

**YANGON UNIVERSITY OF ECONOMICS
DEPARTMENT OF APPLIED ECONOMICS
MASTER OF PUBLIC ADMINISTRATION PROGRAMME**

**A STUDY ON HOUSEHOLDS' PERCEPTION ON
NUTRITION ENVIRONMENT IN NAYPYITAW
(CASE STUDY ON POBBATHIRI TOWNSHIP)**

**HTET AUNG
EMPA - 19 (20th BATCH)**

JUNE, 2025

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A thesis submitted as a partial fulfillment towards the requirement for the degree of
Master of Public Administration (MPA)

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This is to certify that this thesis entitled “**A STUDY ON HOUSEHOLDS’ PERCEPTION ON NUTRITION ENVIRONMENT IN NAYPYITAW (CASE STUDY ON POBBATHIRI TOWNSHIP)**” submitted as a partial fulfillment of the requirement for the Degree of Master of Public Administration (MPA) has been accepted by the Board of Examiners.

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ABSTRACT

This study explores the perception of households regarding the nutrition environment in Pobbathiri Township, Naypyitaw. In recent years, unhealthy eating habits have increased due to limited awareness, low food diversity, and economic challenges. The objective of the study is to assess how community, consumer, home, and psychosocial nutrition environments influence household food choices. As part of the study's quantitative, descriptive research technique, 272 randomly selected residences from five wards in Pobbathiri Township are surveyed in March 2025. The results show that most respondents have basic knowledge about nutrition but lack deeper understanding of food environments. Healthy foods such as fruits, vegetables, and dairy products are seen as expensive or less available. Many eating behaviors are shaped by family habits, media, and affordability. The study highlights the need for public education, better access to nutritious food, and government action to promote healthy diets and support sustainable food systems in households of Myanmar.

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TABLE OF CONTENTS

	Page
ABSTRACT	i
ACKNOWLEDGEMENTS	ii
TABLE OF CONTENTS	iii
LIST OF TABLES	v
LIST OF ABBREVIATIONS	vi
CHAPTER I INTRODUCTION	
1.1 Rationale of the Study	2
1.2 Objective of the Study	3
1.3 Method of Study	3
1.4 Scope and Limitations of the Study	4
1.5 Organization of the Study	4
CHAPTER II LITERATURE REVIEW	
2.1 Concept of Nutrition Environment	5
2.2 Healthy Eating Initiatives in Nutrition Environments	8
2.3 Eating Behavior and Nutrition Environment	12
2.4 Household and Nutrition Environment	15
2.5 Review on Previous Studies	17
CHAPTER III NUTRITION ENVIRONMENT IN MYANMAR	
3.1 Role of Nutrition Food in Myanmar	20
3.2 Food and Nutrition Policy in Myanmar	29
3.3 Nutrition Environment in Naypyitaw	30
CHAPTER IV SURVEY ANALYSIS OF HOUSEHOLD PERCEPTION	
4.1 Survey Profile	32
4.2 Survey Design	33
4.3 Survey Result	34

CHAPTER V CONCLUSION

5.1 Findings and Discussion	45
5.2 Suggestions and Recommendations	47

REFERENCES

APPENDIX

LIST OF TABLES

Table No.	Title	Page
3.1	Consumption of Macronutrients for a Person per Day	25
3.2	Food Availability / Supply (person/day) in Dietary Energy and Macronutrients (2018-2022)	27
3.3	Per Capita Food Availability / Supply (person/day) in Dietary Energy and Macronutrients of Food Commodities	28
4.1	Data Collection List from Pobbathiri Township	33
4.2	Demographic Characteristics of Respondents	34
4.3	Household Perception on Health Eating Initiatives	37
4.4	Measuring Household Perception of Nutrition Environment's for Store	38
4.5	Measuring Household Perception of Nutrition Environment's for Restaurants	39
4.6	Measuring Household Perception of Nutrition Environment's for Home Food Environment	40
4.7	Household Perception on Eating Behavior in Nutrition Environment	41
4.8	Household Perception on Nutrition Environment	43

LIST OF ABBREVIATIONS

BMI	Body Mass Index
DEC	Dietary Energy Consumption
DER	Dietary Energy Requirements
EB	Eating habits and behaviors
ED	Energy Dense
FAO	Food and Agriculture Organization
GAD	General Administration Department
GDP	Gross Domestic Product
GHG	Green House Gas
HAZ	Height for Age
HFE	Home Food Environment
IHLCA	Integrated Household Living Conditions Assessment
INGO/ NGO	International Non-Governmental Organization
IYCF	Infant and Young Child Feeding
LA	Latin America
MMK	Myanmar Kyats
MNAPFNS	Myanmar National Action Plan for Food and Nutrition Security
MS NPAN	Multi – Sectoral National Plan of Action for Nutrition
MYCN	Mother, Infant and Young Child Nutrition
NEMS-P	Nutrition Environment Measures Survey – Perceived
NEMS-S	Nutrition Environment Measures Survey – Store
PAL	Physical Activity Level
SDGs	Sustainable Development Goals
SMEs	Small and Medium-sized Enterprises
SUN	Scaling Up Nutrition
UAE	United Arab Emirates
UN	United Nations
UNDP	United Nations Development Programme
UNEP	United Nations Environment Programme
UNFCCC	United Nations Framework Convention on Climate Change
UNICEF	United Nations Children's Fund

USDGA	United State of Dietary Guidelines for Americans
WAZ	Weight for Age (WAZ)
WCFNS	Working Committee on Food and Nutrition Security
WFP	World Food Programme
WHO	World Health Organization
WHO	World Health Organization
ZHC	Zero Hunger Challenges

CHAPTER I

INTRODUCTION

To actively maintain and preserve all life, ecosystems must be nutritious, resilient, and healthy for human well-being (Klein et al., 2014). So, undernutrition constitutes a breach of the rights of children and adults to growth, survival, and the best possible level of good health (United Nations Children's Fund (UNICEF), 2015). "From conception to adulthood, adequate food and nutrition are essential for proper growth and physical development, in order to ensure optimal work capacity, adequacy of the immune systems, hence, sound health status," per the World Health Organization (WHO). Because better nutrition leads to stronger immune systems, fewer illnesses, and greater health and development for people of all ages, it is therefore a crucial component of human development and healthy living (Ruel et al., 2013). Triple planets crisis and disasters like floods and cyclones have had a devastating impact on Myanmar, leading to lethal disease outbreaks and poor health outcomes (WHO, 2024).

The nutrition environment helps promote good eating habits. On the other hand, nutritional environment could support health development and socioeconomic so that to prevent non-communicable diseases. The triple burden of malnutrition that Myanmar is currently dealing with includes undernutrition, micronutrient deficiencies, and an increase in obesity, particularly among urban populations. In addition, 42.1% of women of reproductive age have anemia, and 26.7% of children under five are stunted (Global Nutrition Report, 2023). Only public servants and some health-conscious middle-class and upper-middle-class households are involved in the study of Nutrition Environment. Therefore, Naypyitaw, where most households live, was selected as the survey site for this study. In Myanmar, the lack of health education and preparation for health among the majority of Burmese people is not related to wealth. Myanmar's capital, Naypyitaw, is residence to most of the citizens who work as government. To put it another way, the majority of people there are interested in health, and it is more educated than other government on the households'

community, educational background, and level of knowledge, the nutrition environment can change. In order to explore household perspectives of the Nutrition Environment, this study is based on Naypyitaw (Omotayo, 2016).

1.1 Rationale of the Study

Food consumption has a direct impact on the Sustainable Development Goals (SDGs) and the health of people and the planet. An improper diet is one of the top five health risk factors that contribute to severe obesity, and diets around the world are shifting toward higher consumption of meat, fat, and oils (Lim et al., 2012; Tilman and Clark, 2014). The field of environmental nutrition emerged from the realization that the intricate relationships between the environment and health within the food chain must be considered at the same time. In order to necessarily include a comprehensive understanding, environmental nutrition methodically examines the relationships within food systems, going beyond the existing discourse on sustainable diets. It is becoming more widely acknowledged that one of the biggest worldwide challenges is feeding a growing population while balancing what the Earth can produce and absorb. Because of growing air and water pollution, exposure to harmful chemicals, antibiotic-resistant bacteria, soil erosion, greenhouse gas emissions brought on by climate change, and biodiversity loss, the conventional food system poses a threat to human health and general well-being. Medical and public health experts generally agree that the typical "diet of affluence" of today leads to several expensive health issues, such as obesity, diabetes, cardiovascular disease, dementia and cognitive decline, other neurodegenerative disorders, and different types of cancer. Thus, environmental nutrition is a valuable instrument for evaluating the extensive effects of industrial agriculture on the environment, society, and human health.

Nutrition environment is one of the most effective health promotion initiatives, according to scientific research. Over the past few decades, traditional eating practices have gradually evolved. The prevalence of obesity and obesity has significantly increased because of sedentary lifestyles and changes in eating habits (J Aranceta, 2003). The psychological and social implications of diet and physical activity behaviors at the individual level provide no explanation for the high incidence of obesity. Furthermore, the simple recommendation to "eat less and move more" ignores the intricate ways that social and constructed surroundings affect people's

access to reasonably priced, nutritious food and communities that encourage physical activity. While the amount of study on active living environments has increased dramatically in recent years, the same cannot be said for our knowledge of surroundings that promote healthy diet.

Numerous studies examined households as significant providers of nutritious meals. Fruit and vegetable consumption, for instance, is influenced by household meal choices and the availability of these foods. Some of the racial/ethnic and socioeconomic differences in nutrition and health outcomes may be explained by the nutrition environment. For example, minority communities have a higher concentration of fast-food restaurants than grocery stores. Certain nutritious foods, like fruits, vegetables, and low-fat dairy products, are either harder to get or of worse quality in low-income and minority communities. Adults' consumption of fruits and vegetables rose with each new supermarket in a census tract, according to a recent, significant publication. Globally, the nutrition environment has been evolving quickly. Over the past 20 years, eating out has become more and more popular, which has increased the percentage of nutrients consumed from food sources that are not at home. Foods made away from home tend to be lower in fiber and higher in fat and saturated fat. The obesity problem seems to be exacerbated by growing portion sizes. The nutrition environment is influenced by price and availability, two factors that are not always conducive to good health. After taste, cost has been ranked as the second most significant consideration when choosing a meal. The price of fruits, vegetables, meat, and pork is constantly influenced by government rules. Purchases of vending machines have also been linked to costs (Glanz, Sallis , Saelens , & Frank, 2005).

1.2 Objective of the Study

The objective of the study is to examine how households in Naypyitaw perceive the nutrition environment.

1.3 Method of Study

The descriptive method and quantitative method are used to analyze the survey research. This study focuses on identifying households' perception on nutrition environment, Naypyitaw. There are 276,423 households in Naypyitaw City among them some households randomly selected from Pobbathiri Township, 272 households out of 33,827 households of 19 wards for the survey according to random sampling

method. The structured questionnaires are distributed to the households from five wards of Pobbathiri Township, and they are selected randomly based on the total number of households in each ward. The names of the wards are WunnaDipa (64 households), ThukhaDipa (27 households), SinPhyuShin (30 households), NaWaDay (68 households), and TaPinShweHtee (83 households), selected accordingly. The secondary data was collected from reports and records of the related departments, related websites of health and food administration, other relevant textbooks and previous research papers. Data collection period was in March 2025.

1.4 Scope and Limitations of the Study

This study only focuses on households' perception on nutrition environment, Naypyitaw City and only in urban areas of Pobbathiri Township. The perception of households in nutrition environment by a sample of households from total 19 wards of Pobbathiri Township in Naypyitaw is the main subject of this study. This study examines only at a selected number of households that consumed nutrition foods on a weekly basis between 2018 to 2022. Primary data are only collected from 272 households out of 33,827 households from 19 wards of Pobbathiri Township in Naypyitaw.

1.5 Organization of the Study

Five chapters make up this thesis. Chapter One introduces the paper's rationale, aims, techniques, scope, and limitations. Chapter Two covers nutritional environment theory, purchasing behavior, eating behavior, and nutrition environment type. Profile of survey area and the perception of nutrition environment by households are discussed in Chapter Three. The analysis and survey results of perception household's nutrition environment in Naypyitaw urban areas are presented in Chapter Four. Chapter Five is concluded with the whole findings, analysis and suggestions.

CHAPTER II

LITERATURE REVIEW

The physical, social, and economic elements affecting food access and dietary decisions in a certain geographic area are referred to as the Nutrition Environment. This includes having resources that support healthy eating habits in addition to having nutrient-dense foods that are accessible, reasonably priced, and promoted. Given its long-term sustainability and influence on population well-being, an understanding of this environment is essential for public health initiatives. It demands a systematic approach to nutritional development because it acknowledges that broader contextual factors impact individual food patterns (<https://lifestyle.sustainability-directory.com>, 2024).

Nutrition is essential for growth and wellness. Improved nutrition promotes longevity, stronger immune systems, safer pregnancies and deliveries, lower risk of non-communicable illnesses (including hypertension, diabetes, and cardiovascular disease), and improved health for mothers, infants, and children. Healthy kids learn better. Well-fed people are more productive and can break hunger and poverty cycles. All kinds of malnutrition are dangerous. Undernutrition and obesity are global issues, especially in low- and middle-income countries. Undernutrition (wasting or stunting), vitamin and mineral deficiency, weight, obesity, and diet-related noncommunicable illnesses are all types of malnutrition. Malnutrition has long-term repercussions on people, their families, communities, and nations in development, economy, culture, and medicine (WHO, 2018).

2.1 Concept of Nutrition Environment

The body uses nutrients to run its processes and provide energy. Typically, they come into the following two main categories:

- (1) **Macronutrients:** mainly give the body energy in the form of fat, protein, or carbohydrates. The body uses various macronutrients for

various energy pathways and purposes. Calories are a unit of measurement for the energy contained in food's macronutrients.

- (2) **Micronutrients:** referred to as vitamins and minerals, are needed in trace amounts by the organism. They protect and promote a number of biological processes, including the conversion of macronutrients into energy. Micronutrients are essential for health, yet they don't provide energy (my.clevelandclinic.org, 2025).

Nutrition environment may explain racial/ethnic and socioeconomic variations in nutrition and health consequences. For instance, minority areas have more fast-food restaurants than grocers. Fruits and vegetables and low-fat dairy products are difficult to locate or of worse quality in low-income and minority neighborhoods. The family nutrition environment is changing dramatically. The rise in restaurant dining over the past two decades has increased the nutrients found there. Food security and hunger are global challenges despite being a human right (Hilmers & Hilmers, 2012).

Triple planetary crisis Pollution, biodiversity loss, and climate change worsen the situation and create a loop that hurts the most vulnerable. Pollution, biodiversity loss, and climate change make it harder to feed the world's growing population with healthy food. Reduce pollution, preserve biodiversity and ecosystems, and mitigate climate change to create resilient food systems that offer healthy food. Population growth, urbanization, economic expansion, and food system power inequality are driving diets high in ultra-processed foods, fat, salt, and refined carbs. Low nutritional quality and big environmental footprints make these diets worse (Nguyen & Grgote, 2023). Billion people suffer from malnutrition, hunger, and food insecurity. The triple planetary catastrophe, biodiversity loss, and climate change are worsening, harming human and environmental health (UNFCCC, 2022). These topics revolve around food consumption, production, processing, distribution, marketing, access, and consumption, and power imbalances in food systems. Changing food production and consumption can tackle nutritional and environmental challenges (Martin & Eldridge, 2024).

Unsustainable food systems and diets cause hunger, food insecurity, and all forms of malnutrition, contributing to the triple global calamity. Three worldwide challenges make it harder to sustainably produce and consume enough healthy, safe, and convenient food for global health and well-being today and in the future. In

high-income nations with ample calories and nutrients and above-recommended intakes, lowering meat, refined carbohydrates, and highly processed food reduces chronic illness and environmental consequences. The Paris Agreement recognizes that industrialized nations should lead the fight against climate change and that various nations have varying capacity to handle environmental concerns depending on their needs and resources (Jimenez, 2013).

Co-benefits for nutritional environment can be achieved through the following policy measures for national or subnational governments:

- (1) **In production systems:** creating and advancing agricultural technologies and practices that lessen adverse environmental effects, with an emphasis on producing a variety of nutrient-dense foods; reintroducing or introducing indigenous species that are underutilized, neglected, and locally appropriate; creating and implementing biofortified crops that are climate change resilient; and fostering the growth of urban and peri-urban agriculture. Preserving, sustainable usage, managing, and restoring biological variety across agricultural sectors may diversify production systems and enhance the number of species and products we depend on (Bilali & Strassner, 2021).
- (2) **In terms of food distribution and storage:** promoting effective food distribution to improve everyone's access to healthy, sustainable foods, especially the most vulnerable, while minimizing environmental impacts; developing technologies to improve the transportation and storage of perishable foods; and helping plan and develop urban and peri-urban food systems (Bilali & Strassner, 2021).
- (3) **In the areas of food processing and packaging:** developing technology and techniques to improve food processing quality and efficiency and helping small and medium-sized enterprises make healthy processed foods; inventing and implementing food packaging innovations that extend perishable food shelf life and reduce pollution and biodiversity loss (Bilali & Strassner, 2021).
- (4) **In retail food and markets:** Promoting efficient and effective trade, particularly local and regional trade, to help vulnerable areas access safe, nourishing, and sustainable food as environmental pressures rise; and changing agricultural subsidies to encourage the production of

nutrient-dense, environmentally friendly foods. (Bilali & Strassner, 2021).

- (5) **Food environments and consumer behavior:** establishing and revising food-based dietary recommendations that balance nutrition and sustainability; regulating food labels for nutritional and environmental factors; prohibiting abusive marketing, especially to vulnerable groups; changing food procurement schemes to promote environmental conservation and healthy nutrition; supporting the use of cleaner fuels for household food preparation and storage; and creating consumer behavior programs to reduce food waste (Bilali & Strassner, 2021).
- (6) **In food loss and waste:** To decrease food loss and waste, governments, farmers, and businesses should collaborate on creative projects and collaborations (Bilali & Strassner, 2021).
- (7) **Investment, cooperation, and research in food systems:** Producing data to evaluate nutritional and environmental impacts and solutions for specific populations, contexts, and locations; funding the assessment of private-sector innovations that could reduce food's nutritional and environmental impacts; creating investment frameworks to help businesses evaluate their decisions and practices; and funding and advising SMEs to innovate at all food systems stages (Bilali & Strassner, 2021).

Development and implementation of environmental and nutritional policies will require collaborative governance. Lawmakers, food-related government departments, the business sector, civil society, informal actors, UN agencies, and other development and financial partners should all try. These partners must compromise, balance environmental and nutritional trade-offs, and construct synergistic policy packages. Multisectoral collaboration is rare in many nations, yet there are successful national and subnational efforts. This article examines Ethiopia, India, and London cooperative policymaking (Bilali & Strassner, 2021).

2.2 Healthy Eating Initiatives in Nutrition Environments

Fruits, vegetables, and animal-based foods are more sensitive to market and consumer waste and value chain food loss (Fabi et al., 2021; Scherhauser et al., 2018).

Lost or wasted food is inedible and has a major environmental impact that may be avoided (Scherhauser et al., 2018). Changing from sustainable food systems to healthy diets demands reducing food waste. Food insecurity may be lessened, and land use and greenhouse gas emissions related to food systems may be decreased, by reducing food loss and waste (Searchinger et al., 2019) (UN Nutrition, 2023).

2.2.1 Measures of Nutrition Environment

The most common measure is short and narrow, and there are few published food environment perception measures. Current evaluations have not been compared to neighborhood differences, health behaviors (fruit and vegetable consumption), health outcomes (BMI), or objective nutrition environment measurements, save for one research that employed a three-item perceived food environment measure. Family eating environment has also been studied in relation to health practices and consequences, particularly in children. A reliable measure that assesses key food setup factors is needed. Research on the establishment of the Perceived Nutrition Environment Measures Survey (NEMS-P). Comparing views in low- and high-SES areas assessed the survey's ability to identify nutrition settings, and empirical methods examined test-retest and internal consistency reliability (Green & Glanz, 2015).

The Nutrition Environment Metrics Study set observational nutrition environment metrics at retail food outlets to assess healthy options, pricing, and quality. Independent raters examined inter-rater and test-retest reliability twice in grocery and convenience stores in four Atlanta metropolitan neighborhoods with various incomes and community designs after pretesting. The years 2004 and 2005 saw the collection and analysis of data. It is thought that people's access to reasonably priced, wholesome food is significantly influenced by their social and physical surroundings. The lack of accurate and meaningful measurements of these surroundings limits our understanding of appropriate nutrition conditions during growth. There is a need for clear concepts and accurate, trustworthy measurements of nutrition settings in order to progress science and guide public health policy. Food choice can be influenced by both "community" and "consumer" nutrition contexts. Community nutrition includes food outlets including supermarkets' amount, kind, location, and accessibility. Consumer nutrition environments include the availability, pricing, and quality of healthful food alternatives at and near food retailers (Glanz, Sallis, Saelens, & Frank, 2007).

- (1) **Stores:** It is thought that people's access to reasonably priced, wholesome food is significantly influenced by their social and physical surroundings. The lack of accurate and meaningful measurements of these surroundings limits our understanding of appropriate nutrition conditions during growth. There is a need for clear concepts and accurate, trustworthy measurements of nutrition settings in order to progress science and guide public health policy. Food choice can be influenced by both "community" and "consumer" nutrition contexts. The quantity, kind, location, and accessibility of food outlets, such as supermarkets, make up the community nutrition environment. The availability, price, and quality of nutritious food options are all aspects of the consumer nutrition environment that consumers experience at and around the locations where they purchase food. Healthy eating habits among locals seem to be significantly influenced by the existence of food stores and the availability of nutritious goods in those establishments. It has been observed that there are racial and cultural differences in access to supermarkets, which usually offer a decent supply of nutritious goods. When there were more supermarkets in their census tracts, Black Americans consumed significantly more fruits and vegetables, and being close to a supermarket was positively correlated with pregnant women's diet quality and a reduced prevalence of obesity and overweight. Compared to those who bought at independent grocers, low-income women who shopped in supermarkets and specialized shops consumed more fruits and vegetables. Therefore, the atmosphere around communal nutrition seems to influence personal eating choices and could have an impact on long-term health (Glanz, Sallis , Saelens , & Frank , 2007).
- (2) **Restaurants:** It has been determined that fast food establishments may be a factor in the increased prevalence of obesity. The higher prevalence of obesity among economically disadvantaged groups may be partially explained by the abundance of fast-food outlets in less affluent districts and the lack of healthy options available within these establishments. However, there is currently little evidence linking a person's weight status to the number of restaurants in their

neighborhood. The application of restaurant proximity as a stand-in for people's eating environments has significant limitations. This presupposes that the dietary quality, food marketing environment, and pricing of all restaurants, or at most all restaurants of the same sort, are the same. Customers' eating habits may be influenced by the atmosphere they experience in restaurants, which varies significantly from one restaurant to another. This is known as the consumer nutrition environment. One significant drawback of using restaurant proximity as a stand-in for people's eating environments is its limitations. This is predicated on the idea that all restaurants, or at most all restaurants of the same kind, share the same standards for food quality, food promotion, and cost. Most likely, the environment that customers experience in restaurants known as the consumer nutrition environment varies significantly from one restaurant to another and may be affecting the eating habits of its clientele (Glanz, Sallis, Saelens, & Frank, 2007).

- (3) **Home Food Environment:** Food buying behaviors like grocery shopping and eating out affect home food quality. The food environment affects dietary behavior, so grocery shopping habits have received more attention in literature. Several studies have linked grocery shopping frequency to fruit and vegetable eating. Many children's obesity studies focus on parental food-related habits, such as eating meals in the living/TV room, taking second helpings, eating while watching TV, eating fast food and full-service restaurant meals for family meals, and food preparation. These practices are rarely investigated as adults. Researchers created a home food model to study low-income overweight and obese women's fruit and vegetable consumption and energy from fat in a weight gain prevention intervention. This model divides the home food environment into grocery shopping, meal preparation, non-home food sources, household TV and eating, social support and modeling, and home food availability and cues (Kegler, Hermstad, & Haardörfer, 2021).

2.3 Eating Behavior in Nutrition Environment

Fat intake is high while fruits, vegetables, and calcium-rich meals are low. Skipping meals worries teens, especially girls. Understanding teenage eating behavior factors is necessary to establish effective nutrition treatments. a social cognition-ecological paradigm for understanding teenage eating behaviors and food choices. Teens' eating habits may be impacted by personal and environmental variables. Macrosystem or societal (e.g., mass media, marketing and advertising, social and cultural norms); social environmental or interpersonal (e.g., family and peers); physical environmental or community settings (e.g., schools, fast food outlets, convenience stores); and individual or intrapersonal influences (Story , NEUMARK-SZTAINER, & FRENCH, 2002).

- (1) **Home:** Adult obesity risk has been found to be strongly predicted by both early childhood obesity and a family history of obesity. The discovery that people's risk of becoming obese is increased by parental obesity, namely maternal obesity, raises the possibility that either shared genes, the environment, or perhaps a combination of the two may encourage children to overeat and gain excessive amounts of weight. By modeling their own eating habits, taste preferences, and food selections, parents not only provide food environments for their children's early food encounters, but they also have an impact on their eating habits. Determining the degree to which connections between eating features and excessive weight gain in households may be influenced by hereditary, environmental, or combined variables is crucial, as is identifying intermediary behavioral eating traits that encourage overeating and obesity. Behavioral genetic approaches can be used to assist divide genetic and environmental origins of variability in behavioral traits (Kral & Rauh, 2010). The separation of hereditary and environmental origins of behavioral trait variability can be assisted by behavioral genetic techniques. In addition to items measuring habits, self-efficacy, eating in front of a television, eating with parents, parenting styles, and the availability and accessibility of foods at home, the Food Frequency Questionnaire evaluates their consumption of fruit, vegetables, and energy-dense (ED) snacks. Eating ED snacks in front of the TV, while watching TV, and having them at home

substantially linked with ED snack intake. The importance of a healthy home environment for improving fruit and vegetable intake demonstrates that nibbling while TV viewing might be a great way to promote it (Pearson, Griffiths , & Biddle , 2017). It should come as no surprise that a variety of health promotion strategies are intended to encourage older people who live at home to eat healthily. Changes related to aging and eating habits in early life are important, even if appropriate nutrition and eating are important for older people. It should come as obvious that a variety of health promotion strategies are intended to encourage older people who live at home to eat healthily. Even though eating well and maintaining a nutritious diet are important for older people, changes brought about by aging and early eating habits may not be helpful in motivating older adults to eat in a way that satisfies their needs for protein or energy. Additionally, the majority of senior citizens believe that their diet is adequate and does not need to be altered. There is growing evidence that older people who live at home are at risk of malnutrition, even though many of them eat a diet that is nutritionally appropriate. In this study, "malnutrition" refers to inadequate nutritional intake to meet energy or protein needs as one age. The absence of systematic nutritional measures is one of the primary nutrition-related issues. In order to prevent malnutrition, systematic nutritional measures involve monitoring each person's nutritional requirements (Kvalsvik, Øgaard, & Jensen, 2021).

- (2) **Psychosocial perception:** According to ecological models, actions have an impact on a variety of levels, including environmental, policy, interpersonal, and intrapersonal factors. Therefore, the best explanation for physical activity behavior should come from a combination of environmental and psychosocial factors. Environmental research studies should concentrate on the environmental factors that may impact specific behavioral choices if they are to be useful in public health policy. Measuring the environment is crucial but so is understanding how an individual interacts with the environment. Therefore, in order to properly focus on interventions, a combination of studies on the psychosocial and environmental influences on these

health-related behaviors is required. While more cycling was linked to the lack of congested streets and the presence of green and recreational space, environmental studies have also shown beneficial correlations between walking and access to open space and good neighborhood walkability (Glanz, Sallis, Saelens, & Frank, 2007).

According to psychological influences, healthy eating was predicted by intentions, confidence, and perceived behavioral control. Healthy eating interventions should lower obstacles to healthy eating and promote feelings of confidence to consume a healthy diet since psychological elements including perceived behavioral control and self-efficacy are important. The grouping of people based on their eating habits. Some "types" of people reported eating fast food, prepared meals, or convenience meals more frequently, or they reported being less in control of their food desires and having higher degrees of disinhibition. Individuals who are prone to unhealthy eating habits are likely to be more effectively reached and engaged by intervention designs that employ multi-level strategies, as suggested by the Ecological Model of Behavior Change. These strategies combine psychological, social, and environmental factors (Hardcastle, Thøgersen-Ntoumani, & Chatzisarantis, 2015). The cooperation of environmental and psychological factors that influence eating in order to maximize the use of limited public health resources. This study looked at the dietary habits of a population sample of women with young children and the relative and synergistic relationships between a variety of food environment and psychological factors (Vogel, Abbott, & Ntani, 2019). Social norms are the things that the majority of people usually do or find acceptable. There have been hints that eating habits may be significantly influenced by perceived social norms. Other research, which have mostly recruited young female adults, have demonstrated how food intake—the quantity of food ingested in a single sitting can be influenced by perceived social norms related to very specific circumstances. To ascertain if social norms have a significant impact on eating behavior and/or may be utilized to encourage significant behavior change, it is now necessary to

investigate the impact that perceived social norms have on objective measurements of eating behavior using longitudinal methodologies (Robinson, 2015).

- (3) **Shopping behavior:** Individuals, families and communities' health is believed to be significantly influenced by the local food environment. Retail food outlets' closeness, variety, and products, as well as their positioning, pricing, and promotions, can all have an impact on dietary patterns and health-related food purchasing habits. More fast-food restaurants, fewer supermarkets, a smaller range of healthy options, and higher pricing are common in poorer communities and those with a higher percentage of the residents around the world. Numerous studies show that residents who live near fast-food restaurants or far from supermarkets have worse health outcomes, such as greater body mass index and lower rates of consumption of nutritious foods (Cannuscio , Tappe, & Hillier , 2013). According to certain research, there is no correlation between health outcomes and the vicinity of fast-food restaurants or supermarkets. Because individual nutrition behavior change strategies are costly and labor-intensive compared to the number of people they affect, environmental and policy approaches to nutrition are being promoted at a population level, and when combined with more conventional health interventions, they may help people make healthier food choices.

2.4 Household in Nutrition Environment

Poor nutrition is an indication of dietary imbalance and infectious illnesses, maternal education, household socioeconomic level (SES), home hygiene, and access to health care case management impact it. Only a small number of research have examined the impact of community-level infrastructure (such as health service delivery or hygiene) and the nutritional effect of household SES on malnutrition, but they have been acknowledged to vary by child age (Pongou, Ezzati , & Salomon , 2006). Children's risk for obesity may be influenced by behavioral and environmental factors in the family home, such as those pertaining to nutritious eating. Evidence points to links between family-level elements such parent education and role modeling, family food regulations, and family meal patterns and children's eating

habits in non-rural communities. Children's ability to eat healthily may also be influenced by other aspects of their home environment, such as the availability of nutritious meals, dining in front of a TV, and consuming fast food. Regrettably, there is little research on these and other factors that either prevent or contribute to obesity in rural family homes (Jackson, Smit, & Manore, 2015).

Household eating habits and behavior (EB) typically carry over into family members, and parents and other caregivers have a big influence on what children eat. One of the most important environments for the development of eating habits during adolescence is home. Teenagers are crucial for the development and maintenance of dietary and lifestyle behaviors. Several adult nutrition-related illnesses may be linked to household poor eating and lifestyle habits. Families worldwide report eating less fruits and vegetables, skipping meals, consuming fast food, and not dining together. Story and colleagues observed that food environment influences family eating behaviors. Healthy eating interventions should target home food settings. Home food environments (HFEs), a key source of calories, shape household eating behaviors. Research shows that children and teenagers' eating habits are impacted by the frequency and quality of family meals and the availability of healthy and harmful foods (Sohail, Hasan, & Saqan, 2024).

Markets' food environments limit and inform what customers can purchase. It includes the accessibility, cost, practicality, and appeal of different foods. The food environment always modifies the impact of money on dietary consumption. The goals of many agricultural initiatives are to increase incomes, expand access to food, and lower food costs. Food environment metrics that show how extra revenue is likely to be spent and how large-scale interventions affect food availability and costs should help us better understand their effects on nutrition (Herforth & Ahmed , 2015). The desire for a wider variety of foods increases rapidly as income levels grow (Behrman & Deolalikar, 1989). While expenditure on "other" foods (such prepared or convenience foods) and beverages rises, spending on staple cereals and fruits and vegetables tends to fall rapidly for every additional dollar spent on food (Muhammad, Seale , Meade, & Regmi, 2014). Similarly, the percentage of calories from plant-based proteins and starches decreases as national income grows, whereas the percentage of calories from animal fats and proteins and sweets rises (Drewnowski & Popkin, 1997).

2.5 Review on Previous Studies

According to Pongou, Ezzati, & Salomon (2006), one of the main causes of child mortality in poor nations, particularly in sub-Saharan Africa, is undernutrition. The study looks at the socioeconomic and environmental elements at the household and community levels that are linked to Cameroon's children's nutritional condition, as well as how their effects changed during the economic crisis of the 1990s. It was also considered how the home economic situation affects children's nutrition according to age. Weight-for-age (WAZ) and height-for-age (HAZ) z-scores were used to assess the nutritional health of the children. Data came from the 1991 and 1998 Demographic and Health Surveys. To evaluate the bivariate relationship between the explanatory factors and nutritional status, the study employed analysis of variance. The net effects of household and community characteristics were estimated using multivariate, multilevel theories. In Cameroon, community and household variables significantly affect children's health. Designing intervention programs tailored to a community's age can be made easier with an understanding of these relations.

According to Ravikumar, Spyreli, Woodside, McKinley, & Kelly (2022), households eating patterns are influenced by the food environment in and around their homes, with socioeconomic areas experiencing nutritional disadvantages. It is unclear how families view the food environment and how it affects their dietary choices. This brief examination collected qualitative data on how low-income parents view the food environment and how it affects their eating choices. After 2000, qualitative and mixed-methods peer-reviewed journal articles explored low-income parents' food environment perspectives and how they influenced food choices for families with children aged 2 to 17. This review used PsycINFO, Embase, and Scopus. Seven families, diet, attitudes, influences, environment, socioeconomic status, and research type themes were searched. Two reviewers analyzed 64 studies. They used thematic synthesis. This synthesis of qualitative data sheds light on how low-income parents view the variables affecting their children's dietary choices. The results have consequences for public health and the creation of practical plans to enhance the eating patterns of underprivileged youngsters. Policy solutions to low income, food access, and the high cost of nutritious foods are necessary to bring about long-lasting improvements in dietary habits for low-income families.

Yamaguchi, Praditsorn, Purnamasari, & Sranacharoenpong (2022), the evaluation of respondent-based metrics of local food environments (perceived food environments) are still lacking, nevertheless. This systematic review set out to assess the assessment instruments for perceived food environments by five food access aspects and to provide a general picture of how they relate to dietary practices among adults in middle- and high-income nations who are at least 18 years old. The perceived food environments were used most frequently in the following order: accessibility, acceptability, affordability, accommodation, and availability. There was a positive, if somewhat small, correlation found between eating habits and perceived food environments. Socioeconomic and latent background variables at the individual and community levels contribute to the complexity of the relationship between dietary patterns and perceived food environment. As a result, it is essential to examine a variety of factors, including the combination of food access dimensions of perceived food environments and the impact of both nutritious and harmful food on eating habits and food environments.

Chue Htet Hnin & Theingi Myint (2022) found that inter-household food preferences on certain foods are linked to eating habits, patterns, and food consumption systems. The study examines the intra-household food preferences of major food items among household members in the study region and the perceptions and food consumption habits of a selection of families. Age and gender affect eating choices, which affect health and well-being throughout life. Myanmar needs food preference research to promote health and nutrition.

The study evaluated how individuals in three Naypyitaw, Myanmar, townships perceive, practice, and contribute to their preferences for rice, meat, fish and shellfish, pulses, eggs, vegetables, and fruits. Galva'n & Herna'ndez-Cabrera (2023) studied Latin American parents, teachers, and experts' perceptions of food environments in schools and homes during Covid-19 via online cross-sectional research. Obesogenic eating settings are associated to Latin American (LA) youth obesity and overweight. Also consider the negative effects of the COVID-19 pandemic. This study compares how Los Angeles parents, educators, and experts see home and school food settings that support healthy students before and after the COVID-19 epidemic. The study found that parents were less likely than experts and teachers to detect important school food environment elements. Healthy eating settings that consider children's interpersonal mediators need interventions. Sohail & Hasan (2024) examined "The

Influence of the Home Food Environment on the Eating Behaviors, Family Meals, and Academic Achievement of UAE School Adolescents”. This study studied how home food environment affects UAE teenagers' eating habits, family dinners, and academic achievement. A UAE cross-sectional survey included 304 school-age teens. The questionnaire covered sociodemographics, eating habits, HFE (food availability and accessibility), physical activity, sleep, and academic achievement. Combining questionnaire items yielded an HFE score. These queries included weekly family meals, meal preparation, and the availability of good and poor food and snacks at home. These findings show how crucial a good HFE is in shaping teenagers' food preferences and healthy eating behaviors. They may be used to develop evidence-based, effective strategies to improve UAE teens' academic achievement and well-being.

According to Chan Myae Lwin (2024), this study looks into the variables that influence consumers' decisions of wholesome rice in Naypyitaw, Myanmar. The purpose of this study is to determine the variables influencing urban consumers' selection of wholesome rice products in Naypyitaw. It is anticipated that the findings would provide policy insights to improve Myanmar's dietary health and encourage the use of nutritious rice, which is an important objective for sustainable development. This study provides important insights into consumer behavior by examining the parameters related to urban consumers' intake of nutritious rice in Naypyitaw. Although there are many nutrient-dense rice options available, consumers' restricted consumption is partly caused by a noticeable lack of understanding. Consumer choices are significantly influenced by income and education, with individuals with higher incomes and levels of education being more likely to consume nutritious rice. Additionally, household dynamics, particularly the presence of vulnerable members, have an impact on consumption choices, suggesting that some shopping decisions are motivated by health concerns. Health-related behaviors are also very important; people are more likely to select nutrient-dense rice if they value physical activity, eat fruits, and pay attention to nutritional information.

CHAPTER III

NUTRITION ENVIRONMENT IN MYANMAR

The growing conflict was brought on by the COVID-19 pandemic in March 2020, which also caused social, economic, and political unpredictability. Basic social security networks have been badly damaged by a combination of economic shock, the health system's near-collapse, the COVID-19 pandemic's aftereffects, and widespread conflict. As a result, households are unable to obtain basic services like clean water and healthcare. Many children today lack access to safe, clean water, nutritious food, education, and constant care and protection (Global Nutrition Report, 2023). Myanmar is 'on course' to meet two Mother, Infant and Young Child Nutrition (MYCN) objectives. With 42.1% of women between 15 and 49 anemics, no progress has been achieved toward lowering anemia in reproductive-age women. Progress toward the low birth rate has been made with 12.3% of neonates underweight. With 51.2% of infants aged 0 to 5 months exclusively breastfed, Myanmar is "on course" to meet the exclusive breastfeeding target. Although there has been significant improvement in Myanmar's stunting rate, 26.7% of children under five are still affected, which is higher than the Asia-wide average of 21.8%. Although Myanmar has made some strides in meeting the wasting objective, the percentage of children under five who are still affected is 6.7%, which is less than the average for Asia (8.9%). Myanmar is 'on course' to keep the frequency of overweight children under five from rising, with a prevalence of 0.8% (Global Nutrition Report, 2023).

3.1 Role of Nutrition Food in Myanmar

Myanmar is a resource-rich nation with enough food available nationwide, but household food security is affected by unequal resource distribution and poor investment in important areas. Household food security is affected by unequal resource distribution and poor investment in critical areas, despite Myanmar's abundant natural resources and ample food supply nationwide. Although there has been some progress in recent years in advancing food and nutrition security, there is

still much to be achieved. The government of Myanmar has made ending hunger a top priority, as well as making sure that everyone in all States and Regions has access to enough wholesome food to maintain their health, support their jobs, and enable their children to reach their full potential in the areas of both cognitive and physical development.

- (1) **Food security:** occurs when everyone has physical and financial access to adequate healthy food that meets their dietary needs and preferences for an active and healthy life (World Food Summit, 1996). This commonly accepted definition of food security must contain the following.
- (2) **Food availability:** The availability of enough food that is of the right quality, either through imports (including food aid) or domestic production.
- (3) **Food accessibility:** Access to enough finances (entitlements) to buy nutritious foods. The legal, political, economic, and social institutions of their community define entitlements as any commodity bundles over which an individual might exert power, including traditional rights like access to common resources.
- (4) **Utilization:** Nutritional well-being requires an adequate diet, clean water, sanitation, and medical care to meet all physiological demands. This shows how important non-food inputs are to food security.
- (5) **Stability:** A population, home, or person must always have enough food to be food secure. They shouldn't risk losing food owing to seasonal food shortages or rapid shocks like economic or climatic disasters. Thus, food security stability includes availability and access.

Depending on their economic deployment activities, social networks, infrastructure development, perceptions of the states' and regions' progress, how the budget is distributed to support the activities, and other factors, food security in the various states and regions of the nation may differ from one another. One cannot assume that food is distributed equitably, even if there is an absolute amount of it to feed the entire population. Home food access must be assessed. Socioeconomic status determines whether households produce or buy food. Food costs and how they change with household income affect food access. Food and nutritional security need proper food utilization. This requires a biological approach that incorporates the

body's biophysical needs for food intake and absorption. Food usage is immediately affected by diet and sickness. These immediate factors depend on underlying ones. Dietary intake is food consumption. This requires food security and other household-level cultural and socioeconomic elements that impact care practices. Illness may impair nutrition absorption.

Healthcare access, hygienic habits, and the health environment all contribute. Food and nutrition security and excellent nutritional benefits are attained when everyone has access to and uses food effectively in a healthy context. This Strategic Review discusses these three food and nutrition security elements and their effects on nutrition. According to the World Food Program in Myanmar, several states and regions particularly the Magway Region, Northern Rakhine, Chin, Kachin, and Shan states face severe food insecurity. Acute malnutrition in children under five is present in over 9% of the population nationwide. The 2010 IHLCA Survey found that over 25% of Myanmar's population lives in poverty. Food poverty is higher in rural areas than in urban ones, even though agriculture provides most of the rural population's income. This is a result of inequalities in food availability and financial accessibility. Additionally, Myanmar is susceptible to tropical cyclones landslides, earthquakes, and droughts (WFP, 2017).

3.1.1 Myanmar National Action Plans

(i) Myanmar National Action Plan for Food and Nutrition Security (MNAPFNS) (2015)

A National Working Committee on Food and Nutrition Security helped the Myanmar government create the MNAPFNS in 2015. It was designed because improving Myanmar's food and nutrition is crucial to become a middle-income nation by 2025. MNAPFNS analyzes global, national, and local food and nutrition security issues. It also examines food and nutrition insecurity's multiple solutions, commitments, and efforts.

The MNAPFNS was established in response to the Five Pillars of the global Zero Hunger Challenge and the Scaling Up Nutrition (SUN) initiative. The Five Pillars include:

- (1) All year round, 100% equitable access to reasonably priced, wholesome food.
- (2) Reduction of stunting and all types of malnutrition.

- (3) Every food system is sustainable.
- (4) 100% growth in the income and productivity of small holders; and
- (5) Zero loss or waste of food

The SUN nation movement also strongly supports MNAPFNS Pillar 2, which seeks to minimize stunting and all other forms of undernutrition by incorporating nutrition-sensitive practices into all pillars. The Myanmar government and its partners planned to work through MNAPFNS through multi-sectoral and multi-stakeholder action to secure food and nutrition for all. MNAPFNS provides a guidance and action plan with a unified outcome framework that identifies the major objectives and priority interventions needed to alleviate food insecurity and undernutrition. This included reducing food loss and waste, increasing the number of paid agriculture workers, providing enough social safety nets, and transforming Myanmar's agriculture sector—crops, livestock, fisheries, and forestry—from subsistence to production and income for farmers.

The government and allies have developed malnutrition-fighting strategies and nutrition-sensitive agriculture. These include nutritional supplementation, integrated acute malnutrition management, IYCF assistance, improved health services, and good hygiene and sanitation. Interventions to encourage change toward important behaviors that lead to better nutrition and health, such as eating nutritious food and having an appropriate IYCF, were also to be given priority. These interventions will be supported by tactics and measures to improve the legal, regulatory, social protection, and enabling policy environment.

(ii) Draft framework for multi-sectoral national plan of action for nutrition (MS NPAN) (2018)

The Myanmar Multisectoral National Plan of Action on Nutrition aims to "reduce all forms of malnutrition in mothers, children, and adolescent girls". This should lead to healthier, more productive lives that support the nation's economic and social goals. The five-year, evidence-based Multisectoral National Plan of Action on Nutrition (MS-NPAN) will address Myanmar's high malnutrition rates and strengthen capacity and mechanisms to sustain improvements.

From 2018 until 2022. Myanmar's better nutrition supports its National Economic and Social Development Plan to become a peaceful, modern, and developed nation. Mothers can transmit malnutrition to their offspring, so sustaining

intergenerational cycles of poverty and ill health. According to estimates, child malnutrition may reduce GDP by as much as 11%. Maternal and child malnutrition raises health care expenses and compromises overall socioeconomic development by increasing the incidence and severity of sickness. Because of the complex and multiple nature of malnutrition, a multidisciplinary approach must be used to address the issue. The MS-NPAN's strategy will aim to provide a prioritized package of critical nutrition services and interventions while fortifying Myanmar's systems for a multi-sectoral response to malnutrition. A nation's entire economic and social goals can be directly affected by investments in nutrition. By enhancing cognitive growth, academic achievement, and productivity, achieving optimal nutrition benefits human development at every stage of life (UNDP, 2023).

3.1.2 Nutrition Environment Practice in Myanmar

In Myanmar, food waste plays a significant role in figuring out food supply. Food waste and losses happen at different points along the value chain. Farmers, processors, village traders, wholesalers, and retailers are all accountable. Lack of cold storage facilities put food, particularly perishable food, at risk of spoiling farmers and everyone involved in the food supply chain. In Myanmar, the relationship between food affordability and availability is currently impacted by both market instability and loss of livelihoods. In comparison to the greater input expenses, they have had to pay, farmers obtain low farm gate pricing. Due to their limited purchasing power, many consumers in both rural and urban areas are unable to afford the food they buy at the market.

The US Dietary Guidelines for the Americas prescribe a person's daily intake of macronutrients by age and gender, as shown in Table (3.1). Since there is not a specific publication for Myanmar, this is the closest thing that those who study healthy eating use, even though it may differ slightly depending on the nation, culture, and region.

Table (3.1) Consumption of Macronutrients for a Person per Day

No.	Age Group (Year)	Gender	Calories intake per day (kcal/day)	Macronutrients per day		
				Carbohydrates (%)	Protein (%)	Fats (%)
1.	1~3	Female	1000	45~65	10~30	20~35
		Male	1000	45~65	10~30	20~35
2.	4~8	Female	1200	45~65	10~30	20~35
		Male	1400 ~ 1600	45~65	10~30	20~35
3.	9~13	Female	1600	45~65	10~30	20~35
		Male	1800	45~65	10~30	20~35
4.	14~18	Female	1800	45~65	10~30	20~35
		Male	2200~3200	45~65	10~30	20~35
5.	19~30	Female	2000	45~65	10~35	20~35
		Male	2400~3000	45~65	10~35	20~35
6.	31~50	Female	1800	45~65	10~35	20~35
		Male	2200	45~65	10~35	20~35
7.	51 and above	Female	1600	45~65	10~35	20~35
		Male	2000	45~65	10~35	20~35

Source: USDGA (2019)

According to a recent study, "women often reported either reducing or adapting their food consumption (i.e., buying less expensive brands or products, or eating less of expensive foods like meat)." Research on food preferences is still necessary in Myanmar in order to improve health and nutrition. Household food preferences on specific food items are directly correlated with eating habits, eating patterns, and household food consumption systems. Individual food choices, which have a substantial impact on health and welfare at various periods of life, are influenced by age and gender. Research on food preferences is still necessary in Myanmar to improve health and nutrition. The study was copied with the findings of the current household perception on nutrition environment preferences to the main food items (rice, meat, fish & seafood, pulses, eggs, vegetables and fruits) in Naypyitaw, Myanmar.

The first priority in addressing food insecurity is to prioritize access or entitlement to food. There are four different kinds of food entitlements, or strategies to guarantee food access. These include

- (1) Producing food through cultivation
- (2) Trading through purchases
- (3) Working to generate income for food purchases
- (4) Receiving food transfers, such as from international organizations or citizens.

The SDGs' guarantee to eradicate all forms of hunger and malnutrition by 2030 made Myanmar realize how important food and nutrition security is. Most of the nation's present food system practices, it acknowledges, are still in the early stages of accomplishing this objective. In many respects, Myanmar's food and nutrition security situation is inconsistent. Even though the government of Myanmar acknowledges the importance of the agriculture sector to the economy, the sector continues to face difficulties with low productivity, asset inequality, high price volatility, low investment, and inadequate research, extension, and financial services. These issues ultimately impact on the public's access to wholesome food. Relative food costs are a significant effect in household dietary choices, particularly for lower-income households, even though other factors like food preferences and nutritional awareness also play a part. Due to the cheap cost of more nutrient-dense foods, most Myanmar households consume excessive quantities of rice and relatively few other staple foods. Increasing the availability of nutritious foods, bolstering agri-businesses and agri-food sectors, enhancing social protection measures, and expanding nutrition and malnutrition awareness are some of the strategies being investigated to solve this situation.

Due to its expanding population, depleting natural resources, high rates of food loss and waste, and susceptibility to climate change, Myanmar has been dealing with both unhealthy and unsustainable food consumption trends. Action track 2 on changing sustainable and healthful consumption patterns has thus been given top priority in Myanmar in order to meet the Sustainable Development Goals (SDGs) of the 2030 Agenda. The triple burden of malnutrition in Myanmar under-five stunting, micronutrient deficiencies, and obesity is being exacerbated by poor diet quality, with severe immediate and long-term human and economic repercussions. The creation of a food system framework, the inclusion of nutrition instruction in the National

instruction Strategic Plan (2016–2021), and city-level food strategies to establish an enabling food environment were the suggested remedies that were debated and determined (Ministry of Agriculture, Livestock and Irrigation, 2021).

A thorough overview of Myanmar's food supply trends for the current year is included in Table (3.2), which lists the key commodities, their sources of supply, and how they are used for each food item. Next, the corresponding quantity is divided by the relevant population figures for 2018 to 2022 to determine the per capita supply of each such food item available for human consumption. Per capita food supply data are shown in terms of quantity as well as calorie value, protein content, and fat content (by applying the proper food composition parameters for all primary and derived processed products).

Table (3.2) Food Availability / Supply (person/day) in Dietary Energy and Macronutrients (2018-2022)

Dietary Energy and Macro-nutrients (per person/ day)	2018	2019	2020	2021	2022
Dietary energy supply (kcal)	2,848	2,785	2,805	2,759	2,815
Proteins (gram)	105	100	107	110	110
Fats (gram)	61	72	68	72	75

Source: (CSO data, 2024)

Table (3.3) Per Capita Food Availability / Supply (person/day) in Dietary Energy and Macronutrients of Food Commodities (2018-2022)

Products	PER CAPITA SUPPLY (Kg/person/day)														
	2018			2019			2020			2021			2022		
	Calo-ries	Pro-teins	Fats	Calo-ries	Pro-teins	Fats	Calo-ries	Pro-teins	Fats	Calo-ries	Pro-teins	Fats	Calo-ries	Pro-teins	Fats
Cereals (excl. beer)	1334	25	3	1401	26	6	1384	26	6	1348	25	6	1392	25	6
Starchy roots	26	0	0	27	1	0	27	0	0	22	0	0	21	0	0
Sugar crops	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sugur & Sweeteners	183	0	0	1	0	0	1	0	0	1	0	0	1	0	0
Pulses	351	20	2	234	13	2	304	18	2	368	22	3	344	20	3
Treenuts	32	1	1	32	1	1	32	1	1	33	1	1	27	1	1
Oilcrops	69	2	6	62	2	6	56	2	5	63	2	5	58	2	5
Vegetable oils	109	0	12	144	0	16	100	0	12	138	0	16	144	0	16
Vegetables	54	3	0	55	3	0	44	2	0	50	3	0	57	3	0
Fruits	72	1	0	187	2	2	187	2	2	56	1	0	63	1	0
Stimulants	3	0	0	2	0	0	2	0	0	2	0	0	2	0	0
Spices	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0
Alcoholic beverages	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Meat	364	24	27	395	24	29	413	27	30	428	28	31	460	30	34
Offais	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Animal fats	4	0	0	2	0	0	2	0	0	2	0	0	2	0	0
Milk (excluding butter)	38	2	2	43	2	2	37	2	2	36	2	2	36	2	2
Eggs	7	1	1	9	1	1	10	1	1	10	1	1	12	1	1
Fish & Sea food	198	26	7	186	25	7	202	26	7	198	25	7	192	25	7
Miscellaneous	3	0	0	4	0	0	4	0	0	4	0	0	4	0	0

Source: (CSO data, 2024)

The Myanmar Agriculture Statistics (2014-2015 to 2021-2022) supply/usage account for each commodity was weighted, and Table (3.3) shows seed rates, waste rates, predicted stock changes, and categories of utilization (Seed, Feed, Food, Processing, and other usage). The food component of the commodity is the total amount available for human consumption throughout the year and is typically used as a balancing item. MM FBS aggregates the food component of all available commodities, including fishery products, to offer estimates of overall food availability in addition to commodity-by-commodity statistics. The daily nutritional energy, protein, and fat supply per person are calculated and expressed using these numbers as well as the population estimates that are currently available. Only primary goods are included in the FBS production data; all other elements, including processed products derived from them, are included in the data and are expressed in primary commodity equivalent.

3.2 Food and Nutrition Policy in Myanmar

Similar to the national poverty incidence, Myanmar's national average incidence of food poverty (10%) obscures significant regional and state-specific variation. Less than half of the country's food poverty is experienced by eleven states and regions. Eleven states and areas have a food poverty incidence of less than half of the national average, while Chin State has a poverty incidence of 2.5 times the average, or 25%. Because of the rice industry's vital role in ensuring food security as well as its social and political significance in Myanmar, successive administrations have created programs to assist it throughout the nation's history. The nation allowed economic and democratic transformation in 2011. The previous administration's development goals included increasing income to assist agricultural expansion, the economy, and rural poverty. The new democratic government's agricultural vision is based on the sustainable development goals of an inclusive, sustainable, and increasingly productive and resilient agriculture sector that provides safe and nutritious food for all, rising rural incomes, especially smallholder farmers and landless people, and modern, innovative domestic and export-oriented agribusiness. About 65% of Myanmar family's farm.

Daily work or agricultural commodity production and sales are rural families' main sources of income countrywide (Thanda Kyi, 2018). These resources are used for various livelihood strategies by households. These activities can be categorized as

agricultural, wage job outside the home, or non-agricultural own business. Some provide food, others income. In addition, homes may get food or cash from remittances or gifts from community members, the community, or government actions. Depending on family resources, perceptions of the magnitude and variety of returns to each activity, the time period over which those returns are obtained, and the correlation of returns across activities impact activity choice. The household may plant a combination of crops with different climate shock and return susceptibilities to earn revenue. Food security, hunger, and nutrition are not predictable by these allocations. Random incidents or “shocks” do happen. distinct environmental, economic, governance, social, and legal conditions will cause distinct shocks. These factors impact asset stock, returns, and the link between income and well-being. Second, household income goes to food security, nutrition, other products, and savings. These choices represent household preferences (either collectively or through negotiation), all items pricing, and their settings.

Home food consumption (called food access in most of the food security literature), health care commodities like medications, and health environment goods like housing, sanitation, and water influence food security. These three goods, along with knowledge and practice of good nutritional and health practices (called “care behaviors”) and the public health environment (such as potable water), affect illness and food intake, which affects nutritional status or food utilization. Individual intakes vary based on age, sex, household choices, norms, and individual needs.

3.3 Nutrition Environment in Naypyitaw

Measurements might include food security, hunger, family food acquisition, food intake, and nutritional status. Individual studies assess several of them, but global data only measures hunger and nutritional status. Unknown numbers of individuals are food insecure. No direct estimations are based on measured intakes and minimal dietary needs. Instead, the UN Food and Agriculture Organization provides the most generally acknowledged hunger figures. FAO creates an indirect measure: A country's population with a Dietary Energy Consumption (DEC) below its Dietary Energy Requirements (DER) is considered undernourished by FAO (Cafiero and Gennari, 2011). Disaggregated country-level census data on population size by age and sex is used to calculate DER. The disaggregated statistics are

essential because basal metabolic rates, which make up a substantial portion of resting energy needs, vary by age and sex.

This was then adjusted for a minimum Physical Activity Level (PAL) “compatible with a healthy life” (Cafiero and Gennari, 2011) and the assumption that a specific number of women will be pregnant each year (FAO, 2008). Combine two pieces of information for DEC. FAO updates its food balance sheet with estimates of mean per capita dietary energy supply (production + stockpiles - post-harvest losses + commercial imports + food aid - exports). Calculate undernutrition using a three-year average of these values. This supply is then distributed. The distribution is frequently based on a household budget survey that estimates household calorie intake. Building country-level DERs is pretty easy, other than the dependability of census data. Other components are more contentious. Since dietary energy supply is not directly monitored, mistakes in its components, such as feed and stock estimations, which are notoriously difficult to quantify, affect it (Jacobs and Sumner, 2002). Creating an assumed calorie distribution is considerably more worrying. Take the distribution from a “recent National Household Budget Survey conducted in the hypothetical country” (FAO, 2008). Average DEC for the poorest decile is 1554 kcal/person/day. The second-highest decile is 3093 and the richest is 3373. Both are bad. The DEC value for the lowest decile is approximately comparable to the diet given to volunteers during the Minnesota Starvation Experiment, which would have likely killed the individuals after 24 weeks (Keys et al., 1950). The increasing DEC levels contradict micro-econometric data from Hoddinott, Skoufias, and Washburn (2000), which indicates that caloric-income elasticities are nearly negative in rich families. Another example is FAO's 2010 State of Food Insecurity in the World technical appendix. This reveals that upgrading India's distributional statistics decreased hunger by 31 million in 2005-07 and 57 million in 2000-02.

CHAPTER IV

SURVEY ANALYSIS OF HOUSEHOLD PERCEPTION

This chapter analyzes survey findings on household perceptions of the nutrition environment in Naypyitaw. It presents demographic, socio-economic, and behavioral data, highlighting key trends in healthy eating attitudes and practices. The results provide insights into how households engage with nutrition in daily life.

4.1 Survey Profile

This study examines the perception of households on nutrition environments in Naypyitaw city. According to the Myanmar Census Report (2024) Naypyitaw is a Union Territory of Myanmar, and there are four districts in Naypyitaw, like Zayarthiri, Pyinmana, Lewe, and Ottara. Under these districts, there are eight townships, such as Zeyarthiri, Pobbathiri, Zabuthiri, Pyinmana, Dekkhinathiri, Lewe, Tatkon, and Ottarathiri. This study focuses on 5 wards in Pobbathiri Township out of 19 wards. Naypyitaw Union Territory, 35 people live in GAD-designated urban areas and 65 people live in rural regions for every 100 people. Thirty-one percent of the Union's population lives in urban regions, while sixty-nine percent reside in rural areas. Naypyitaw is second percentage of people living in urban areas (Myanmar Census Report, 2024).

Pobbathiri Township is in the southern part of Naypyitaw and the survey data was collected from 272 households in five wards of Pobbathiri Township, using a simple random sampling method. These five wards are WunnaDipa, ThukhaDipa, SinPhyuShin, NaWaDay and TaPinShweHtee. Mostly government servants residing in Pobbathiri Township. Generally, the government servants have knowledge and intention with healthy food and eating habits with nutrition environment. This paper focused on the government servants and the area where most government servants are situated like Pobbathiri Township. The survey research is analyzed using both descriptive and quantitative methods. This data is collected from Pobbathiri Township as below mentioned list.

Table (4.1) Data Collection List from Pobbathiri Township

No.	Name of Ward	No. of Respondents	Percentage
1.	WunnaDipa	64	24%
2.	ThuKhaDiPa	27	10%
3.	SinPhyuShin	30	11%
4.	NaWaDay	68	25%
5.	TaPinShweHtee	83	30 %
	Total	272	100%

Source: Survey Data (March, 2025)

4.2 Survey Design

"The analysis of household perception on nutrition environment in Naypyitaw" is stated in this chapter. This chapter is divided into two sections of survey questionnaire. Section A discussed the respondent's demographic characteristics in several approaches such as gender, age, education background, marital status, Occupational, type of dwelling other factors that are to examine the household lifestyle that can effect on eating behavior of household in nutrition environment. In section B of this chapter, an examination of nutrition environment among households, health eating initiatives, measurement of nutrition environment and eating behaviors are examined using a variety of measures on a five-point Likert scale in Naypyitaw. The structured questionnaires were distributed to the households from five wards of Pobbathiri Township, and they were selected randomly based on the total number of households in each ward. The structured questionnaires were distributed to the households in Pobbathiri Township. The names of the wards are WunnaDipa (64 households), ThukhaDipa (27 households), SinPhyuShin (30 households), NaWaDay (68 households), and TaPinShweHtee (83 households), selected accordingly and it shows in Table (4.1) Descriptive statistics are used to describe the characteristics of the respondents and the mean value of the variables. The Taro Yamane Formula (Yamane, 1973) is used to determine the sample size among them.

$$n = \frac{N}{1 + N(e)^2}$$

n = the sample size

N = the population size

e = the acceptable sampling error/ level of precision (90% confidence level and $p = 0.5$ are assumed)

Substitute number in formular as shown below:

$$= \frac{276423}{1 + 276423(0.5)^2}$$

$$n = 272$$

4.3 Survey Result

4.3.1 Demographic Profile of Respondents

A structured questionnaire with a five-point Likert scale was utilized to collect the data. The appendix has a detailed questionnaire.

Table (4.2) Demographic Characteristics of Respondents

Demographic Characteristic		Frequency	Percentage
Gender	Male	184	67.60
	Female	88	37.40
Age	25 and less	6	2.20
	26-35 years	93	34.20
	36-45 years	110	40.40
	46 and above	63	23.20
Education Background	Bachelor	188	69.12
	Master	21	7.72
	Doctoral	10	3.67
	Other (Diploma, Certificate etc.)	53	19.48
Marital Status	Single	63	23.16
	Married	209	76.84
Occupational	Government Services	165	60.66
	Company Staff	38	19.85
	Own Business	54	13.97
	INGO/ NGO Staff	15	5.51

Demographic Characteristic		Frequency	Percentage
Type of dwelling	Detached house	106	38.97
	Apartment	119	43.75
	Wooden house	33	12.13
	Other	14	5.15
Ownership of house	Rent	118	43.38
	Own	154	56.62
Number of family members	Only one	12	4.41
	Two	19	6.99
	Three	63	23.16
	Four	115	42.28
	Five	45	16.54
	Six	18	6.62
Monthly Household's Income	100,000-300,000 MMK	14	5.15
	300,001-500,000 MMK	142	52.21
	500,001-800,000 MMK	60	22.06
	800,001-1,000,000 MMK and above	56	20.59
Monthly Household's Expense	100,000-300,000 MMK	65	23.90
	300,001-500,000 MMK	109	40.07
	500,001-800,000 MMK	41	15.07
	800,001-1,000,000 MMK and above	57	20.96

Source: Survey Data (March, 2025)

According to the survey result shown in Table (4.2), most of the respondents are male, with over half of the total respondents at 67.60 percent and it is described most of the household leader are male in Naypyitaw.

The age of respondents is categorized into four groups: 25 years and below, 26–35 years, 36–45 years, and 46 years and above. Most respondents are between 36 and 45 years old, representing the highest proportion at 40.40 percent of the total respondents, as shown in Table (4.2). This indicates that most surveyed households are middle-aged. The second-largest group is respondents aged 26–35 years, accounting for 34.20 percent. The smallest group are those aged 25 years and below.

The educational backgrounds of the respondents are grouped into four groups: Bachelor, Master, Doctoral, and Other (Diploma, Certificate, etc.). Among them, the bachelor graduates are two-thirds of the respondents at 69.12 percent of the total

respondents. It's the highest number of respondents in all. And the second highest number of the respondents are others (diploma, certificate, etc.) at 19.48 percent among the four groups.

Most of the respondents are married, at 76.84 percent, and singles are only 23.16 percent.

The occupations of the respondents are divided into four groups, such as government services, company staff, own business, and INGO/NGO staff. Among them, government servants are the highest in number at 60.66 percent of all respondents. The lowest number of respondents are INGO/NGO staff at 5.51 percent. According to survey results, most of the respondents are government servants, so they care more about the nutrition environment than others.

The respondent's types of dwellings are categorized into four groups: detached houses, apartments, wooden houses, and others. Apartments represent the largest share at 43.75 percent, followed by detached houses at 38.97 percent.

The ownership of respondents' houses is divided into two groups in this survey, like rent and own. According to the survey results in Table (4.2), more than half of the respondents live in their own house. And the rest of the respondents, with 43.38 percent.

The number of family members is categorized into six groups, ranging from one to six persons. The most common household size is four members 42.28 percent, while single-person households are the least common 4.41 percent. The survey indicates that most households in Naypyitaw consist of three or four members.

Monthly household incomes are divided into four ranges: 100,000–300,000 MMK, 300,001–500,000 MMK, 500,001–800,000 MMK, and 800,001–1,000,000 MMK. More than half of respondent's 52.21 percent earn between 300,001 and 500,000 MMK, while only 5.15 percent fall in the lowest range of 100,000–300,000 MMK. This reflects that most respondents are government servants in Naypyitaw, whose salaries are generally within the 300,001–500,000 MMK range.

Monthly household expenses follow the same four ranges as incomes, such as 100000-300000 MMK, 300001-500000 MMK, 500001-800000 MMK, and 800001-1000000 MMK accordingly. The largest group, 40.07 percent, spends between 100,000 and 300,000 MMK per month, while the smallest group 15.07 percent spends between 500,001 and 800,000 MMK. Overall, the results indicate that most households' expenses are generally aligned with their incomes.

4.3.2 Analysis of Households Perception on Nutrition Environment in Naypyitaw

This section examines how household perception on nutrition environment in Naypyitaw city. Health eating initiative, stores, restaurants, home food environment and eating behavior are measured using a variety of measures on a five-point Likert scale. Among the following scales: 5 (strongly agree), 4 (agree), 3 (neutral), 2 (disagree), and 1 (strongly disagree). Best (1977) evaluated the mean value of the items on the five-point Likert scale as follows:

- (1) The score among 1.00 – 1.80 means strongly disagree
- (2) The score among 1.81 – 2.60 means disagree
- (3) The score among 2.61 – 3.40 means neither agree nor disagree
- (4) The score among 3.41 – 4.20 means agree
- (5) The score among 4.21 – 5.00 means strongly agree

(1) Analysis of Household Perception on Health Eating Initiatives in Nutrition Environment

There are eight factors that are used to measure the perception of the household about nutrition environment. Table (4.3) shows each the mean value and standard deviation of each statement.

Table (4.3) Household Perception on Health Eating Initiatives

No.	Statement	Mean	Std. Deviation
1.	I regularly monitor my overall habits of eating healthy food.	3.25	.658
2.	I am always encouraged to eat vegetables.	3.36	.938
3.	I am always encouraged to eat fruit.	3.24	.860
4.	I try to follow a healthy diet every day.	3.44	.860
5.	I bring healthy foods to work for my colleagues.	3.05	.820
6.	I talk about food and nutrition with my family members and neighbors.	3.16	.634
7.	My household usually includes vegetables in every dish.	3.69	.885
8.	I take vitamins daily.	3.76	.606
Overall Mean		3.46	

Source: Survey Data (March, 2025)

The respondents agreed with the health eating initiative with overall mean 3.46 as shown in Table (4.3) and range of mean value was found 3.41- 4.20. It means the respondents have positive perception with health eating initiatives. Standard deviations above indicate that the data deviate from the mean less significantly and that the survey's findings have stronger acceptable overall. It is shown the respondents agreed that “used to take vitamin in daily” has highest mean value of 3.76. The respondent neither agreed nor disagreed with “bringing healthy foods to work for my colleagues” with lowest mean value of 3.05. And there is no disagreement or strongly disagree with all statements of health eating initiative with nutrition environment. It means that the respondent already knows with health eating initiative with nutrition environment but still needs to improve in practically.

(2) Measuring Household Perception of Nutrition Environment’s for Store

There are four factors used to measure nutrition environment measurement in store as shown in the Table (4.4) below and it shows mean value and standard deviation of each factor.

Table (4.4) Measuring Household Perception of Nutrition Environment’s for Store

No	Statement	Mean	Std. Deviation
1.	Healthy foods available in household’s environment.	3.57	.755
2.	Households are assessed for the nutrition environment based on their daily eating habits.	3.36	.640
3.	Households used to buy fast food at the store.	2.86	.781
4.	Households usually buy vegetables and fruits from the store.	2.65	.876
Overall Mean		3.25	

Source: Survey Data (March, 2025)

The respondents agreed that “healthy food availability in household’s environment” 3.57 in Table (4.4) and range of mean value was found 2.65 to 3.57. In this variable only this statement has the respondent agreed the rest statements are neither agreed nor disagree, it is mean apart from “healthy food availability in household’s environment”, the rest are households were weak with “buying

vegetables and fruit at store” and “used to buy fast food at store” in mean value 2.65 and 2.86 that is saying house disagreed but almost neutral with both statement. But the overall mean score is 3.25 states that the household perception was neutral with household perception of nutrition environment’s measurement in store.

(3) Measuring Household Perception of Nutrition Environment for Restaurants

There are four factors used to measure nutrition environment measurement in restaurants as shown in the Table (4.5) below and it shows mean value and standard deviation of each factor.

Table (4.5) Measuring Household Perception of Nutrition Environment for Restaurants

No	Statement	Mean	Std. Deviation
1.	One or more than two times per week having a meal in restaurants.	2.76	1.117
2.	The restaurant provides nutrition information (such as calorie content) on a menu board or on the menu in Naypyitaw.	2.29	.945
3.	Households used to go to the menu or menu board highlights and promote healthy options at the restaurant.	2.49	.846
4.	Households don’t used to go to restaurants that cost more to buy healthy options.	4.00	.803
Overall Mean		3.01	

Source: Survey Data (March, 2025)

The average score on nutrition environments measurement in Table (4.5), is 3.01, indicated that the households neither agree nor disagree with nutrition environments measurement. The highest value 4.00 of “Households used to go to restaurants that cost more to buy healthy options”. According to this result, most of the restaurants in Naypyitaw sell foods that are not convenient for healthy eating in general. So, the household used to buy healthy options, like requesting to reduce monosodium glutamate (MSG), spices, salt, etc. This outcome shows the households are used to eating at restaurants, often with their healthy eating options. Because the

result of the statement “One or more than two 3 times per week having a meal in restaurants” has a mean value of 2.76, as shown in Table (4.5). The statement about "Households used to go to the menu or menu board highlights and promote healthy options at the restaurant" has the second lowest mean value with 2.49 because not only Naypyitaw but also other cities in Myanmar are not familiar with using menu books, as they already know the available foods of the restaurant in nature. "The restaurant provides nutrition information (such as calorie content) on a menu board or on the menu in Naypyitaw". This statement has the lowest mean value of all the statements. This is because restaurants in Naypyitaw prioritize taste and rarely sell health and calorie counts. However, this statement is "disagree" because households are demanding healthy food.

(4) Measuring Household Perception of Nutrition Environment for Home Food Environment

Measurement with Home Food Environment in nutrition environment used to measure with below four factors as shown in Table (4.6) and it describes mean value and standard deviation of each factor.

Table (4.6) Measuring Household Perception of Nutrition Environment for Home Food Environment

No.	Statement	Mean	Std. Deviation
1.	Healthy foods are available in my home.	3.24	.734
2.	Households always prepare their three meals on time at home.	3.54	1.037
3.	Fruits and vegetables are available at the home.	2.80	.876
4.	Unhealthy foods are not available in their home.	4.00	.817
Overall Mean		3.43	

Source: Survey Data (March, 2025)

The overall mean value of nutrition environment’s measurement in home food environment, as shown in Table (4.6) is 3.43, including that the household agree with this statement. The results revealed that households always make their 3 meals punctual at home and have a second highest value of 3.54. Therefore, all households may take care with their meal to be punctual at home concerning with nutrition

environment. On the other hand, the unavailability of unhealthy food in their home was the highest mean value of 4.00 with household strongly agreed with this statement despite having available unhealthy foods in their home. "Availability of fruits and vegetables in the home" has the lowest mean value, with a mean value of 2.80. The reason for the low mean value is that the availability of fruits and vegetables varies by region. Depending on the region, the availability of fruits and vegetables is also limited. In addition, the practice of most households in Naypyitaw is to buy only the amount they can consume per day, depending on the type of fruit, on the same day or every other day. The statement "Healthier foods are available in my home". has the third highest mean value of 3.24. This result shows that most households in Naypyitaw prioritize eating fresh and healthy foods.

(5) Household Perception on Eating Behavior in Nutrition Environment

There are eight factors that are used to measure what the perception of eating behavior of nutrition environments is in the below Table (4.7). It shows each statement mean value and standard deviation of this.

Table (4.7) Household Perception on Eating Behavior in Nutrition Environment

No.	Statement	Mean	Std. Deviation
1.	Household used to cook rice, rice noodles, corn, bread or other foods made from cereals including thick grain-based porridge.	3.48	.810
2.	Households used to cook white potatoes, white yams, taro or any other foods made from roots weekly.	3.26	.796
3.	Households used to cook Pumpkin, carrots, sweet potatoes and any other vegetables that are yellow/orange inside (including wild vegetables).	3.56	.674
4.	Households intentionally included dark green leafy vegetables in their diet, such as watercress, gourd leaves, spinach, and tamarind leave daily eating habits.	3.06	.869

No.	Statement	Mean	Std. Deviation
5.	Households avoid eating liver, kidney, heart, and other organs of animals.	3.00	1.006
6.	Households don't avoid eating any meat (beef, sheep, pork, chicken, goat, duck, rats, frog etc.) daily based eating habits.	3.67	.789
7.	Households sometimes eat sugary foods such as honey, chocolates, candies, pastries, cakes or biscuits.	3.45	.580
8.	Household members usually eat dinner together.	3.77	.990
Overall Mean		3.51	

Source: Survey Data (March, 2025)

According to Table (4.7), the overall mean value of eating behavior is 3.51 which means that the household agreed with this statement in nutrition environment. According to the results, the maximum score of 3.77 is "Household members usually eat dinner together". The second highest score 3.67 is the households agreed with the not avoid eating any meat (beef, sheep, pork, chicken, goat, duck, rats, frog etc.) daily based eating habits. Because of most of the people at Naypyitaw and middle Myanmar people like to eat meat often. The rest of the statements are neither at a level of agreement nor disagreement, with overall mean value 3. The statement "Households used to cook Pumpkin, carrots, sweet potatoes and any other vegetables that are yellow/orange inside (including wild vegetables)". had the third highest score of 3.56, and Naypyitaw is a place where these vegetables are abundant in terms of location. The mean value of the statement "Household used to cook rice, rice noodles, corn, bread, or other foods made from cereals, including thick grain-based porridge" is 3.48, and households agree with the statement. "Households sometimes eat any sugary foods such as honey, chocolates, candies, pastries, cakes, or biscuits." The mean value of the statement is 3.45, and the standard deviation value is .580. This is because most households in the central district of Myanmar like strong tastes. For example, they often eat sweet, salty, and spicy foods. Therefore, households agree with this statement.

(6) Analysis of Household Perception on Nutrition Environment

There are eight factors that are used to measure what the perception of nutrition environments is in the below Table (4.8). It showed each statement meant value and standard deviation of this.

Table (4.8) Household Perception on Nutrition Environment

No	Statement	Mean	Std. Deviation
1.	Households typically consume three or more servings of fruits and vegetables per day.	3.06	.815
2.	Households do not usually consume processed or fast foods daily at home.	4.11	.712
3.	On average, households drink more than 2 liters of water daily.	3.33	.922
4.	Households are satisfied with the overall variety of foods in their diet.	3.46	.767
5.	Households feel satisfied when they try to eat healthily.	3.77	.681
6.	Households have primary nutritional goals aimed at maintaining general health.	3.97	.992
7.	Healthy food is accessible in the household.	3.71	.678
8.	The fresh food available in their environment is of high quality.	3.58	.945
Overall Mean		3.63	

Source: Survey Data (March, 2025)

The findings of the examination of household perception on nutrition environments are shown in Table (4.7) household nearly strongly agreed with not used to consume processed or fast foods daily at home with highest mean value of 4.11. It seems to be care about nutrition environments with their eating habits and consuming daily, so they lack eating with process or fast food daily. The second highest mean value of 3.97 the household agreed with having primary goals about nutrition for general health and households have knowledge with nutrition environments with their health. Apart from these statements the rest of the statements

are neither agreed nor disagreed with household perception on nutrition environments. The mean value of the state "Households are satisfied when they try to eat healthily" is 3.77, indicating that households agree with the statement with third highest mean value. "Household's home has 3 or more fruits and vegetables typically consume per day." The statement has the lowest mean value, with a mean value of 3.06, which is due to the fact that fruits are not easily available in foreign and other remote areas, except for some local fruits. However, households have a positive perception of this statement. According to the survey results, the variable is positive perception of households with nutrition environments in Pobbathiri Township, Naypyitaw, with an overall mean of 3.63. The fourth highest mean value is "Households have accessibility of healthy food in the home." The mean value is 3.71. Naypyitaw is different from Yangon. Vegetables and meat are available anytime and fresher. Therefore, this statement conveys a positive view of households.

CHAPTER V

CONCLUSION

The conclusion is discussed in this chapter and is based on the results of the data analysis. It includes finding and discussion, suggestions and recommendations and demands for further research. This study examined the household perceptions on nutrition environment in Naypyitaw City.

5.1 Findings and Discussion

The purpose of this study is to determine the household's perception of nutrition environment in Naypyitaw, as well as the challenges encountered to be ahead of nutrition environment among the households. The objective of the study was to investigate households' eating habits on nutrition environments in Naypyitaw. The research of the nutrition environment only includes government employees and a small number of middle-class and upper-class households that are concerned about their health eating daily. As a result, the majority of households reside in Pobbathir, Naypyitaw, which was chosen as the study's survey location. Most Burmese people in Myanmar lack health education and readiness, and this absence is unrelated to wealth. The majority of people who work in government reside in Naypyitaw, the capital of Myanmar, as well as they are educated person in nature

The sample for this study is mainly composed of 272 households from Pobbathiri Township, Naypyitaw. This study focuses on 5 wards in Pobbathiri Township out of 19 wards. The structured questionnaires were distributed to the households from five wards of Pobbathiri Township, and they were selected randomly based on the total number of households in each ward. The structured questionnaires were distributed to the households in Pobbathiri Township. The names of the wards are WunnaDipa (64 households), ThukhaDipa (27 households), SinPhyuShin (30 households), NaWaDay (68 households), and TaPinShweHtee (83 households), selected accordingly. In terms of gender, male respondents exceed female respondents, according to the survey findings. Most respondents are married when it

comes to marital status. The majority of responses are between the ages of 36 and 45. Age this old is capable of work since it is energetic, powerful, and mature. Because majority of the staff are middle aged and married, the household has already experience about nutrition environment. The majority of respondents are bachelor's holders.

According to the mean values analysis of households, nutrition environment among households has the highest mean value 3.63. It can be concluded that the household has positive perception with nutrition environment. The second highest mean value 3.51 makes up household perception on eating behavior in nutrition environment. The overall mean value of household perception on the health eating initiative is the third highest number among all variables, with 3.46. Household perception of the measurement of the nutrition environment in the store is the lowest overall mean value at 3.01.

In addition, home food environment and nutrition environment's measurement in store have nearly mean value at fourth and fifth position respectively with 3.43 and 3.25. According to the results, the household's assessment of the nutrition environment is generally good and only slightly affected by the nutrition environment store measurement, although it was still at a level that was agreed upon. Conclusion of find is that the respondents have knowledge and good perception with nutrition environment practice such as health eating initiatives, measurement of nutrition environment in store and restaurants are important roles. Moreover, home food environments are an important factor in nutritional environment and there are still barriers such as price, accessibility, availability and convenience. Besides, education and income affect also can change with eating behaviors. On the other hand, nutrition environments link to SDGs such as SDG 2: zero hunger, SDG 3: Good health and wellbeing, SDG 12: responsible consumption and production then finally link to SDG 1: No poverty & SDG 10: Reduced inequalities. According to this study, households are aware of nutrition environment, but they also face availability and affordability issues. Accessibility, income, and education all affect how households understand nutrition environments, and financial support and education can help influence behavior.

5.2 Suggestions and Recommendations

To foster improved nutritional outcomes and promote sustainable dietary behaviors, a multi-dimensional and evidence-based approach must be adopted. This approach should encompass interventions across individual, household, community, and institutional levels, as well as supportive public policies aligned with the broader goals of national development.

- (1) **Promote Transition to Sustainable and Healthy Diets:** It is essential to reform dietary patterns by encouraging the consumption of diversified and balanced food groups. This includes promoting diets rich in whole grains, legumes, fruits, vegetables, nuts, and seeds, while moderating the intake of animal-based products such as red meat, poultry, fish, dairy, and eggs. These recommendations are consistent with the FAO and WHO Guiding Principles for Sustainable and Healthy Diets (2019), which emphasize not only nutritional adequacy but also environmental sustainability, cultural acceptability, and socio-economic relevance.
- (2) **Mitigate Environmental Impacts of Agricultural Practices:** Food systems must be transformed to reduce their ecological footprint. The excessive use of chemical inputs, such as synthetic fertilizers and pesticides, has led to environmental degradation including soil contamination, water pollution, and biodiversity loss. Therefore, promoting integrated pest management, organic farming techniques, and efficient resource utilization can significantly reduce the harmful environmental consequences while maintaining agricultural productivity.
- (3) **Strengthen Governmental Role in Food System Governance:** The Government of Myanmar should play a more proactive role in shaping the nutrition environment, particularly in urban centers like Naypyitaw. Policy interventions should aim to:
 - (a) Enhance access to affordable, safe, and nutritious food.
 - (b) Support targeted nutritional education campaigns to raise public awareness.
 - (c) Foster environments that facilitate healthy food choices in schools, workplaces, markets, and households.

These actions should be embedded within existing frameworks such as the National Plan of Action for Nutrition (NPAN) and linked to the National Nutrition Policy, ensuring coherence across health, agriculture, education, and social protection sectors.

- (4) **Enhance Community-Level Food Systems Resilience:** Strengthening local food systems through support for home gardening, urban agriculture, and farm-to-table initiatives can improve household food security and dietary diversity. Empowering communities to engage in food production not only improves access to fresh produce but also fosters self-reliance and resilience, particularly in the context of economic instability or climate shocks.
- (5) **Institutionalize Monitoring and Evaluation Mechanisms:** To ensure the effectiveness of nutrition interventions, it is critical to develop robust monitoring and evaluation systems. These systems should track changes in dietary behavior, food accessibility, and environmental indicators. Data-driven policymaking will enable timely adjustments and the identification of best practices for scaling up successful initiatives.

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APPENDIX
MASTER OF PUBLIC ADMINISTRATION
QUESTIONNAIRES

Questionnaire survey for “**A STUDY ON HOUSEHOLDS’ PERCEPTION ON NUTRITION ENVIRONMENT, NAYPYITAW**”

I am Mg Htet Aung, an EMPA (online) student from Yangon University of Economic. My thesis is about **A STUDY ON HOUSEHOLDS’ PERCEPTION ON NUTRITION ENVIRONMENT, NAYPYITAW**. This survey questionnaire is only to complete my thesis. It will take about 30 minutes to complete. All responses will be kept confidential. Your kind cooperation in providing this information would be much appreciated.

SECTION A

Demographic Characteristics of the Respondents

1. Gender:

- Male
 Female

2. Your age (Years)

- 25 and Less
 26 - 35
 36 - 45 years
 46 and above

3. Educational Background:

- Bachelor
 Master
 Doctoral
 Others (Diploma, Certificate, etc.)

4. Marital Status

- Single
 Marriage

5. Occupational

- Government service
- Company staff
- Own Business
- INGO/NGO staff

6. What is your dwelling type?

- Detached house
- Apartment
- Wooden house
- Other

7. Do you rent or own the place where you live?

- Rent
- Own

8. How many numbers are there in your family?

- Only one Two Three
- Four Five Six

9. How much is your household monthly income?

- 100,000 to 300,000MMK
- 300,001 to 500,000MMK
- 500,001 to 800,000 MMK
- 800,001 to 1,000,000 MMK and above

10. How much are your household monthly expenses?

- 100,000 to 300,000 MMK
- 300,001 to 500,000 MMK
- 500,001 to 800,000 MMK
- 800,001 to 1,000,000 MMK and above

SECTION B

Households' Perception on Nutrition Environment

Rating Scale 1= strongly disagree 2= disagree 3 = neutral 4 = agree 5=strongly agree

Statement	Rating Scale				
	1	2	3	4	5
1. Nutrition Environment among household					
i) Households typically consume three or more servings of fruits and vegetables per day.					
ii) Households do not usually consume processed or fast foods daily at home.					
iii) On average, households drink more than 2 liters of water daily.					
iv) Households are satisfied with the overall variety of foods in their diet.					
v) Households feel satisfied when they try to eat healthily.					
vi) Households have primary nutritional goals aimed at maintaining general health.					
vii) Healthy food is accessible in the household.					
viii) The fresh food available in their environment is of high quality.					
2. Healthy Eating Initiatives and Nutrition Environment					
i) I regularly monitor my overall habits of eating healthy food.					
ii) I am always encouraged to eat vegetables.					
iii) I am always encouraged to eat fruit.					
iv) I try to follow a healthy diet every day.					
v) I bring healthy foods to work for my colleagues.					
vi) I talk about food and nutrition with my family members and neighbors.					
vii) My household usually includes vegetables in every dish.					
viii) I take vitamins daily.					

Statement		Rating Scale				
		1	2	3	4	5
3. Measures of Nutrition Environment						
Store	i) Healthy foods available in household's environment.					
	ii) Households are assessed for the nutrition environment based on their daily eating habits.					
	iii) Households used to buy fast food at the store.					
	iv) Households usually buy vegetables and fruits from the store.					
Restaurant	v) One or more than two times per week having a meal in restaurants.					
	vi) The restaurant provides nutrition information (such as calorie content) on a menu board or on the menu in Naypyitaw.					
	vii) Households used to go to the menu or menu board highlights and promote healthy options at the restaurant.					
	viii) Households don't used to go to restaurants that cost more to buy healthy options.					
Home Food Environment	ix) Healthy foods are available in my home.					
	x) Households always prepare their three meals on time at home.					
	xi) Fruits and vegetables are available at the home.					
	xii) Unhealthy foods are not available in their home.					

Statement	Rating Scale				
	1	2	3	4	5
4. Eating Behavior and Nutrition Environment					
i) Household used to cook rice, rice noodles, corn, bread or other foods made from cereals including thick grain-based porridge.					
ii) Households used to cook white potatoes, white yams, taro or any other foods made from roots weekly.					
iii) Households used to cook Pumpkin, carrots, sweet potatoes and any other vegetables that are yellow/orange inside (including wild vegetables).					
iv) Households intentionally included dark green leafy vegetables in their diet, such as watercress, gourd leaves, spinach, and tamarind leave daily eating habits.					
v) Households avoid eating liver, kidney, heart, and other organs of animals.					
vi) Households don't avoid eating any meat (beef, sheep, pork, chicken, goat, duck, rats, frog etc.) daily based eating habits.					
vii) Households sometimes eat sugary foods such as honey, chocolates, candies, pastries, cakes or biscuits.					
viii) Household members usually eat dinner together.					