7%	100.0%
Total	70	187	43	300
	23.3%	62.3%	14.3%	100.0%

Chi-Square=31.235[a] p<0.0001

Overweight was high in Hae yar ywar ma (26.7%) and underweight was high in Kay lar and Inn paw khone (29.9%) as shown in Table 25. There was statistically significant ($p < 0.05$) of correlation between BMI and the residence. See Table 26.

Table 27 Relationship between family member and BMI of study population

Family member	BMI			Total
	underweight	normal	overweight	
1-4	20	60	10	90
	22.2%	66.7%	11.1%	100.0%
≥5	50	127	33	210
	23.8%	60.5%	15.7%	100.0%
Total	70	187	43	300
	23.3%	62.3%	14.3%	100.0%

Chi-Square=1.387[a] p=0.500

In families with 1-4 members BMI normal is 66.7%, in those with 5 plus members BMI normal is 60.5% as shown in Table 27.

Table 28 Relationship between income and BMI of study population

Income	BMI			
	under	normal	over	Total
≤100000	48	115	22	185
	25.9%	62.2%	11.9%	100.0%
≥100001	22	72	21	115
	19.1%	62.6%	18.3%	100.0%
Total	70	187	43	300
	23.3%	62.3%	14.3%	100.0%

Chi-Square=3.421[a] p=0.181

Table 28 shows that among those earning less than kyats 100,000 per month, underweight is 25.9% and among those earning more than kyats 100,000 per month, underweight is 19.1%. Underweight differences remain small dependent on income.

Table 29 Relationship between daily expenditure and BMI of study population

Daily expenditure	BMI			
	underweight	normal	overweight	Total
≤2000	55	121	23	199
	27.6%	60.8%	11.6%	100.0%
≥2001	15	66	20	101
	14.9%	65.3%	19.8%	100.0%
Total	70	187	43	300
	23.3%	62.3%	14.3%	100.0%

Chi-Square=8.093[a] p=0.017

Families that spend kyats 2000 plus daily expenditure have underweight 14.9% but families that spend under kyats 2000 daily expenditure have underweight 27.6%. Therefore the daily expenditure and BMI are found to have a connection. See Table 29.

Table 30 Relationship between water source and BMI of study population

Water source	BMI			
	underweight	normal	overweight	Total
Lake	63	130	31	224
	28.1%	58.0%	13.8%	100.0%
Well	2	22	0	24
	8.3%	91.7%	.0%	100.0%
Artesian	5	35	12	52
	9.6%	67.3%	23.1%	100.0%
Total	70	187	43	300
	23.3%	62.3%	14.3%	100.0%

Chi-Square=19.147[a] p=0.001

Table 30 shows that among well and artesian users the underweight does not show significant difference, but lake water users have 28.1% underweight. Therefore there exists a connection between the type of water used and BMI. The value of BMI was found to be correlated to the water source one could afford.

Table 31 Relationship between latrine and BMI of study population

Latrine	BMI			
	underweight	normal	overweight	Total
Direct pit	49	78	17	144
	34.0%	54.2%	11.8%	100.0%
Indirect pit	21	109	26	156
	13.5%	69.9%	16.7%	100.0%
Total	70	187	43	300
	23.3%	62.3%	14.3%	100.0%

Chi-Square=17.771[a] p=0.000

Underweight was high with those who used direct pit latrine (34.0%). Significant relation was also found (p <0.000) as shown in Table 31.

Table 32 Relationship between eating meat/fish and BMI of study population

Meat/fish per week	BMI			
	underweight	normal	overweight	Total
≤3 days	52	141	28	221
	23.5%	63.8%	12.7%	100.0%
≥4 days	18	46	15	79
	22.8%	58.2%	19.0%	100.0%
Total	70	187	43	300
	23.3%	62.3%	14.3%	100.0%

Chi-Square=1.924[a] p=0.382

Those who eat meat/fish for 1-3 days per week have underweight 23.5%, while those who do so for 4 plus days per week have overweight 19.0%. See Table 32.

Table 33 Relationship between eating eggs and BMI of study population

Eggs per week	BMI			
	underweight	normal	overweight	Total
≤3 days	53	138	40	231
	22.9%	59.7%	17.3%	100.0%
≥4 days	17	49	3	69
	24.6%	71.0%	4.3%	100.0%
Total	70	187	43	300
	23.3%	62.3%	14.3%	100.0%

Chi-Square=7.383[a] p=0.025

About (22.9%) of *Inthars* with underweight and (17.3%) of *Inthars* with overweight took eggs 1-3 days per week. Those who ate eggs more than 4 days per week had more percentage of *Inthars* (71.0%) with normal. There was a significant correlation between the consumption of eggs and BMI value. See Table 33.

Table 34 Relationship between eating beans and BMI of study population

Bean per week	BMI			
	underweight	normal	overweight	Total
≤3 days	62	159	42	263
	23.6%	60.5%	16.0%	100.0%
≥4 days	8	28	1	37
	21.6%	75.7%	2.7%	100.0%
Total	70	187	43	300
	23.3%	62.3%	14.3%	100.0%

Chi-Square=5.241[a] p=0.073

About (16.0%) of *Inthars* with overweight took beans less than 3 days per week. Those who ate beans more than 4 days per week had (2.7%) of *Inthar* with overweight as shown in Table 34.

Table 35 Relationship between eating vegetables and BMI of study population

Vegetable per week	BMI			
	underweight	normal	overweight	Total
≤3 days	12	43	9	64
	18.8%	67.2%	14.1%	100.0%
≥4 days	58	144	34	236
	24.6%	61.0%	14.4%	100.0%
Total	70	187	43	300
	23.3%	62.3%	14.3%	100.0%

Chi-Square=1.044[a] p=0.593

Table 35 shows that those who eat vegetables for 1-3 days per week have BMI underweight 18.8%, while those who do so for 4 plus days per week have BMI underweight 24.6%. There was no statistically significant association between vegetables eating pattern and BMI.

Table 36 Relationship between eating fruits and BMI of study population

Fruits per week	BMI			
	underweight	normal	overweight	Total
≤3 days	6	34	7	47
	12.8%	72.3%	14.9%	100.0%
≥4 days	64	153	36	253
	25.3%	60.5%	14.2%	100.0%
Total	70	187	43	300
	23.3%	62.3%	14.3%	100.0%

Chi-Square=3.575[a] p=0.167

Those who eat fruits for 1-3 days per week have underweight 12.8%, while those who do so for 4 plus days per week have BMI underweight 25.3%. See Table 36.

Table 37 Relationship between eating milk/milk products and BMI of study population

Milk/milk products per week	BMI			
	underweight	normal	overweight	Total
≤3 days	67	176	43	286
	23.4%	61.5%	15.0%	100.0%
≥4 days	3	11	0	14
	21.4%	78.6%	.0%	100.0%
Total	70	187	43	300
	23.3%	62.3%	14.3%	100.0%

Chi-Square=2.749[a] p=0.253

About 23.4% of *Inthars* with underweight and 15.0% of *Inthars* with overweight took milk and milk products less than 3 days per week. Those who ate milk and milk products more than 4 days per week had more percentage of *Inthars* 78.6% with normal BMI. This eating pattern of milk and milk products did not show statistically significant association with BMI. See Table 37.

Table 38 Relationship between eating traditional snacks and BMI of study population

Traditional snacks	BMI			
	underweight	normal	overweight	Total
≤3 days	32	106	16	154
	20.8%	68.8%	10.4%	100.0%
≥4 days	38	81	27	146
	26.0%	55.5%	18.5%	100.0%
Total	70	187	43	300
	23.3%	62.3%	14.3%	100.0%

Chi-Square=6.462[a] p=0.040

Table 38 shows that about 20.8% of *Inthars* with underweight and 10.4% of *Inthars* with overweight took traditional snacks less than 3 days per week. Those who ate traditional snacks more than 4 days pre week had low percentage of *Inthar* 55.5% with normal BMI.

Table 39 Relationship between eating Myanmar snacks and BMI of study population

Myanmar snacks	BMI			
	underweight	normal	overweight	Total
≤3 days	70	177	42	289
	24.2%	61.2%	14.5%	100.0%
≥4 days	0	10	1	11
	.0%	90.9%	9.1%	100.0%
Total	70	187	43	300
	23.3%	62.3%	14.3%	100.0%

Chi-Square=4.379[a] p=0.112

Those who consume Myanmar snacks for 1-3 days per week have overweight 14.5%, while those who do so for 4 plus days per week have overweight 9.1%. There was not statistically significant association between vegetables eating pattern and BMI. See Table 39.

Table 40 Relationship between eating ready made snacks and BMI of study population

Ready made snacks	BMI			
	underweight	normal	overweight	Total
≤3 days	58	126	28	212
	27.4%	59.4%	13.2%	100.0%
≥4 days	12	61	15	88
	13.6%	69.3%	17.0%	100.0%
Total	70	187	43	300
	23.3%	62.3%	14.3%	100.0%

Chi-Square=6.632[a] p=0.036

About 13.2% of *Inthar* with overweight ate ready made snacks less than 3 days per week while that of those consuming more than 4 days per week was 17.0% as shown in Table 40.

Table 41 Relationship between eating soft drink and BMI of study population

Soft drink	BMI			
	underweight	normal	overweight	Total
≤3 days	55	128	39	222
	24.8%	57.7%	17.6%	100.0%
≥4 days	15	59	4	78
	19.2%	75.6%	5.1%	100.0%
Total	70	187	43	300
	23.3%	62.3%	14.3%	100.0%

Chi-Square=9.986[a] p=0.007

Those who consume soft drink for 1-3 days per week have BMI underweight 24.8%, while those who do so for 4 plus days per week have BMI underweight 19.2%. Therefore there exists a connection between soft drink and BMI. See Table 41.

Table 42 Relationship between dietary practice and BMI

Dietary practice	BMI			
	underweight	normal	overweight	Total
Bad practice	69	180	43	292
	23.6%	61.6%	14.7%	100.0%
Good practice	1	7	0	8
	12.5%	87.5%	.0%	100.0%
Total	70	187	43	300
	23.3%	62.3%	14.3%	100.0%

Chi-Square=2.427[a] p=0.297

Followers of good practice have BMI normal 87.5% and underweight 12.5%. Followers of bad practice have BMI normal 61.6% and underweight 23.6% as shown in Table 42.

7.4 Human Calorimetry

Table 43 Measurement of energy

	Energy (kcal)	Protein (%)	Fat (%)	Carbohydrate (%)
Mean	2426	16.8	17.2	65.8
SD	665	5.8	5.1	8.3
Range	1188-4581	5.1-33.9	7.4-35.5	38.2-85.8

It is seen that *Inthar* whose daily requirement of energy intake in adequate energy is 70%, over energy is 10% and under energy is 19.3% (See Figure 35). If an adequate energy supply is not provided, some protein will be burnt to provide energy. This is considered wasteful, as they are no longer available for their essential body building function. The carbohydrate (CHO) percentage of the consumption of *Inthar* is 65.8%, fat is 17.2% and protein is 16.8%.

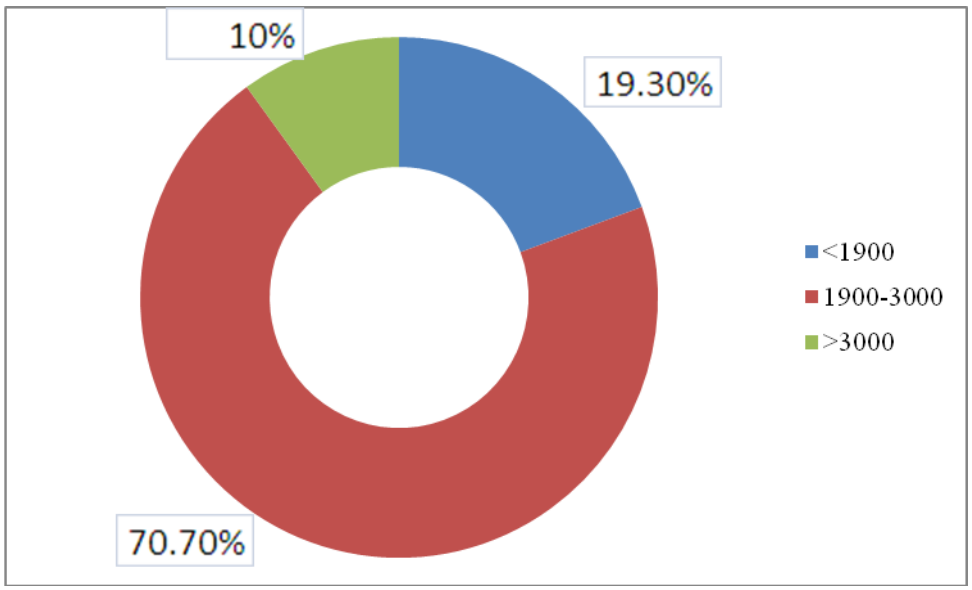


Figure 35. Study population energy intake (Calories)

CHAPTER (8)
DISCUSSION

8.1 Environmental adaptation

Man has three basic needs for his survival, namely food, clothing and shelter. Therefore he has to follow environmental adaptation in his life. The *Inthars* are an ethnic group which has made a habitat of villages which they set up on the waters of *Inle* Lake. An assessment of the lifestyle and livelihood of the *Inthars* shows that they are able to cope with the nature of their surroundings, able to adapt to it to their advantage. They turned the natural flotation islets on the *Inle* Lake waters into farmland and could successfully grow fruits and vegetables for regional consumption. In other words, the *Inthars* have modified their environmental factors, giving rise to a water farming culture.

Lenkeit (2001) shows a culture adapts in response to its environment. Inuit peoples of northern Canada learned to hunt seals through the ice and ate the raw meat, blubber, organs and blood. Many Americans, especially those in California, have learned to eat the immature flower of the artichoke plant.

In this *Inthars* study, concerning *Inthars'* main eating habit, they mainly eat fish which are got naturally from the environment of *Inle* Lake and the rice, pulses and various kinds of vegetables which are grown and produced adapted to the environment. The *Inthar* strikingly build houses supported by long stilts so as to live just above the waters of *Inle* Lake. Just as most of the nationals living on the plains of the country move about through the use of bullock cart, bicycle, motor car, and train, so also, the *Inthars* mainly use boats or outboard motor boats on the waters of *Inle* Lake to go to other houses, other villages.

The *Inthars* are found to have employed adaptation to create on environment to their advantage so that their existence, livelihood, and production of goods they need are rendered possible. *Inle* Lake waters are found to have been polluted as a side effect due to agricultural and industrial waste containing toxic chemicals and direct pit toilets used by the people.

8.2 Food production

Inthars do both farming and water farming. The *Inthars* grow paddies, especially during summer, for their staple food of rice on the fringe lands of *Inle* Lake, available for cultivation for six months of the year and submerged for the other six months.

According to Myint Myint Aye and Zin Mar Latt (2003) studied Pa-O national' agriculture consists of farming, gardening and seasonal plantation. They start cultivating in June-July and harvest by October-November. They start farming in February- March and harvest in July- August. In the plains of Myanmar farming is done through irrigation but at *Inle* the waterlogged farmland has to be first emptied of water by manpower or mechanized pumps. In plains a plough pulled by 2 bullocks or buffaloes is usually used, while at *Inle* only one buffalo is attached to the plough because of the uneven terrain. Nowadays a few hand-held mechanized ploughs are being used but as it is difficult to handle on uneven land the farmers mostly use traditional methods. In some places even buffalo power is not enough so that manual till with human labour is done.

Haviland (1999) said that hand-ploughed farming at *Inle* use human labour only, without resort to draught animals or machines, so it can be called horticulture. Another striking agricultural activity at *Inle* is water farming, which has two types, namely, land gardening and floating gardening. The *Inthars* have developed gardening on natural floating islands. Land gardening is undertaken near or around villages, to a depth of 8-9 feet only. Grown at such a garden are radish, cauliflower, cabbage, chili, okra, pumpkin, gourd, watermelon, bitter gourd, beans, chayote, potato, and onion. Floating islands can be used anywhere on *Inle* Lake; they only have to be fixed where one likes with bamboos pushed into the lake bed. In floating gardening the main lucrative crop is tomato, lately the *Inthars* through the use of outboard motor boats have been making the floating islands more productive with muddy deposits and algae piled up on it, preparing the beds with machines, and using fertilizers, insecticides and sprays. Today, thanks to the exhortation of Agriculture Service offices their use of fertilizers, insecticides and sprays is limited to some degree. According to Haviland (1999), the *Inthars'* farming and water farming can be called intensive agriculture for their widespread use, except for hand-ploughed farming, of draught animals, machines and fertilizers. In regard of rice, the Inle area has a self-sufficiency of about 80% only.

Hiebert (1983) studied that farming seems to have originated in several places; in southwest Asia, with the domestication of wheat, rye, flax, peas, apples, pears, and plums; in Southeast Asia, with the cultivation of rice, sugar cane, coconuts, bananas, citrus fruits, breadfruit, yams, and cotton; and later along the Gold Coast in Africa, where millets and sorghum were raised. Cattle, sheep, goats, and cats were domesticated in Southwest Asia; chickens, pigs, and water buffalo in Southeast Asia; and horses and reindeer in central Asia. The New World is notable for its small array of domesticated animals: llamas, alpacas, ducks, guinea pigs, and dogs.

Livestock breeding at *Inle* mainly covers chicken, pig, cow, goat, and turkey. Dependent on *Inle* Lake waters for most of their livelihood and home-making, the *Inthars* have access to fish. *Inle* area have 5 day markets only, so chicken, duck, pork and beef can be bought at the 5 day market only, and are not easily available on every day.

8.3 Food Habits

8.3.1 Preference and dislike

This section describes about *Inthar's* food habits, their food classification and dietary beliefs. As civilization developed gradually in the history of mankind, people were able to produce different kinds of food in abundance. Accordingly, they started eating a particular foodstuff as their main food source rather than other types of food. Every culture or every nationality is found to eat a selected type of food as their staple food (U Tai Oak 1988).

Suwandono and Aryastami (1998) stated that since Indonesia is a big country with almost 200 million population, 17000 islands and almost 300 ethnic groups, dietary patterns of food consumption vary from region to region. The staple food in Java, Sumatera and Sulawesi is rice, while in Molluca they eat tuber, and in East Nusa Tenggara, the communities eat either corn or other seeds. In Irian Java, the indigenous staple foods are banana and cassava. However, the differences are also influenced by areas where populations reside, since people in urban areas mostly eat rice, while people in the rural areas of Java and Bali vary their diet depending on the local conditions and habits.

However, south-east Asians including Myanmar consume rice as their principal food (U Tai Oak 1988). The Republic of the Union of Myanmar is constituted of more than 100 national groups. But their dietary patterns of food consumption vary from

nationality to nationality, from place to place. Tin Yee et al (2004) studied Para Nagas' staple food is rice. When enough paddy is not harvested in the year, maize (grains) common millet and Italian millet alone, or mixed with rice, are cooked and eaten.

Tin Yee et al (2004) studied that Salon nationals live wandering about in boats at sea or ocean islands. So their foods are seafoods and those foods obtained from the islands. In ancient times they had little access to rice, so they had had to consume La-an and Buboon (in Salon language), wild yam, barnacles clinging to rocks, mollusc, oysters and fish.

As *Inthars* are one of our ethnic groups, they also eat rice as their staple food. Regarding their food habits, it is found that medicinal bitter herb soup or *seikharhim* is the most popular dish among them. They like fish best followed by pork in second place although they seldom consume beef and mutton.

8.3.2 Food way or diet

Myint Myint Aye and Zin Mar Latt (2003) carried out a study of Pa-O nationals in Thaton Township, who were found to have three meals a day, ie, at about 7:00 am, 1:00 pm, and 6:00 pm. They mainly eat their own produce, rather than meat and fish, of which they consume little. Pa- O nationals' typical curry is Jackfruit *talapot*, whose preparation goes: make cubes of young jackfruit. Rice-flour paste is added into some boiling water. When it is cooked, jackfruit cubes, lemon grass and fresh fermented soybean are put in. Another curry is: fermented sesame oil-cake fried together with green chilli and tomatoes. Their snacks in the afternoon are boiled taro, sweet potato, East Indian arrowroot, and white yam.

The *Inthars'* dietary habit is three meals in a day, to be taken at 6:00 am, 12:00 noon, and 5:00 pm. They consume one or two good curries only. The *Inthars'* favourite dish is medicinal bitter herb soup, *seikharhin*. Its ingredients may include fish, beans and pulses, rice flour, and taro. In pulses *seikhar*, the main ingredient is pulses, which is boiled and pounded, and added with garlic, ginger, seasoning powder and blended with bitter herb powder in preparing bitter medicinal curry. The *Inthars'* traditional curries are tenderized fried fish, pounded fermented soy bean, pounded fish paste, salad of edible root of allium tuberosum, and thick curry of tomatoes. The *Inthars* usually take as snacks "Inn" rice noodles, glutinous rice flakes, glutinous rice crispies, steamed hide flakes, popcorns accompanied by plain tea. Therefore their foods are

found to have been prepared according to traditional habits. The whole family of *Inthars* usually sits down for meal together. Food habits, appearing by tradition, differ because cultures tend to differ. The *Inthar* diet does not depend on individuals' economic circumstances but it is cooked and consumed in their cultural way.

8.3.3 Dietary belief and traditional practice

Like other nationalities in the world, *Inthars* adopt some practices in their eating habits. According to their classification, some foodstuffs are completely prohibited, others are occasionally forbidden and the rest are regarded as non-edible ones. Moreover, they have some food stuffs used as medicine and others for longevity and youthfulness. Their dietary beliefs vary based on their traditions.

Almost all women avoid eating *tet-sar* that may cause dizziness or drowsiness during their pregnancy. During their confinement, most *Inthus* avoid taro, hilsa, small fish, fish- paste, prawns, mushroom, bamboo shoots, pineapple, jackfruit, common millet, Italian millet, cucumber and egg-plant.

The *Inthars* usually rub the tongue of their new-born child with pepper and honey. The infant, aged 1-7 days, is fed with ripe *phigyan* plantain which is scooped out with a spoon. From an age of four months, the infant is fed with rice gruel. Aged 6-7 months, the infant is fed with rice kneaded with edible oil, and from an age of eight months onwards he is allowed to enjoy a meal like on adult. When a second child is conceived in quick succession the breastfeeding of the first child is stopped. At aged one and half years, the child is weaned off.

According to traditional habits of *Inthars*, the men need not shun any food, but the women during their menses avoid eating sour and bitter things before and during their menstruation period. Their choice of food for some physiological condition such as pregnancy and confinement as well as puberty and adolescence vary according to their traditional obession. Within *Inthar* community, different food customs may be practiced only by women.

Most *Inthars* are found to avoid eating creatures such meat as tortoise, snake, eel, and frog and also of snake gourd, towel gourd, and mint. Their food habit is found to be connected with belief and traditional practice.

8.3.4 Food classification

In human communities of the world, cultures differ just like food beliefs and practices differ. There are wide variations throughout the world in what substances are regarded as food and what are not. As Helman's study shows, though snake, squirrels, otters, dogs, cats and mice are available for food purposes in U.K, they are not regarded as food. This paper tries to study *Inthars'* foods according to Helman's food classification. According to *Inthars'* culture, eel, tortoise, frog, snake, mice, dog and cat are not regarded as food, but they are found to consume liquor, betel quid, tobacco and beer which are regarded as non-food by the nutritionists.

Foodstuffs whose use is validated by religion may be classified as sacred food while those which are forbidden by religious belief as profane food. Latham (1997) conducted that religion may have an important role in forbidding the consumption of certain foods. Neither the Muslim nor the Jewish people consume pork, and Hindus do not eat beef and are frequently vegetarians.

According to Hunt(1976), regular food abstentions are also a feature of Hinduism; many observant Hindus spend two or three days a week "fasting", that is, eating only "pure" foods such as milk, fruit, nuts, and starchy root vegetables like cassava and potatoes.

The most of *Inthars*, being Buddhists are required to avoid killing of creatures for their food. Formerly they rarely ate chicken or duck eggs which, they believed, harboured lives. Moreover, a portion of their choice foods are offered respectfully to the Buddha and *sangha*. On commemorative religious days and new moon and full moon days the *Inthars* go to the monastery to keep Sabbath, whereby they have to fast after noon. However, Sabbath- keepers are found, by tradition, to be consuming sodas (cold drinks) and jaggery in the evening.

The division of all foodstuffs into two main groups usually called hot and cold is a feature of many cultural groups. Greenwood (1981) studied in Morocco; he found significant differences among his informants as to what foods were hot and what were cold, although they all agreed on the tastes, physiological effects and therapeutic value expected to the two categories. In some cases the choice of category was based mainly on personal experience: one man, for example, noted that goat meat tasted sour and caused indigestion and joint stiffness (cold conditions), and that goats could not tolerate being outside in the winter, while cattle could, and therefore goat meat was cold while beef was hot.

Hunt (1976) studied that hot-cold classification of foods among Indians in the UK. Hot foods are - wheat, potato, buffalo milk, fish, chicken, horse gram, groundnut, drumstick, bitter gourd, carrot, radish, fenugreek, garlic, and green mango. Cold foods are- rice, plantains, cow's milk, buttermilk, green gram, peas, beans, onions, green tomatoes, pumpkin, bananas, lemons.

According to Thet Swe (1991) Myanmar Traditional Medicine, Dietary items which increased hotness in one's system include: chicken, mutton, freshwater catfish, and banded snakehead. Dietary items which induce a cold effect include: pork, goose/duck, buffalo meat, gourd, pumpkin.

According to the *Inthars*, hot foods are -chicken, duck, mollusc, common moorhen, ginger, hydrocotyle asiatica, chilli, garlic, turmeric root, bitter herb, and dregea volubilis. Beef, pork, mustard, cauliflower, cucumber, gourd, pulse,onion, potato, tomato, and egg plant are regarded as cold foods.

Food as medicine and medicine as food usually overlaps with parallel food classifications, when the two coexist in the same society. Special diets may also seen as a form of medicine for certain illnesses or physiological states. Etkin and Ross (1982) studied the use of plants, both as medicine and as food, among the Hausa people of northern Nigeria. They found that many of the plants were used as folk medicines and as food. For example, cashew nuts were chewed for treatment of intestinal worms, diarrhoea and dyspepsia, but were also added to soups and used as a condiment in vegetable foods.

Regarding food used as medicine and medicine as food, *Inthars* consume *seikharhin* (bitter herb soup) as they believe that it is good for health. *Seikhar* (bitter herb) can prevent malaria and it can also treat digestive disorders mainfested by excessive gas. It is the main ingredient of their traditional dish highly valued by the folk.

A further example of a social food with ritual significance is the British wedding cake. Charsley (1987) suggests that the wedding cake- comprising three tiers, each one covered with smooth white icing and surrounded by elaborate ornaments and decorations is symbolic of the bride herself, in her long white dress and veil. Furthermore, the joint cutting of the 'virginal white' cake by the new birde and groom has a sexual significance-symbolic of the couple now 'becoming one flesh'.

Moreover, this study presents some practice of *Inthars* in terms of social food. It is found that *Inthars* follow traditional practices of preparing different dishes for

different occasions. Moreover, even if the same dish or meal is served in both auspicious occasion and in funerals, the way they prepare the meal is quite different from one another. Most of the foodstuff they prepare and consume on such occasions has symbolic value. For example, some foodstuffs such as *juu muitthau* salad, *seim-kyaw*, *hinhtiut* etc served at such social gatherings bring about symbolic meaning. In addition, symbolic value can be also found in the packets of green tea leaves which are used as gifts to invite the members of *Sangahs* to preside over their rituals and religious activities. In such a case, they pack the tea leaves differently to indicate different purposes. For wedding ceremonies, the well- off serve the visitors with rice, pork or dried fish and *seikharhin* whereas those who cannot afford the cost treat their guests to betel quid, green-tea, pickled tea and *paukchoe* etc.

Foods serve also as expression of prestige and social status in all cultures. Prestige demands that one should consume rare and costly items of food. Jelliffe (1967) studied among the prestige foods that can be identified are venison and game birds in Northern Europe, the T- bone steak in America, the camel hump among Bedouin Arabs, and the pig in New Guinea.

An interesting thing to be presented is the "prestige food" of *Inthars*. These days, with the soaring price of natural small carp (*ngafein*) and common moorhen, the majority of local people cannot afford to consume them. Accordingly, these things have become a status symbol or prestige food because only the rich and distinguished guests can consume them.

In this study Helman (1991)'s food classification has been applied in classifying *Inthars'* foods. Significantly in their traditional thinking, there are pairs of foods which should not be consumed together. Among Bamars also, the royal cookbook describes pairs of foods which should not be consumed together from the perspective of good health. For example, some of those are; the green gram and pomegranate; milk and pork; milk and mushroom; and cassava root and peafowl flesh.

Inthars are against mixed consumption of several pairs of food from good health perspective as well as traditional belief. Those pairs of foods not to be consumed together from health perspective are: papaya and turtle meat (lest leprosy would follow); ginger and pigeon meat (virtiligo, a skin disease could follow); jiggery and pork (diarrhea could follow); mushroom and crab (muscle tension could follow); duck egg and watermelon (vomition could follow); ice -lolly and ginger salad (liable to cause vomiting); sticky brown and peanut snack (liable to cause vomiting); pickles

and milk (liable to cause vomiting, and could to death due to food poisoning); edible tuber and cow milk (leading to death due to food poisoning); mushroom and beef (could lead to death); mushroom and milk (could lead to death); and pickled tea leaves and water chestnut (could lead to death).

The pair of foods *Inthars* avoid from taking together from the perspective of traditional belief is *hinntoat* and fritters (*kinpaung kyaw* in *Inthars'* dialect), as those foods are usually entertained at funerals. Most *Inthar* avoid pickles or pickle packets which react badly with western medicines one takes on being taken ill.

8.4 BMI

The nutritional status of the *Inthars* at the between 10-19 years was calculated based on WHO- Anthro plus 2007. BMI for *Inthar* with the age above 20 was calculated according to world Health organization criteria (weight in kg/height in meter^2). The *Inthars'* nutritional status is found to be 23.3% underweight, 14.3% overweight, and 62.3% normal. By gender, women are 29.0% underweight, a greater proportion than men who are 16.7% underweight.

Ramalingaswami et al (1997) study says women in some communities have greater proportion of underweight because the best foods and bigger portions have to be fed to men. But the *Inthar* community has a greater proportion of underweight among woman not for that reason. At the dining table of *Inthars* a spoonful of each food is first offered to the elderly and household head, and then all family members eat cooked rice and curries more or less equally. Perhaps female have a greater proportion of underweight among them because more taboos in food customs for women exist. In other words, among *Inthars*, women have the habit of forbidding certain foodstuffs depending on the specific circumstances in one's stages of life and some physiological condition. Female*'* nutritional status is influenced by culture. When socio-demographic of the household chef, female, is taken, 75% of those chefs are found to be working people. The high proportion of underweight among women can be attributed to their daily routine. Although *Inthar* nationals are supposed to equally share the food at dinner table energy requirement of women could be higher than men what with their livelihood activity and cooking for the family in the kitchen. Therefore underweight status could be considered to have a connection with the daily routine work. When the nutrition knowledge of the main cooker (chef) in the

household is studied it is found to be high but they still follow their food customs so there is a gap in food practice.

The *Inthar'* nutritional status has also been studied according to three age groups, namely 10-19 year, 20-40 year, and above 40. The above 40 group has 23.1% overweight, a greater proportion than other age groups. Perhaps *Inthars* have a greater percentage of overweight because in moving about, they are forced by circumstances to use boats rather than walk.

As for major economic activities of the three villages in study area, Hea yar ywar Ma village is famous for its silver-ware and gold- ware. It is the village where experts on gold and silver smiths exit. The village of Inn paw khone depends on looming work. In the same way, on the floating islands is Kay lar village famous for the agricultural products of tomatoes. When livelihood occupation and nutritional status are studied village by village, Hea yar ywar ma is found to have overweight 26.7% while Kay lar has overweight 4.1% only. Perhaps farmers have less overweight because of the type of their work, namely, use of strength and physical activity much more than other livelihoods. These figures show that in *Inthar* is found a connection between economic occupation and nutritional status.

Another finding; the nutritional status of 5 plus member families is underweight 23.8%, a few greater figure than that of families with four members or less. Thus the number of family members is found to have an effect on nutritional status.

Sanjur (1982) studied income is also a major influence on dietary patterns. But beyond these physical and economic determinants, food habits are fundamentally cultural habits. The *Inthars'* income and economic circumstances are found not to have an effect on their nutritional status because, whatever the income, their cuisine is done according to traditional customs. Therefore Sanjur (1982)'s concept is found to apply in that aspect.

DeWalt suggests that policies and programs that focus on the most vulnerable population instead of commercialization are more likely to have a positive effect on food security and nutritional status. As *Inthars* have been concentrating more and more on floating gardening of tomatoes as cash crop, other crops are being grown less and less. This is a factor worthy of consideration in the light of *Inthars'* food security and nutritional status.

This study shows that among user groups of lake, well and artesian as water source, the *Inthars* mainly dependent on lake water have 28.1% underweight as their

nutritional status a greater proportion than the other groups. Lake water users have a high proportion of underweight probably because that water is polluted due to agricultural and industrial waste.

According to Manckeberg (1970) study, malnutrition has bad sanitary conditions as one of its causes. In *Inthar* nationals also, a connection between nutritional status and sanitary conditions has been found. The use of lake water and latrine built into it are found to have a negative effect on *Inthars*' nutritional status. To prevent pollution of *Inle* Lake water an anthropologist suggested that household latrine be supported by floating islands lying underneath. Another suggestion says notices for taking precautions against pollution of the lake water should be nailed into tree trunks. Maung Ko Pwa (2008) said five methods will be used for human waste disposal: 1) programme for inland villages; 2) programme for semi-water villages; 3) programme for above water villages; 4) use of bio-filter fitted with motor pump; and 5) oxygen-voided bio-filter.

For a funeral, *Inthars* drop the coffin through a hole made in the floating island to the lake bottom where it is securely fixed by a standing long bamboo pushed hard into the lake bottom. This practice is unsanitary so the government and the community have cooperatively begun building crematories. Construction of a crematory each at Nant pan and Hea yar ywar ma is in progress, the former for the use of villages in the east of the lake and the latter for the use of villages in the west of the lake. Efforts to cleanse the *Inle* lake water contributes to better health of *Inthar* nationals.

8.5 Calorie intake

Trowell and Burkitt's (1981) studied that cultural changes with modernization include the seemingly invariable pattern of diet in industrial countries – decreased fiber intake and increased consumption of fat and sugar. Modernization is also associated with decreased energy expenditures related to work, recreation, or daily activities. From the perspective of the populations undergoing economic modernization, increasing average weight might be seen as a good thing rather than a health problem. When *Inthars'* calorie intake is calculated carbohydrate accounts for 65.8% of total energy, protein 16.8%, and fats 17.2%. Park (2005) studied that in the Indian dietary, they contribute to the total energy intake in the following proportions. They are proteins 7-15 %, fats 10-30 %, and carbohydrates 65-80 %. Mark (1997) conducted study requires carbohydrate be 40-50% of total energy, protein 25-30%, and fat 25-30%.

Compared to this study, *Inthars'* intake of carbohydrate is found to be higher than necessary, probably due to their reliance on cooked rice, which they consume three times a day. Compared to Mark's study, *Inthars'* intake of protein and fat is small. Probably, though fish is easily available to them their intake of protein remains small because meats and eggs are not easy to buy as the 5 day market mostly exists in *Inle* area. Therefore the above mentioned socio-culture factors are found to be influencing the *Inthars'* nutritional status.

CHAPTER (9)
CONCLUSION AND RECOMMENDATIONS

9.1 Conclusion

The lifestyle and livelihood of the *Inthars* shows that they are able to cope with the nature of their surroundings, able to adapt to it to their advantage. They had to establish villages, large and small, on the waters of the *Inle* Lake, but at the same time they could produce the required food, shelter, and clothing, and other necessary goods for a living appropriate to their lifestyle.

Inthar turned the natural floating islets on the *Inle* Lake waters into farmland and could successfully grow fruits and vegetables for regional consumption. The agricultural methods used in *Inle* area are agriculture (farming) and water farming. Two types of cultivation, namely, land gardening and floating gardening are found in water farming. Various kinds of crops are grown on land gardening and tomatoes are mainly grown on the floating gardening. Tomatoes are the main cash crop for the *Inthars*. Tomatoes are grown for local consumption as well as for commercial purposes. Thus, for an increased harvest, fertilizers and pesticides come to be in widespread use, causing the lake waters to be contaminated. In the long run, the use of such chemically produced goods may have, more or less, some adverse effects on the *Inthars'* health.

In this *Inthars* study, concerning *Inthars'* main eating habit, they mainly eat the fish which are got naturally from the environment of *Inle* Lake and the rice, pulses and various kinds of vegetables which are grown and produced adaptable to the environment. Pulses are a vital ingredient for preparing appetizing dishes. It can be noted that garlic plays an important role in the *Inthar's* diet. According to the custom, the natives of *Inle* Lake called *Inthars* pay respect to the elders and are considerate towards the younger people. While having the meals, the old and the children are given priority by the rest of the family members and all of them share the food equally and have it together. As *Inthars* are one of our ethnic groups, they also eat rice as their staple food. Regarding their food habits, it is found that medicinal bitter herb soup or *seikharhin* is the most traditional dish among them. They like fish best followed by pork in second place although they seldom consume beef and mutton.

Like other nationalities in the world, *Inthars* adopt some practices in their eating habits. According to their classification, some foodstuffs are completely prohibited, others are occasionally forbidden and the rest are regarded as non- edible ones. Their dietary beliefs vary based on their traditions.

Inthars never eat the meat of tortoise, frog, dog, and snake which are consumed by other national groups because they regard them as non-food. For instance, they drink liquor, chew betel quid and smoke cheroots etc despite that such things are classified as non-food by nutritionists.

Concerning with sacred food, alms meals *Inthars* offer daily to the members of Sangahs can be classified as sacred food. Like other food classification systems, *Inthars* also divide the foodstuffs into two types, the hot and the cold foodstuffs. Regarding food used as medicine and medicine as food, *Inthars* consume *seikharhin* as they believe that it is good for health. Moreover, some practice of *Inthars* in terms of social food exists. It is found that *Inthars* follow traditional practices of preparing different dishes for different occasions. Moreover, even if the same dish or meal is served in both auspicious occasion and in funerals, the way they prepare the meal is quite different from one another. Most of the foodstuff they prepare and consume on such occasions has symbolic value. For example, some foodstuffs such as *Juu* roots salad, *seim-kyaw,hinhtou*, etc. served at such social gatherings bring about symbolic meaning. In addition, symbolic value can also be found in the packets of green tea leaves which are used as gifts to invite the members of Sangahs to preside over their rituals and religious activities. In such a ceremony, the well-off serve the visitors with rice, pork or dried fish and *seikharhin* whereas those who cannot afford the cost treat their guests to betel quid, green-tea, pickled tea and *paukchoe* etc.

Another thing to be presented is the "prestige food" of *Inthars*. These days, with the soaring price of natural small carp *(ngafein*) and common moorhen, the majority of local people cannot afford to consume them. Accordingly these things have become a status symbol or prestige food because only the rich and distinguished guests can consume them. On analysis of *Inthars'* diet according to Helman's food classification a significant finding is that they have pairs of food which they avoid consuming together because of their traditional belief.

The *Inthars'* nutritional status stands at underweight 23.3%, normal 62.3%, and overweight 14.3%. In this study, underweight % of female was higher than that of male. *Inthars'* food custom is such that females have more taboos than males do, so

the proportion of underweight is greater among them. Among the *Inthar* national group, women make better food choices than men so as to enhance their beauty and health. According to age group, underweight was high among those with age of 20-40 years and obese was high among those above 40 years old. About 40 plus *Inthars* have a higher proportion of overweight because most of above 40 years old *Inthars* have little physical activity as they have to use boats only going from place to place. Hea yar ywar ma is found to have overweight 26.7% while farming-centred Kay lar has 4.1% only. Perhaps farmers have less overweight because of the type of their work, use of strength and physical activity much more than other livelihood. Another finding, *Inthar* having ≥ 5 family member had higher percentage of *Inthar* with underweight compared to those having ≤ 4 family members. Thus the number of family members is found to have an effect on nutritional status.

In nutritional status *Inthars*' practice conforms to their food customs only whether they are rich or poor, their nutritional knowledge is high or low. In other words, culture only has influence on nutritional status. *Inle* Lake water is polluted because of agricultural and industrial waste containing chemicals. In the nutritional status those *Inthars* who mainly use *Inle* Lake water have a higher proportion of underweight among them. Therefore the type of water used by the household and the toilets built in the lake has an influence on nutritional status.

The *Inthars'* staple food is rice, and they eat three meals a day. In the energy given by their food, carbohydrate accounts for a higher percentage than others. Protein from their food is little because meat is not readily available to them and most of them refrain from consuming eggs which are thought to be alive according to their religious belief. The above mentioned socio- cultural factors supposedly influence *Inthars'* nutritional status more or less.

9.2 Recommendations

In this study the following are recommended:

1. Harmful taboos should be demystified through health education programmes, with the support of government/ NGO programmes. Better food eating habits should be promoted through behavior changes communication (BCC) program.
2. The most *Inthars* with above 40 years tend to be overweight. Overnutrition is more prevalent than undernutrition. The health hazards from overnutrition

have a high incidence of obesity, diabetes, hypertension, cardiovascular and renal diseases, disorders of liver and gall bladder. BCC program should be promoted to change their lifestyle to prevent overweight.

3. *Inthars*' consumption of food shows a shortage of protein. Protein-rich meat, fish and beans more should be made accessible to *Inthars*, by various means authorities concerned.
4. The majority of *Inthar* nationals mainly depend on *Inle* Lake water for their daily needs. The lake water, polluted for various reasons, could be harmful to human health. Therefore, water filtering tanks have been constructed at some villages with UNDP help. The use of safe clean water should be encouraged through education program and expanded construction of water filtering tanks with the support of government and UN agencies and non-governmental organizations.
5. Human waste which has been disposed into the *Inle* Lake is detrimental to their health and nutrition. Some bio-latrines designed by UNDP are under trial at *Nantpan.* The use of bio-latrine should be promoted through training education and material technical support.
6. Education as well as training is essential and it needs support from Myanmar Agriculture Service in regard to the use of fertilizers and insecticides.
7. Nutritional status of other ethnic nationals also should be studied from health perspective as well as anthropological perspective.

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APPENDIX-1

No.	Variable	Operation definition	Scale of measurement
1.	Age	Age at last birthday	Continuous
2.	Sex	Gender on male (or) female	Nominal
3.	Education level of Chef	Illiterate – cannot read & write Read & write Primary – up to fourth standard level = 1 Middle – up to eight standard level = 2 High – up to tenth standard level University & graduate – University level & graduated = 3	Ordinal
4.	Chef Occupation	Wamen's task allocation	Nominal
5.	Ethnic Group	(1) Inthar (2) Shan (3) PaO (4) Burma (5) Other	Nominal
6.	Religion	(1) Buddhist (2) Christian (3) Hindu (4) Islam (5) Others	Nominal
7.	Family Size	Number of persons lived in the family	Nominal

8.	Family Income	The money their family earn monthly (in kyats) (1) Less than 5000 – low (2) Between 5000 – 100000 – moderate (3) More than 1000 – high	Oridinal
9.	Daily expenditure	One day expenditure (in kyats) (1) Less than 2000 (2) More than 2000	Ordinal
10.	Use of water	(1) Lake (2) Well (3) Artesan	Nominal
11.	Sanitation	(1) Direct pit (2) Indirect pit	Nominal
12.	Nutritional knowledge score of chef	In a set of (17) questions on nutritional knowledge Correct answer – 1 mark Wrong answer and don't answer = 0 0-12 marks - < 70 %- low score 12 marks -≥ 70% - high score	Nominal
13.	Eating pattern	Behavior style related to the eating pattern in terms of - type of food - average frequency of food - preference of food	Nominal
14.	Nutritional status	Height, weight and Body Mass Index of Inthar	Ordinal

15.	Anthropometric	Scientific measurements of the human body which includes height weight	Continuous
16.	BMI (Body Mass Index)	A measure of body mass relative to height, calculated as weight (Kilogram) divided by the square of height (meters). (weight/height^2)	Continuous
17.	Underweight	<18.5	Ordinal
18.	Normal	18.5-24.9	Ordinal
19.	Overweight	25.0-29.9	Ordinal
20.	Obesity grade 1	30.0-34.9	Ordinal
21.	Obesity grade 2	35.0-39.9	Ordinal
22.	Severe Obesity	40 and above	Ordinal

APPENDIX 2

TIME FRAME (Gantt Chart)

Activities to be done	2008-2012																																													
	2008-2009											2											2												2												
	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	1	2	3	4	5	6	7	8	9	10	11	12					
Proposal Preparation	*	*	*	*	*	*																																									
Preparing Questionnaires																																															
Literature Review																																															
Regular Seminar																																															
Credit Seminar																																															
Date Collection and field work																																															
Thesis Writing																																															
Thesis Defend																																															

APPENDIX 3

Agreement form to participate

Principal Research	Ma Moe Moe
Organization	Department of Anthropology, Yangon University
Research Paper's Title	Anthropological Perspective on Nutritional Status of Inthar Community

Part A. Research Subject

1. Introduction

My name is Ma Moe Moe, one of faculty staff at East Yangon University. I aim to do some research on the significance of nutrition in human health, Inthars' outlook on diet, and their traditional concepts.

2. Aim of Research

Health problems of humankind include the important role played by nutrition. Therefore, this research will try to comprehensively study Inthars' dietary outlook, food production, cuisine, their traditional concepts of food, and nutritional status participants in this research are family members of Inthar community aged 10 and above.

This research is done for Ph.D thesis. If you agree to participate, you are requested of the following:

1). To let the researcher conduct on site study of traditional dietary concepts and food habits;

2). To sit down for interviews;

3). To respond in questionnaire;

4). To allow the interviews to be taped if necessary;

5). To have nutrition related measures taken of you, like body weight, height, etc; and

6). To have photographic records taken with your permission.

Response by Questionnaire

You are required to undersign this form in agreement. In the course of research, though your identity is known to researchers, the findings and computerized records with not contain your identity. Your identity will be known to the researcher only. A copy of this agreement will be given to you as keepsake, while the original will remain with the researcher for five years.

The research findings, to be transcribed by researcher Moe Moe, might be used in journal articles, at paper reading session, but your identity will not be revealed. Though your participation in this research will not benefit you directly it might help care efforts for the sake of your fellow nationals. Your security will by no means be affected by non-participation, or becoming so after having been a participant once. Enquiries on this research can be made of reseasrcher Moe Moe, Ph 095057493.

Part (B). Agreement to participate in this study

Date: ----------

Having been clearly aware of this research's aim, procedure and other particulars, I hereby undersign it to be a participant of my own volition.

Participant

Name: ----------

Signature: ----------

Date: ----------

သဘောတူညီချက်ပုံစံ

အဓိကသုတေသီ– မမိုးမိုး

အဖွဲ့အစည်းအမည်– မနုဿဗေဒဌာန၊ ရန်ကုန်တက္ကသိုလ်

သုတေသနအဆိုပြုလွှာအမည်– မနုဿဗေဒရှုထောင့်မှအင်းသားတို့၏အာဟာရအခြေအနေပေါ်လေ့လာခြင်း

အပိုင်း(က) သုတေသနနှင့် ပတ်သက်သည့် အကြောင်းအရာ

၁။ မိတ်ဆက်ခြင်း

ကျမ၏အမည်မှာ--------ဖြစ်ပါသည်။ ရန်ကုန်အရှေ့ပိုင်း တက္ကသိုလ်တွင် တာဝန်ထမ်း ဆောင်နေသူဖြစ်ပါသည်။ ကျမ အနေဖြင့် လူတို့၏ကျန်းမားရေးတွင် အရေးပါသော အာဟာရအခြေအနေ၊ အင်းသားတို့၏ အစားအစာပေါ်ထားသည့်သဘောထား၊ ရိုးရာအယူအဆများနှင့် ပတ်သက်ပြီး သုတေသန လုပ်ငန်းတစ်ခုကိုဆောင်ရွက် လိုပါသည်။

သုတေသန၏ ရည်ရွယ်ချက်

ကမ္ဘာပေါ်ရှိ လူတို့၏ ကျန်းမားရေး ပြဿနာများတွင် အာဟာရသည်လည်း အရေးပါသော အခန်းကဏ္ဍမှပါဝင်လေသည်။ ထိုကြောင့် အင်းသားများ၏ အစားအစာပေါ်ထားသည့်သဘောထား၊ အစားအစာ ထုပ်လုပ်ပုံ၊နှင့် ချက်ပြုတ်စားသောက်ပုံ၊ အင်းသားတို့၏ အစားအစာနှင့် ပတ်သက် သည့် ရိုးရာ အယူအဆများ၊ အာဟာရအခြေနေတို့ကို ဆက်စပ် လေ့လာသွားမည်ဖြစ်ပါသည်။ ယခုပြုလုပ်မည့် သုတေသနတွင်ပါဝင်မည်သူများမှာ (၁၀)နှစ်အထက်အင်းသား မိသားစုဝင်များ ဖြစ်သည်။

ဤသုတေသန ပြုစုမှုသည် PhD ဘွဲ့စာတမ်းအတွက် လေ့လာခြင်းဖြစ်ပါသည်။ ဤစာတမ်းတွင် ပါဝင်ရန် သဘောတူညီပါက သင်သည်

(၁) အစားအစာနှင့်ဆိုင်သည် ရိုးရာအယူအဆများနှင့် အပြုအမူများကို သုတေသနပြုသူကိုယ်တိုင် လူကြီးမင်းတို့၏ပတ်ဝန်းကျင်တွင် ပါဝင်လေ့လာခြင်း၊

(၂) လိုအပ်လျှင် မေးမြန်းဖြေဆိုစေခြင်း၊

(၃) မျက်နှာချင်းဆိုင် အသေးစိတ်မေးမြန်းဆွေးနွေးအား အခါအားလျော်စွာ ဖြေဆိုစေခြင်း၊

(၄) ထိုတွေ့ဆုံမေးမြန်းမှုအား ကက်ဆက်ခွေဖြင့် အသံဖမ်းယူခြင်း၊

(၅) အာဟာရအခြေအနေသိရှိရန်အတွက် ကိုယ်အလေးချိန်တိုင်းတာခြင်း၊ အရပ်တိုင်းတာခြင်း၊

(၆) ခွင့်ပြုချက်ဖြင့် မှတ်တမ်းတင် ဓာတ်ပုံ ရိုက်ကူးခြင်းတို့အား လက်ခံပေးရန် တောင်းဆိုအပ်ပါသည်။

သင်၏ သဘောတူညီချက်အနေဖြင့် ဤပုံစံတွင် လက်မှတ်ရေးထိုးရမည်ဖြစ်ပါသည်။ လေ့လာစဉ် ကာလတစ်လျှောက်တွင် သင်မည်သူဖြစ်သည်ကို သုတေသီများမှ သိသော်လည်း လေ့လာတွေ့ရှိချက်နှင့် ကွန်ပျူတာမှတ်တမ်းများတွင် သင်၏အမည်အား ဖော်ပြမည်မဟုတ်ပါ။ သို့ဖြစ်ပါ၍ သင်မည်သူဖြစ်ကြောင်းကို သုတေသီမှလွဲ၍ မည်သူမျှသိမည်မဟုတ်ပါ။ ယခုလက်မှတ် ရေးထိုးသော သဘောတူခွင့်ပြုချက်ကို သင့်အား တစ်စုံပေးထားမည်ဖြစ်ပြီး သုတေသီမှလည်း နောက်(၅) နှစ်တိုင်အောင် ထိန်းသိမ်းထားမည်ဖြစ်ပါသည်။

ဤသုတေသနရလဒ်များကို သုတေသနပြုသူ မိုးမိုးမှ စာတမ်းရေးသားမည်ဖြစ်ပြီး ၄င်းအားဂျာနယ် ရေးသားဖော်ပြခြင်းနှင့် နီးနှောဖလှယ်ပွဲများတွင် ဖတ်ကြားတင်ပြခြင်း တို့ပြုလုပ်မည်ဖြစ်ပါသည်။ သို့သော် သင့်အားမည်သူဖြစ်သည်ဟု ဖော်ပြမည်မဟုတ်ပါ။ ဤသုတေသနတွင်ပါဝင်ခြင်းဖြင့် သင့်အတွက် တိုက်ရိုက် အကျိုးခံစားခွင့် ရှိမည်မဟုတ်ပေ။ သို့သော်သင့်ပါဝင်ဖြေကြားခြင်းသည် နောင်တွင် လူကြီးမင်းတို့လူမျိုးစု၏ ကျန်းမာရေးစောင့်ရှောက်မှုအတွက် အထောက်အကူပြု ပေးနိုင်မည်ဖြစ်ပါသည်။ ဤသုတေသနတွင် မပါဝင်သည်ဖြစ်စေ (သို့မဟုတ်) ပါဝင်ပြီးမှ နုတ်ထွက်သည်ဖြစ်စေ သင်၏ ဘဝလုံခြုံမှုအား လုံးဝ ထိခိုက်နစ်နာစေမည်မဟုတ်ပါ။ ယခု သုတေသနနှင့်ပတ်သက်၍ မေးမြန်းလိုပါက သုတေသနပြုသူ မိုးမိုး ဖုန်း-၀၉၅၀၅၇၄၉၃ အားဆက်သွယ်မေးမြန်းနိုင်ပါသည်။

အပိုင်း (ခ)　　လေ့လာမှုတွင်ပါဝင်ရန် သဘောတူညီ ကြောင်းဝန်ခံချက်

ရက်စွဲ----------

သုတေသနလုပ်ငန်း၏ ရည်ရွယ်ချက်၊ လုပ်ငန်းစဉ်နှင့် သိရှိဖွယ်များကို ရှင်းလင်းစွာ သိရှိရ ပြီးနောက် မိမိဆန္ဒ အလျောက် အထက်ပါသုတေသန လုပ်ငန်းတွင်ပါဝင်ရန် သဘောတူညီကြောင်း လက်မှတ် ရေးထိုး အပ်ပါသည်။

သုတေသနတွင် ပါဝင်သူ
အမည် ----------
လက်မှတ် ----------
(ရက်စွဲ) ----------

APPENDIX-4

The Questionnaires for Inthars' dietary knowledge assessment

Section (1)

Date of test

Name of the ward

Name of the village

House numbers

1. Name of the participant ----------

2. Date of birth ---------- ☐☐ ☐☐ ☐☐

3. Age in completed year ---------- ☐☐ ☐☐

4. Gender ☐
   (1) Male
   (2) Female

5. Education level ☐
   (1) Illiterate/Read & write/Primary level
   (2) Middle level
   (3) High school /University & graduate

6. Occupation ☐
   (1) Dependant
   (2) Employed

7. Religion practiced ☐
   (1) Buddhism
   (2) Christianity
   (3) Hinduism
   (4) Islam
   (5) Other ----------

8. Nationality ☐
   (1) Inthar
   (2) Shan

(3) Pao

(4) Bamar

(5) Other ----------

9. Number of family members ☐

10. Family's monthly income ☐

11. Daily expenditure ☐

12. Water source ☐

(1) Lake

(2) Well

(3) Artesian well

(4) Other ----------

13. Type of latrine ☐

(1) Direct pit

(2) Indirect pit

(3) Other ----------

Section (2)

Instruction: Answer the following questions. Read each of the statements carefully and give your answer by circling on the number of the option you has chosen.

1. The basic need for nutrition varies according to age.

(1) True

(2) False

(3) Does not know

2. The need for nutrition varies according to gender.

(1) True

(2) False

(3) Does not know

3. The need for nutrition varies according to body weight.

(1) True

(2) False

(3) Does not know

4. The need for nutrition varies according to life style.

(1) True

(2) False

(3) Does not know

5. We get required nutrition through consuming food.

(1) True

(2) False

(3) Does not know

6. Dietary restriction can cause health problems.

(1) True

(2) False

(3) Does not know

7. Meat, Liver, beans, and peas are enriched with iron.

(1) True

(2) False

(3) Does not know

8. Iron deficiency can cause anaemia.

(1) True

(2) False

(3) Does not know

9. Meat fish contain a lot of vitamin A. ☐

(1) True

(2) False

(3) Does not know

10. Vitamin A deficiency can cause goiter. ☐

(1) True

(2) False

(3) Does not know

11. If children suffer from Iodine deficiency, they will become dull and inactive. ☐

(1) True

(2) False

(3) Does not know

12. If adults lack Iodine, they will become sluggish, retard and they will also suffer from goiter. ☐

(1) True

(2) False

(3) Does not know

13. What advantages do eating green vegetables give for you body? ☐

(1) Good eye sight

(2) Encouraging blood red cells

(3) Protection from goiter

14. What benefits can you get by eating sour foodstuffs? ☐

(1) Enhancing immure system

(2) Encouraging blood red cells

(3) Protection from goiter

15. Which types of food are good for body growth? ☐

(1) Meat, fish, eggs, milk, beans

(2) Vegetables and fruits

(3) Rice, wheat, and maize

16. Which types of food can protect the diseases? ☐

(1) Meat, fish, eggs, milk, beans

(2) Vegetables and fruits

(3) Rice, wheat, and maize

17. Which types of food can give energy providing food?

(1) Meat, fish, eggs, milk, beans

(2) Vegetables and fruits

(3) Rice, wheat, and maize

Section (3)

Questionnaire on eating habits

Please circle the number of the option you have chosen.

1. How many times do you take your meals?

(1) One time

(2) Two time

(3) Three time

2. What kind of food did you have for your meals yesterday?

(1) Meat, fish, Liger etc

(2) Eggs

(3) Beans

(4) Vegetables

(5) Fruits

(6) Milk and milk products

(7) Others

3. What kind of snacks did you have Inthar yesterday?

(1) Traditional snacks (Shan Noodle, Soft Warm Tofu, Inn-Hmon-Tee)

(2) Myanmar snacks (Kauk-Nyin-Paung, Hmont-Saint-Paung)

(3) Readymade snack (biscuit, potato chips)

(4) Soft drinks (soda, coffee, tea)

4. How often did you have each of the following types of food stuffs during last week? If you did not happen to eat it please fill in zero in the box.

(1) Meat, fish, Liger etc

(2) Eggs

(3) Beans

(4) Vegetables

(5) Fruits

(6) Milk and milk products

(7) Others

5. How many days did you have snacks during last week?

(1) Traditional snacks (Shan Noodle, Soft Warm Tofu, Inn-Hmon-Tee)

(2) Myanmar snacks (Kauk-Nyin-Paung, Hmont-Saint-Paung)

(3) Readymade snack (biscuit, potato chips)

(4) Soft drinks (soda, coffee, tea)

6. What is your reason for your choice of snacks? ☐

(1) Because I think it is clean

(2) Because I like the taste

(3) Because I think it is nutritious

ရှမ်းပြည်နယ် အင်းလေးဒေသ အတွင်းရှိ ----------ရွာတွင်

အင်းသူ/အင်းသားများ၏အာဟာရ ဗဟုသုတ လေ့လာခြင်းမေးခွန်းလွှာ

(အိမ်ထောင်ရှင်မ(သို့မဟုတ်) အိမ်တွင် အဓိကစီမံချက်ပြုတ်သူ)

အောက်ဖော်ပြပါ မေးခွန်းများကို ဖြေဆိုရာတွင် မိမိရွေးချယ်ထားသော အဖြေရှေ့ရှိ နံပါတ်ကိုဝိုင်းပါ။

နမူနာပြထားသည့်အတိုင်းဖြေဆိုပါ။

နမူနာပုံစံ

မေးခွန်း။ ။ တနေ့ထမင်းဘယ်နှစ်ကြိမ် စားပါသလဲ။

(၁) တစ်ကြိမ်

(၂) နှစ်ကြိမ်

(၃) သုံးကြိမ်

မိမိရွေးချယ်ထားသော အဖြေမှာ နံပါတ် ၃ ဖြစ်ပါက

တနေ့ထမင်းဘယ်နှစ်ကြိမ် စားပါသလဲ။

(၁) တစ်ကြိမ်

(၂) နှစ်ကြိမ်

(၃) သုံးကြိမ်

အဝိုင်း (၁)

ဖြေဆိုသူ၏ကိုယ်ရေးကိုယ်တာ အချက်အလက်များ

ရက်စွဲ

ရပ်ကွက်အမည်-

ကျေးရွာအမည်-

အိမ်အမှတ်-

၁။ အမည်-

၂။ မွေးသက္ကရာဇ်-

၃။ ပြည့်ပြီးအသက်- နှစ်၊ လ၊

၄။ ကျား/မ

(၁) ကျား

(၂) မ

၅။ ပညာအရည်အချင်း

(၁) စာမတတ်/ရေးတတ်၊ဖတ်တတ်/မူလတန်းအောင်

(၂) အလယ်တန်းအောင်

(၃) အထက်တန်းအောင်/တက္ကသိုလ်ပညာဘွဲ့ရ

၆။ အလုပ်အကိုင်

(၁) မှီခို

(၂) အလုပ်အကိုင်ရှိ

၇။ကိုးကွယ်သည့်ဘာသာ

(၁) ဗုဒ္ဓဘာသာ

(၂) ခရစ်ယာန်

(၃) ဟိန္ဒူ

(၄) အစ္စလမ်း

(၅) အခြား

၈။ လူမျိုး

(၁) အင်းသား

(၂) ရှမ်း

(၃) ပအို၀

(၄) ဗမာ

(၅) အခြား

၉။ မိသားစု၀င်အရေအတွက်

၁၀။ မိသားစုတစ်လ၀င်ငွေ

၁၁။ တစ်နေ့စျေးဘိုး

၁၂။ ရေသုံးစွဲမှု

(၁) ကန်ရေ

(၂) တွင်းရေ

(၃) အဝီစီရေ

(၄) အခြား

၁၃။ အိမ်သာအသုံးပြုပုံ

(၁) ကန်အတွင်းတိုက်ရိုက်စွန့်ပစ်အိမ်သာ

(၂) တွင်းအိမ်သာ

(၃) အခြား

အပိုင်း (၂)

အောက်ဖော်ပြပါ မေးခွန်းများကို ဖြေဆိုပါ။ မှန်လျှင် မှန်၊ မှားလျှင်မှား၊ မသိလျှင် မသိပါဟု ဖြေဆိုပါ။ မိမိရွေးချယ်ထားသော အဖြေရှေ့ရှိ နံပါတ်ကိုဝိုင်းပါ။

၁။ အာဟာရ လိုအပ်ချက်သည် အသက်အရွယ်ပေါ် မူတည်၍ ပြောင်းလဲသည်။

(၁) မှန်

(၂) မှား

(၃) မသိပါ။

၂။ အာဟာရ လိုအပ်ချက်သည် ကျား/မပေါ် မူတည်၍ ပြောင်းလဲသည်။

(၁) မှန်

(၂) မှား

(၃) မသိပါ။

၃။ အာဟာရ လိုအပ်ချက်သည် ခန္ဓာကိုယ်အလေးချိန် ပေါ် မူတည်၍ ပြောင်းလဲသည်။

(၁) မှန်

(၂) မှား

(၃) မသိပါ။

၄။ အာဟာရ လိုအပ်ချက်သည် နေထိုင်မှုပုံစံပေါ် မူတည်၍ ပြောင်းလဲသည်။

(၁) မှန်

(၂) မှား

(၃) မသိပါ။

၅။ ခန္ဓာကိုယ်အတွက် လိုအပ်သော အာဟာရကို အစာစားခြင်းမှ ရရှိသည်။

(၁) မှန်

(၂) မှား

(၃) မသိပါ။

၆။ အစားအသောက် ရှောင်ခြင်းသည် ကျန်းမားရေးကို ထိခိုက်နိုင်သည်။

(၁) မှန်

(၂) မှား

(၃) မသိပါ။

၇။ အသား၊ အသဲ၊ ပဲအမျိုးမျိုးတို့သည် သံဓာတ် ကြွယ်ဝသော အစားအစာများ ဖြစ်သည်။

(၁) မှန်

(၂) မှား

(၃) မသိပါ။

၈။သံဓာတ်ချို့တဲ့ပါက သွေးအားနည်းရောဂါ ဖြစ်စေသည်။ ☐

(၁) မှန်

(၂) မှား

(၃) မသိပါ။

၉။ အသားငါး တို့တွင် ဗီတာမင်အေ များစွာပါဝင်သည်။ ☐

(၁) မှန်

(၂) မှား

(၃) မသိပါ။

၁၀။ ဗီတာမင်အေ ချို့တဲ့ပါက လည်ပင်းကြီးရောဂါ ဖြစ်စေသည်။ ☐

(၁) မှန်

(၂) မှား

(၃) မသိပါ။

၁၁။ ကလေးငယ်တို့တွင် အိုင်အိုဒင်း ချို့တဲ့ပါကညစ်ထိုင်းခြင်း၊ သွက်လက်ဖျတ်လတ်မှုမရှိခြင်း တို့ဖြစ်တတ်ပါသည်။ ☐

(၁) မှန်

(၂) မှား

(၃) မသိပါ။

၁၂။ လူကြီးများတွင် အိုင်အိုဒင်း ချို့တဲ့ပါက သွက်လက်မှု မရှိဘဲ ထုံထိုင်းနေးကွေးခြင်းနှင့် လည်ပင်းကြီးရောဂါ ဖြစ်တတ်သည်။ ☐

(၁) မှန်

(၂) မှား

(၃) မသိပါ။

၁၃။ အစိမ်းရောင် ဟင်းသီးဟင်းရွက်စားခြင်းသည် ခန္ဓာကိုယ်အတွက် မည်သည့် အကျိုးကျေးဇူး ရရှိသနည်း။ ☐

(၁) မျက်စိအမြင်ကြည်လင်စေခြင်း

(၂) သွေးအားကောင်းစေခြင်း

(၃) လည်ပင်းကြီးရောဂါကို ကာကွယ်နိုင်ခြင်း

၁၄။ အရသာချဉ်သော အစားအစာများသည် သည် ခန္ဓာကိုယ်အတွက် မည်သည့် အကျိုးကျေးဇူး ရရှိသနည်း။

(၁) ခုခံအားကောင်းမွန်စေခြင်း

(၂) သွေးအားကောင်းစေခြင်း

(၃) လည်ပင်းကြီးရောဂါကိုကာကွယ်နိုင်ခြင်း

၁၅။ ခန္ဓာကိုယ်ကြီးထွားစေသော အစားအစာများသည် မည်သည့်အစားအစာများဖြစ်သနည်း။

(၁) အသား၊ ငါး၊ ဥ၊ နို့၊ ပဲအမျိုးမျိုး

(၂) ဟင်းသီးဟင်းရွက် နှင့်သစ်သီးဝလံ

(၃) ဆန်၊ ဂျုံ၊ ပြောင်း

၁၆။ ရောဂါဘယ ကာကွယ်ဟန့်တားစေသော အစားအစာများသည် မည်သည့်အစားအစာများ ဖြစ်သနည်း။

(၁) အသား၊ ငါး၊ ဥ၊ နို့၊ ပဲအမျိုးမျိုး

(၂) ဟင်းသီးဟင်းရွက် နှင့်သစ်သီးဝလံ

(၃) ဆန်၊ ဂျုံ၊ ပြောင်း

၁၇။ အင်းအားဖြစ်ထွန်းစေသော အစားအစာများသည် မည်သည့်အစားအစာများဖြစ် သနည်း။

(၁) အသား၊ ငါး၊ ဥ၊ နို့၊ ပဲအမျိုးမျိုး

(၂) ဟင်းသီးဟင်းရွက် နှင့်သစ်သီးဝလံ

(၃) ဆန်၊ ဂျုံ၊ ပြောင်း

အပိုင်း(၃)

စားသောက်မှုဆိုင်ရာမေးခွန်းများ

မိမိရွေးချယ်ထားသော အဖြေရွေရှိ နံပါတ်ကိုဝိုင်းပါ။

၁။ တစ်နေ့ထမင်းဘယ်နှစ်ကြိမ် စားပါသလဲ။

(၁) တစ်ကြိမ်

(၂) နှစ်ကြိမ်

(၃) သုံးကြိမ်

၂။ မနေ့ကထမင်းစားရာတွင် မည်သည့်အစားအစာများ နှင့်စားခဲ့ပါသနည်း။

(၁) အသား၊ ငါး၊ အသဲ၊

(၂) ဥ အမျိုးမျိုး

(၃) ပဲ အမျိုးမျိုး

(၄) အစိမ်းရင့်ရောင် ဟင်းသီးဟင်းရွက်များ

(၅) အနီရောင် အဝါရောင် သစ်သီးများ

(၆) နို့နှင့်နို့ထွက်ပစ္စည်း

၃။ မနေ့ကမည်သည့်အစားအစာ စားခဲ့ပါသလဲ။

(၁) ရိုးရာမုန့် (ရှမ်းခေါက်ဆွဲ၊ တို့ဟူးနွေး၊ အင်းမုန့်တီ)

(၂) မြန်မာမုန့် (ကောက်ညင်းပေါင်း၊ မုန့်စိမ်းပေါင်း)

(၃) အသင့်စားမုန့် (ဘီစကစ်၊ အားလူကြော်)

(၄) လက်ဘက်ရည်၊ ကော်ဖီ၊ အိုဗာတင်း၊ အအေး

၄။ လွန်ခဲ့သော တစ်ပတ်အတွင်း အောက်ပါအစားအစာများကို ဘယ်နှစ်ကြိမ် စားခဲ့ပါသလဲ။

(၁) အသား၊ ငါး၊ အသဲ၊

(၂) ဥ အမျိုးမျိုး

(၃) ပဲ အမျိုးမျိုး

(၄) အစိမ်းရင့်ရောင် ဟင်းသီးဟင်းရွက်များ

(၅) အနီရောင် အဝါရောင် သစ်သီးများ

(၆) နို့နှင့်နို့ထွက်ပစ္စည်း

၅။ လွန်ခဲ့သော တစ်ပတ်အတွင်း အောက်ပါသရေစာများကို ဘယ်နှစ်ကြိမ် စားခဲ့ပါသလဲ။

(၁) ရိုးရာမုန့် (ရှမ်းခေါက်ဆွဲ၊ တို့ဟူးနွေး၊ အင်းမုန့်တီ)

(၂) မြန်မာမုန့် (ကောက်ညှင်းပေါင်း၊ မုန့်စိမ်းပေါင်း)

(၃) အသင့်စားမုန့် (ဘီစကစ်၊ အားလူကြော်)

(၄) လက်ဘက်ရည်၊ ကော်ဖီ၊ အိုဗာတင်း၊ အအေး

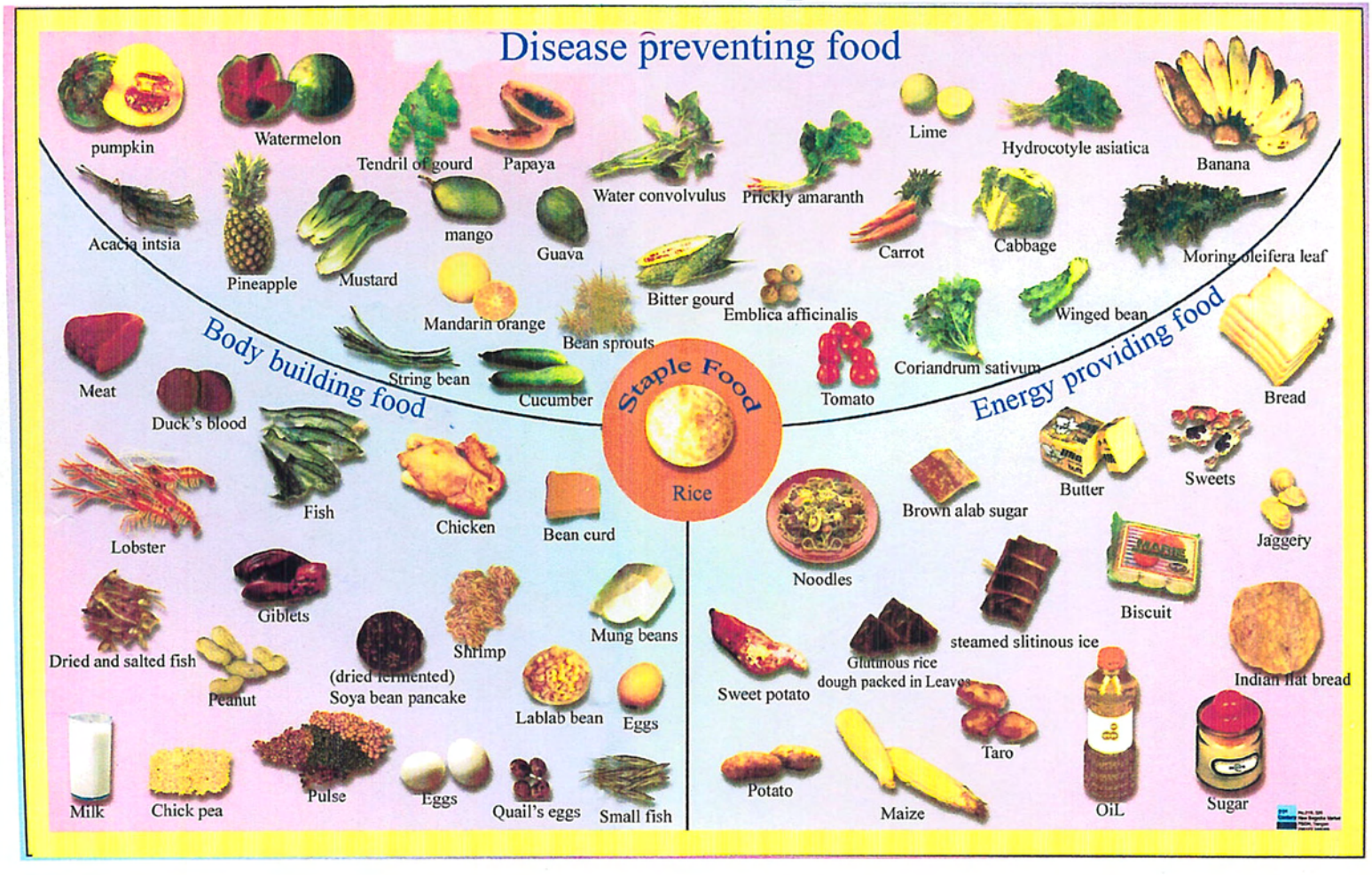
၆။ မည်သည့်အတွက်ကြောင့် အဆိုပါမုန့်ကို ရွေးချယ်ပါသလဲ။

(၁) အရသာကြိုက်သည်

(၂) အာဟာရပြည့်ဝသည်ဟုထင်သည်

(၃) သန်းရှင်းသည်ဟုထင်သည်။

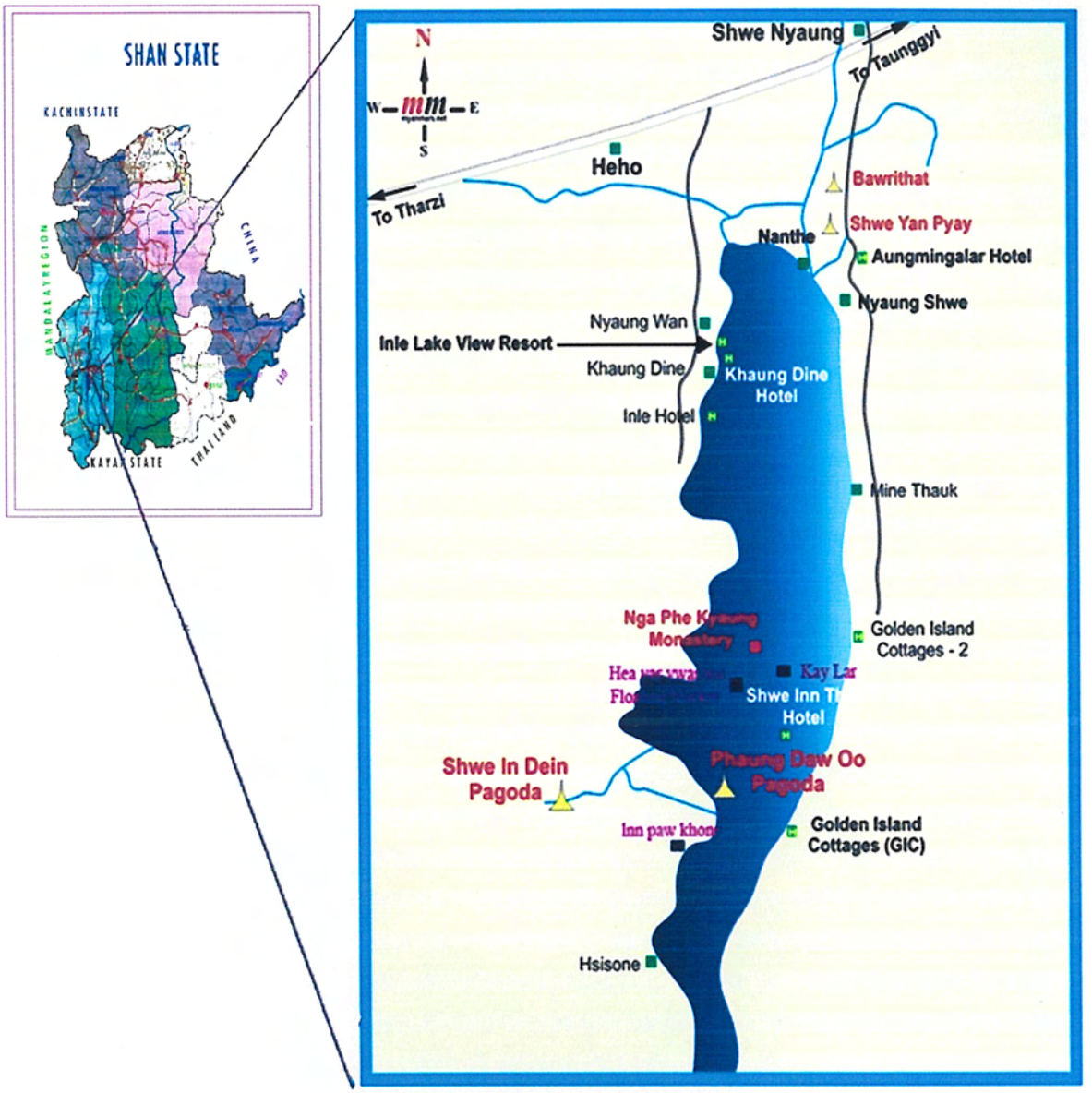
Food Groups



APPENDIX -5

APPENDIX -7

The Map of Inle region



UNIVERSITY OF YANGON

DEPARTMENT OF ANTHROPOLOGY

External examiner's recommendation on the PhD dissertation

Dated Yangon, 28 April, 2012

TO WHOM IT MAY CONCERN

Ref: Moe Moe's PhD thesis

Thesis Title – Food and Man: Anthropological perspectives on nutritional status of Inthar community in Inle Lake, Nyaung Shwe Township, Shan State (South)

The research focused on socio-cultural and anthropometric aspects of food and nutrition among *Inthar* in Myanmar. She could identify relevant data and information with regards to thesis objectives and interpret to meet the aim.

Recommendations could be raised for further food and nutrition related education programme which an invaluable for thesis as well as for *Inthar*. It is recommended that she is entitled to hold doctorate degree with this thesis.

Dr. Tin Maung Chit
Deputy Regional Health Director (Retired)
Ayeyarwaddy Regional
Health Department
Ministry of Health

UNIVERSITY OF YANGON

DEPARTMENT OF ANTHROPOLOGY

Referee's recommendation on the PhD dissertation

Dated Yangon, 28 April, 2012

TO WHOM IT MAY CONCERN

Ref: Moe Moe's PhD thesis

Thesis Title – Food and Man: Anthropological perspectives on nutritional status of Inthar community in Inle Lake, Nyaung Shwe Township, Shan State (South)

Moe Moe's systematic research on "Food and Man" and its results are satisfactory. Her Dissertation can certainly contribute to better understanding of the food, nutrients and sanitation for members of *Inthar* community in *Inle* Lake region, Shan State. It would naturally be important in practice for the essential information contained in the dissertation to be made use of by all concerned for the *Inthar* community.

Therefore, her dissertation on "Food and Man" is considered as eligible for the Doctorate Degree of Philosophy in Anthropology.

U Kyaw Han
Professor & Head (Retired)
Department of Anthropology
University of Yangon