"Nutritional Status and Feeding Patterns of Selected Children Aged 6-24 Months in Rohingya Refugee Camp"

A Dissertation Submitted to the Daffodil International University, Dhaka for the Fulfillment of Bachelor of Science degree in Nutrition and Food Engineering

Submitted To
Prof. Dr. Md. Bellal Hossain
Professor and Head dept. of Nutrition and Food Engineering (DIU)

Supervised By
Fouzia Akter
Assistant Professor dept. of Nutrition and Food Engineering (DIU)

Submitted By
Bristy Roy
Course: B.Sc. in NFE (Bachelor of Science in Nutrition and Food Engineering)
ID: 161-34-480
NFE 20th Batch

Department of Nutrition and Food Engineering
Faculty of Allied Health Science
Daffodil International University

Date of Submission: 18-12-2019

Letter of Acceptance

7th December 2019

Dr. Md. Bellal Hossain
Professor and Head
Department of Nutrition and Food Engineering
Faculty of Allied Health Sciences
Daffodil International University
Subject: Submission of Project Report.

Dear Sir,

I would like to take this opportunity to thank you for the advice and support you have given to this report. Without your help, it would be impossible to complete this report.

To prepare the report I collected what I believe to be most relevant information to make my report as scientific and reliable as possible. I have intensive my best effort to achieve the objects of the report and hope that my endeavor will serve the purpose. The practical knowledge and experience gathered during report preparation will immeasurably help in my future professional life. I request you to excuse me for any mistake that may occur in the report despite of my best effort.

I would really appreciate if you enlighten me with your thoughts and views regarding the report. In addition, if you wish to enquire about an aspect of my report, I would gladly answer your queries.

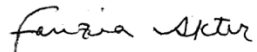Thank you again for your support and patience.

Your Sincerely

Bristy Roy
ID: 161-34-480

Certification

This is to certify that the dissertation entitled **"Nutritional Status and Feeding Patterns of Selected Children Aged 6-24 Months in Rohingya Refugee Camps"** submitted by Bristy Roy, student of B.Sc in NFE, student ID # 161-34-480 has carried out the dissertation work under my direct supervision and guidance in the Department of Nutrition and Food Engineering, Daffodil International Engineering.

I have the confidence regarding the originality of his data and I express that the dissertation is up to my satisfaction.

Fouzia Akter

Fouzia Akter

Assistant Professor

Department of Nutrition and Food Engineering

Faculty of Allied Health Sciences

Daffodil International University, Dhaka

Acknowledgement

All praises to the Almighty God, the most beneficent and most merciful. Without His blessings, none of this world has been possible. First and for mostly it is my immense pleasure to express my heartfelt gratitude and deepest sense of indebtedness to my supervisor Ms. Fouzia Akter for her affection, advice, co-operation, generous and scholastic guidance, constant surveillance and constructive criticism in completion of this dissertation.

I am thankful to all my teachers of Department of Nutrition and Food Engineering, Daffodil International University for their help and encouragement during the study.

I am extremely grateful to my family members, my friends for their enthusiastic support and cooperation.

Dedication

This research work is dedicated to my beloved father Baiddanath Roy and mother Sharma Roy and my elder sister Borna Roy who gave me the support and courage to fulfill this work successfully.

Abstract

The study was carried out to investigate the nutritional status and feeding patterns of selected children aged 6-24 months in Rohingya Refugee Camps. Total 400 mothers with their children were randomly chosen for this purpose. In this study, 3 to 6 family size were 67%, 7 to 12 family size were 31% and 13 to 16 family size were 2%. Maximum fathers (89%) and mothers (91%) were illiterate. In children MAM was found 59% and at Risk was found 41%. In 24 hours starch, protein, vegetable, sugar, breast milk, fruits, drinks and miscellaneous intake were 92%, 88%, 62%, 7%, 78%, 26%, 4% and 37% respectively. No bottle feeding was100%. Early introducing of complementary feeding were 56%. Among mothers knew the complementary feeding 73%. The children are daily feeding times were less than 3 times (24%), 4 times (33%), 5 times (30%) and 6 times (13%). Most of the children consumed rice and also meat, fish, egg, vegetables and outside snacks were intake sometimes. All the children's mother was maintained hygiene properly.

Keywords: Nutritional status, Feeding pattern, Dietary history, Dietary practice, 6-24 months, Hygiene.

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Abbreviations

- Cm= Centimeter
- Kg= Kilogram
- No.= Number
- %= Percentage
- MAM= Moderate Acute Malnutrition
- SAM= Severe Acute Malnutrition
- MUAC= Mid-Upper Arm Circumference
- Kcal= Kilocalorie
- IYCF= Infant and Young Child Feeding
- SARPV= Social Assistance and Rehabilitation for the physically Vulnerable

Chapter 1

1.1 Introduction

Food consumption data are the main source for tracking information on household food insecurity and nutrition outcomes. One of the key components of assessing diet quality of population. Variety of food consumption is generally referred to as dietary diversity. Dietary diversity shows that sufficient amount of nutrient of the diet of individuals. Considering over 40 nutrients are required in the diet for good nutrition and well-being. Different combinations of foods from different food groups is needed to help meet individual's nutritional requirements and enhanced good health. Increasing dietary diversity is a proven intervention that raises nutrient adequacy in children aged 6 to 24 months [1].

In the world currently faces that malnutrition is one of the biggest health problem and annually death with the children aged 6 to 24 months. The children were malnourished to directly or indirectly. Feeding practice period of infancy is difficult for growing, development and health of a child during the first two years and important for early prevention of chronic diseases. Malnutrition leads due to inadequate or inappropriate feeding pattern at the individual level [2]. Nutritional status and feeding patterns impact by cultural factors. Malnutrition is not only affects individuals but it passed from one generation to the next generation [3].

The children exclusively breastfeed for the first six months and given solid or semisolid complementary foods beginning with the seven months of life that recommended by UNICEF and WHO. The WHO recommends that breastfeeding continued from day one to second year of life [3]. Complementary feeding refers to the diversity diet and consumption of iron-rich or iron fortified food [1, 4].

Stunting is a chronic sign of under nutrition. It is defined as the children whose height-for-age is more than two standard deviation below the WHO Child Growth Standards median. Globally the manifestation of stunting among the children under age 5. The half of the world's 161 million stunted children lived in Asia and over one-third in Africa in 2013. About a quarter of the world's under age 5 live in South Asia and among them 38 percent have stunted growth. Four main factors are responsible for stunting according to the WHO conceptual framework: (1) Household and family factors- maternal diseases, age, short stature, poor nutritional status, short

birth intervals, poor care practices, inadequate water supply and sanitation, food insecurity, low caregiver education. (2) Inadequate complementary feeding- poor-quality food, low dietary diversity and intake of food, infrequent and inadequate feeding, insufficient frequency of feeding. (3) Inadequate practice of breastfeeding- early cessation of breastfeeding, non-exclusive breastfeeding and (4) Clinical and subclinical infection- diarrhea, malaria. Childhood anemia is also a public health problem with particular negative health consequences and adverse influence on social and economic development. If the blood hemoglobin level is less than 11g/dl of a child then consider to be anemic and 10-10.9g/dl is mild anemia, 7-9.9g/dl is moderate anemia and less than 7g/dl is severe anemia. Severe anemia can cause mortality. The prevalence of anemia in Bangladesh 56 percent, in India and Pakistan 61 percent but below 50 percent in some other developing countries like- Sri Lanka, Philippines, Afghanistan and Indonesia[4].

This study examined dietary intake and adequacy in relation to growth in selected children aged 6-24 months.

1.2 Justification of the study

Nutritional status means balance the healthy life by the intake of nutritious food. Adequate amount of food intake for the maintenance of good health. When didn't take adequate amount or diversity foods the infant becomes malnourished. The malnutrition rate rises very rapidly from 6 months of age infants and nutritionally vulnerable children aged 6 to 24 months [3]. Many factors are included which are accelerated malnutrition such as non-exclusive breastfeeding, delay or early initiation of breastfeeding, delayed or faulty weaning practices and prolong breast feed. In Rohingya refugee camp parents are not given proper foods to child because of the maximum percent of parents were illiterate. They didn't know when or how much times to feed and started complementary feeding. The children didn't get the right amount of foods they become underweight, wasting, stunting due to lack of nutritious foods. They didn't grow up mentally and physically. Some of the nutrients children need to grow and happy such as calcium, fat, protein, iron and carbohydrate etc. There are not enough source of diversity diet than others. So their diet was limited and low amount of food consumed.

1.3 Problem Statement

For the children introducing of complementary feed at 6 months and continued it for at least 2 years it can decrease infant mortality by 19% [5]. In the Rohingya refugee camps the children usually didn't intake right amount of diversity diet, iron or iron fortified foods. They didn't get complementary feeding right away and right time from the family. In this case the children were suffering from under-nutrition and growth faltering. If they suffer from under-nutrition and growth faltering with life time consequences like other countries. They also reduced their work capacity, increased infection, impaired intellectual performance and an increased risk of non-communicable diseases later in life [6].

1.4 Operational definition

Nutritional status: Nutritional status is a requirement of health of a convinced by the diet, the levels of nutrients containing in the body and normal metabolic integrity.

Feeding pattern: A baby feeding pattern is the routine in which an infant chooses to eat.

Breastfeeding: Breastfeeding is the feeding of an infant or young child with breast milk directly from female human breasts not from a baby bottle or other container.

Complementary feeding: When a child is fed a liquid or semi-liquid or other food to meet the nutritional requirement in addition to breast milk.

Malnutrition: Malnutrition refers to deficiencies, excesses or imbalances in a person's intake of energy and nutrients.

Underweight: The body weight is low relative to age.

Wasting: Low body weight correlative to height.

Stunting: Stunting is the impair growth and development that children experience from poor nutrition, repeated infection and inadequate psychosocial stimulation.

24 hour recall method: A 24-hour diet recall is a dietary assessment tool that consists of a structured interview in which participants are asked to recall all food and drink they have consumed in the previous 24 hours.

1.5 List of variables

Quantitative variable

Family size

Education level of parents

Age of the respondents

Anthropometric measurement of the respondents

Qualitative variable

24 hour dietary history

Food intake pattern

Food frequency questionnaire

Preference food questionnaire

Hygiene maintain

1.6 Research question

What is the nutritional status and feeding patterns of selected children aged 6-24 months?

Objective

General objective

To assess nutritional status and feeding patterns of selected children aged 6-24 month.

Specific objective

To identify socio-demographic information of the respondents.

To measure the anthropometric information base on their height, weight and MUAC.

To assess nutritional status, dietary behavior, food choice and preferences.

To determine the relation between nutritional status and food intake behavior.

Chapter 2

2.1 Literature review

Some guiding principles for feeding of non-breastfeed children-

Amount of food needed: Ensure energy needs are approximately 600kcal per day (6-8 months of age), 700kcal per day (9-11months of age) and 900kcal per day (12-23 months of age).

Food consistency: Increase food consistency and variety gradually. Beginning at six months, infants can eat mashed, pureed and semi-solids food. Most of the infants can eat 'finger food' (snacks that can eat by children alone). The most children can eat the same foods as consumed by the rest of the family by 12 months.

Meal frequency and energy drinks: Meals should be provided 4-5 times per day with additional nutritious snacks for the healthy infant. As desired, additional nutritious food should be offered 1-2 times per day. Every density depends on the appropriate number of feedings. If energy density is low, more meal are needed.

Nutrient content of foods: As much as possible meat, poultry, fish or eggs should be eaten daily, because they are a rich source of iron and zinc. Rich source of calcium and other nutrients is milk products.

Regularly consumed amount of milk is 200-400 ml/d. All things included the source of milk such as full cream animal cream, Ultra High Temperature milk, reconstituted evaporated milk, fermented milk or yogurt and expressed milk.

If milk and other animal source are not eaten adequately, grains and legumes both should consume daily.

Rich source of calcium is dairy product and also soybeans, cabbage, carrots, squash, papaya, dark green leafy vegetable, guava, pumpkin and small fish that include the bones.

Vitamin A, B, C, B_6 rich foods should be included daily diet.

Daily fat should be consumed 10-20g or animal source fat should be consumed. If animal source foods are consumed, more than 5g additional fats or oils may be required.

Avoid drinks/soft drinks with nutrient value.

Vitamin-mineral supplement or fortified products: Fortified foods or vitamin-minerals, supplements contain iron and also other micronutrients, zinc, calcium and vitamin B_{12}. Recommended that 6-24 months of children receive a high-dose vitamin A supplement.

Fluids need: At least 400-600 ml/d of extra fluid needed for non-breastfeed infants.

Safe preparation and storage of foods: Hygiene practice by-

- Before food preparing and eating wash caregiver and children's hands with soap.
- Stored food safely
- Served food immediately after preparation.
- To used clean utensils to serve and prepare food.
- If difficult to keep clean avoid the use of feeding bottles.

Responsive feeding:

1. Feed the infants directly
2. Don't force them should be encouraged to eat
3. Feed the children slowly and patiently
4. If they refuse any foods items experiment with different food items with tastes, texture.
5. If the child lose interest on food items minimize the distractions.
6. Feeding times are period of learning and love

Feeding during and after illness: During illness increased fluid intake and encourage to eat soft, varied, appetizing and favorite foods. After illness, encourage to eat more and give more food than usual [7].

This study was conducted about nutritional status and feeding patterns among mothers of 428 children in Sri Lanka. Their nutritional status was assessed with anthropometric measurements and WHO growth chart and other data were collected by interview based on structured questionnaire. Here mean age of starting complementary feeding was 6 months, lately introduced fat and oil and 75.5 percent were started semi-solid food as the first food. So feeding practice and nutritional status were poor [8].

Inadequate iron intake were 50 percent of infants and 66 percent of toddlers. In this study source of iron were infant formula, cereals, meat and dietary iron [9].

This study was carried out the growth pattern of 400 healthy children in the first 2 year of life in Saudi. There showed 2 percent of wasted and 18 percent of stunted growth in the children. The risk factors for stunted grow are age, sex, bottle feeding and solid food. All these factors are identified the standard nutritional indicator. In Saudi males had a poor growth pattern than females and they observed that genetic factors and poor feeding practices are the reason for faltering growth [10].

In this study data were collected from the mothers of the children through home to home visits using structured interviewer questionnaire. The total respondents were 587 of mothers-child pair. A total prevalence of stunting and wasting were 58.1 percent and 17 percent. In 12-24 months of age children were stunted and wasting 44.6 percent and 11.6 percent and aged 6-11 months of children was 13.5 percent stunting and 5.4 percent of wasting [11].

Basically breastfeeding and complementary feeding practice was conducted in three different regions in Turkey. Low nutritional status region child are latterly (in age) introduced of foods like Red meat, poultry and fish compared to middle and high nutritional status region. But majority of them were introduced bread, pasta, fruits, yogurt and vegetables. The three different regions children were introduced complementary feeding earlier than 6 months of age [12].

In South Africa the children had high nutritional requirement according to body size but consume small amounts of foods that's why needed more nutrient dense foods. In this study 24-hour dietary recall method was evaluated dietary diversity and nutrient density of the complementary diet. Nutrient density was adequate in protein, vitamin A and vitamin C and inadequate for zinc, calcium, iron, niacin, vitamin B_6 and riboflavin of the complementary diet for breastfeeding children. They're less than 25 percent children were consumed equal or above four food groups [13].

For children junk food are not good for health. It reduces appetite test and nutritious foods. In this study, 11.3 percent of families were fed the junk food regularly, 44.7 percent didn't believe

in junk food and 44 percent used this junk food for the children. Those whom children had not taken the junk food their growth rate are more favorable than other children [14].

Feeding practice plays a vital role for growth and development of children. Maximum mother were educated up to class 9 they introduced their child to complementary feeding at 6 months. Six to eight months of infants were received meal 13.9 percent for 1-2 times per day, 44.4 percent for 3-4 times per day, 30.6 percent for 5-6times per day and 11.1 percent for more than 6 times per day. In age of child were given semi-solid and liquid, semi-solid and solid, semi-solid and liquid and besides rice, rice powder khichuri [15].

The study was conducted in rural infants about breastfeeding, complementary feeding and nutritional status. Their first solid food was given maize meal porridge, cereals, and ready-bottled baby foods. Data showed that stunted and underweight were 16 percent and 6 percent [16]. The infant aged 6-24 months this time difficult for his growth and development. Nutritional status was influenced by exclusive breastfeeding, maternal education and birth weight [17].

Firstly selected randomly women those who had infant aged 6-23 months in the rural Soro district of Southwest Ethiopia. Their data were collected by the face to face interview based on structured questionnaire. In this study timely introduced the complementary feeding of the proportion was 34.3 percent. There timely complementary feeding practice was lower than the standard recommends [18].

This study was conducted among mothers who had infant aged 6-23 months of timely initiation complementary feeding in Pawie District, Benishangul Gumuz Regional State. There timely initiation complementary feeding prevalence was 61.8percent. In there, 32.7% of infants fed their meal appropriately and 23.7% of infants were good dietary diversity [19].

The dietary diversity was based on seven food groups and classified into low and high. Non-breastfeed with low dietary diversity score, breastfeed with low dietary diversity score, non-breastfeed with a high dietary diversity score and breastfeed with a high dietary diversity score all things were the infant complementary feeding pattern [20].

Right amount of complementary feeding plays a vital role to reduce child mortality and morbidity. In this study, main focus on the initiation of complementary feeding aged 6-24

months children in rural of northwest Ethiopia. The children timely initiation of complementary feeding were about 53.5 percent and diversity dietary were 4.6 percent respectively. The infant's mother those who had knowledge about IYCF the odds of the timely complementary feeding were high and medium [21].

In the study taken 492 samples of mother with children aged 6-24 months. This study was assessed knowledge, attitudes and practices about complementary feeding. The respondent was good knowledge about complementary feeding and it percent was 88.4. They were founded between maternal knowledge and education status for complementary feeding [22].

The study was assessed feeding practices and nutritional status. In this study before giving the first breast milk the mother already given baby plain water or sugar water and liquid. A maximum percent of infants were achieved of timely complementary feeding but they were introduced of semi-solid food less than about 4 months of age. Their exclusive breastfeeding was decreased besides solid foods were progressively increased. That's why reached the prevalence of wasting [23].

The sample was 216 children between 6-24 months of age in Yangon Children Hospital, Myanmar. Data were collected by anthropometric measurement based on structured questionnaire. In the study only child feeding practices were predicted of stunted children. The lowest score of child feeding was more likely to be stunted 15.45 times than other scores [24].

The study was ascertained of timely initiation of complementary feeding. The sample was 156 children aged 6-24 months in a Nigerian Teaching Hospital. Timely, early and delayed initiation complementary feeding were 41 percent, 53.8 percent and 5.1 percent respectively. Complementary feeding was started with processed cereals, locally prepared maize gruel and family mashed diet [25].

Data were collected using semi-structured questionnaire. A 24-hour recall method used for the measurement of dietary diversity score. In the study the child didn't get properly dietary

diversity, macronutrients, energy and other nutrients. Only 16.1 percent were reached to the dietary diversity. But adequate amounts of iron were found in the complementary foods [26].

The study was conducted 158 mothers with stunting children aged 6-24 months about factors affecting mother behavior in complementary feeding. Stunning are growth disorder it normally occurred with less than 6 months age of children. In Sidoarjo Regency 21.9 percent were the prevalence of under-five stunting on 2016 and in East Java, 26.1 percent were the prevalence of under-five on 2016 [27].

The sample was 300 households and 300 children in Kwale District of Kenya. In Kenya child malnutrition is a significant public health problem. Data were collected using anthropometric methods and structured questionnaire to describe the nutritional status of the children. Nutritional status measured by height-for-age and weight-for-age. In the study 34 percent of children were underweight and 51 percent of children were stunted. There boys were poor nutritional status than girls. About 20 -23 months of children were most vulnerable. In this study area breastfeeding area was very high but started the introducing of complementary foods too much early [28].

In 2010, globally an estimated that 27 percent were stunted and 16 percent were underweight of children. Aged 6 to 23 months of children (less than one-third) were met minimum criteria for dietary diversity and received minimum amounts of meals (50%) [29].

In the study dietary diversity was low due to capability of purchase a variety of food. There under-nutrition rate was high among the children and it was influenced by maternal knowledge of complementary feeding practices and also the complementary feeding practices [5].

Nutritional deficiencies are a serious problem among developing countries including Myanmar. The children age 6-24 months this period is critical for development due to nutritional deficiencies. In this analysis the sample was 1222 children. In Myanmar 16 percent of children were receiving acceptable diet, 25 percent were receiving dietary diet, feed meal frequency were 58 percent, currently breastfeed were 85 percent and iron-rich foods consumed were 59 percent. In this study 20 % were stunted and moderately anemic were 43% [4].

In the world too many children suffer from under-nutrition and growth faltering with life time results are like reduced work capacity, increased risk of non-communicable disease, infection and impaired intellectual performance. In India not only insufficient breastfeeding and another one were detrimental feeding practices. There 20 percent of breastfeeding and non-breastfeeding children were fed. The food was solid or semi-solid. These complementary feeding practices were attached, undesirable socio-cultural beliefs, maternal illiteracy and ignorance [6].

Chapter 3

3.1 Research methodology

Study area

In order to study the nutritional status and feeding patterns of selected children, the study area was at Ukhiya, Cox's Bazar. Data were collected from Camp 3 in Rohingya refugee camp.

Study period and duration

The study was carried out from September 2019 to November 2019

Study population

The study was conducted among selected children aged 6-24 months in Rohingya Refugee Camp.

Study design

The study was cross sectional study. The aim of the study was to determine the nutritional status and feeding patterns of infants. For this research data were collected from the respondent's mother on structured questionnaires including both open-ended and close ended questions.

Part 1: Personal Information and Socio-Demographic Information

It was included Camp no, Sex, Number of family members, Educational level of parents

Part 2: Anthropometric Information

Age, Height, Length, MUAC

Part 3: Dietary History

Food intake of the respondent's by 24-hour recall method.

Part 4: Dietary Practice

Food frequency questionnaire, Food preference, Hygiene practice

Sample size calculation

The required sample size is, $n = z^2pq/d^2$

Population is more than 10000.

Here,

n = is desired sample

z = standard normal deviate= 1.96, corresponding to 95 percent confidence interval

p = assumed proportion of target population= Percent or population variance=50%= 0.5

q= 1- p= (1-0.5) = 0.5

d= level of significance desired= 5%= $5/100$= 0.05

So, $\mathbf{n = z^2pq/d^2}$ $= \frac{1.96 \times 1.96 \times 0.5 \times 0.5}{0.05 \times 0.05} = 384.16 \approx 384$

So, the total sample size will be 384.

To avoid any dropout, we have collected data from 400 samples as a whole.

Sampling technique

The study was about nutritional status and feeding patterns of selected children aged 6-24 months. Data were collected by interviews by using a structured questionnaire.

Inclusion criteria

Willing to participate in the study

Age 6-24 months

Respondent's MUAC 11.5 to 13.4 cm

Exclusion criteria

Severely sick child

Denied to participate in the study

Age less than 6 months and above 24 months

MUAC less than 11.5 cm and above 13.5 cm

Data collection method

A structured questionnaire was prepared in the English language which was translated into Bengali, again after translated into local accent and later was translated back to English to check for consistency.

A survey questionnaire was provided the bulk of the information on personal, socio-demographic, anthropometric, 24 hours dietary history and dietary practice.

Personal Information and Socio-demographic Information

Included their all personal information in this group. For example camp no, sex, family size, father's and mother's educational level.

Anthropometric Information

The anthropometric indicator are length, weight and MUAC. This study data was taken individually. All the measurements were recorded on structured questionnaire.

Length: The child was laid on a flat surface then head placed firmly against the fixed metal headpiece with the infant's eyes looking vertically. Extending the knee by firm pressure and flexing the feet at right angles to the lower legs against the upright foot piece of the height scale. The length of the child was read to the nearest 0.1cm.

Weight: The subject stood at the center of the platform with hands on his side and in light clothing. Weight was recorded in kilogram.

MUAC: A child identified the mid-point between the elbow and shoulder. After that placed the tape measure around the left arm. Measured the MUAC while ensuring that the tape neither pinches the arm, nor was left loose. Then determined the measurement from the rape. Recorded the MUAC to the nearest 0.1cm.

24 hour dietary history

Dietary history were collected by 24 hour recall method. The child's mother were interviewed and asked their amount or diversity of food eaten over the past 24 hours.

Dietary practice

This data were collected from mothers by asked of an infant food frequency, food preference, know about complementary feeding and hygiene maintain.

Quality Control

Data quality was controlled by questionnaire, checking, data entry, entry and minimizing response errors through proven question. The researcher checked every day data to minimize the errors.

Data analysis plan

This work is very important to us. The data were checked, cleared and entered into the SPSS data sheet software and analysis was done by using SPSS version (16.0) into variable data, cross tabulation, frequency, table and graph.

Time frame

Week	Activity
1st	Desk Research
2nd	Questionnaire Development
3-4th	Data Collection
5th	Data Entry
6th	Analysis
7-8th	Report Writing
9th	Presentation and Report submission

Ethical issues

Ethical permission was obtained from SARPV and child's mother. The nature of the study was fully explained to the child's mother to obtain their verbal consent prior to participation in the study and data were kept confidential. Before the interview for data, informed consent was obtained from each child's mother.

Chapter 4

4.1 Results/Finding

A) **Personal Information**

Table 01: Distribution of the respondent's sex

Sex	Frequency	Percent
Male	206	52%
Female	194	48%

Table-01 shows the sex of the respondents. Here the table shows that 52 percent were male and 48 percent were female.

B) **Socio-Demographic Information**

Table-02: Distribution of the family size of the respondent's

Family size	Frequency	Percent
3 to 6	269	67%
7 to 12	125	31%
13 to 16	6	2%

Table-02 shows the respondent's family size. Here the table family size divided by three categories. The first categories ranged were 3 to 6, second categories ranged were 7 to 12 and third categories ranged were 13 to 16. The table shows that about 67 percent of the respondent's family consist less than 6 members, 31 percent of the respondent's family consist 7 to 12 members and 2 percent of the respondent's family consist 13 to 16 members.

Figure-01: Literacy rate among mothers

Literacy rate among mothers

- Illiterate
- Class 1 to 5
- More than class 5

8% 1%

91%

Figure-01 shows the mother education of the respondents. Here the table shows that 91 percent were illiterate, 8 percent were class 1 to 5 and 1 percent were more than class 5.

Figure-02: Literacy rate among fathers

Literacy rate among fathers

400
300
200
100
0

Illiterate | Class 1 to 5 | More than class 5
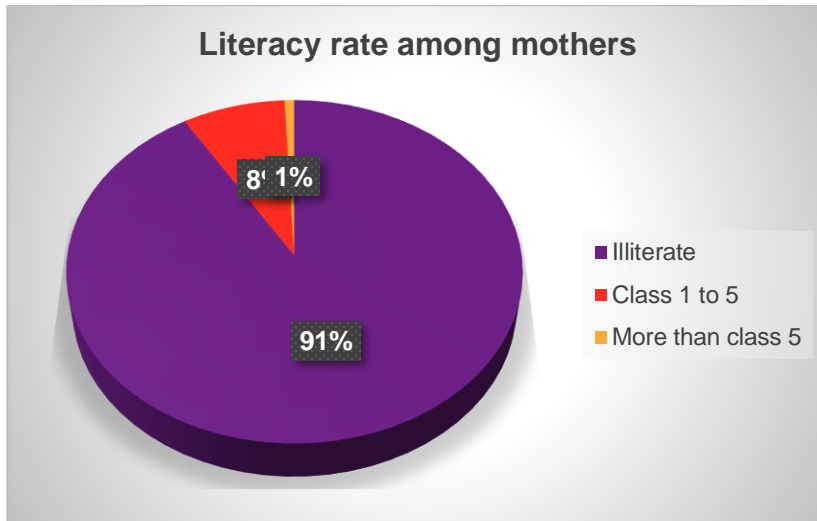
■ Frequency ■ Percent
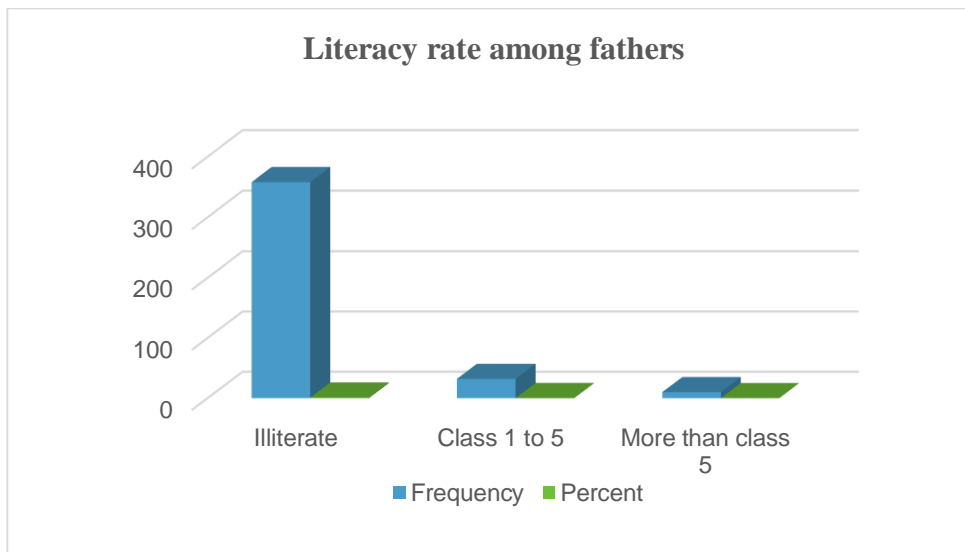
Figure-02 shows the father education of the respondents. Here the table shows that 89 percent were illiterate, 8 percent were class 1 to 5 and 3 percent were more than class 5.

C) Anthropometric Information

Table-03: Distribution of the respondent's age

Age category	Frequency	Percent
6 to 12	179	45%
13 to 17	51	13%
18 to 24	170	42%

Table-03 shows the respondent's age. Here the table shows that 45 percent were 6 to 12 age category, 13 percent were 13 to 17 age category and 42 percent were 18 to 24 age category.

Table-04: Distribution of the respondent's length

Length (cm)	Frequency	Percent
58.0 to 66.6	89	22%
66.7 to 77.7	230	58%
77.8 to 89.8	81	20%

Table-04 shows the respondent's length. Here the table shows that 22 percent were 58.0 to 66.6 cm length, 58 percent were 66.7 to 77.7 cm length and 20 percent were 77.8 to 89.8 cm length.

Table-05: Distribution of the weight of the respondent's

Weight (kg)	Frequency	Percent
4.5 to 5.5	42	10%
5.6 to 10.0	352	88%
10.1 to 11.7	6	2%

Table-05 shows the respondent's weight. Here the table shows that 10 percent were 4.5 to 5.5 kg, 88 percent were 5.6 to 10.0 kg and 2 percent were 10.1 to 11.7 kg.

Table-06: Distribution of the respondent's MUAC

Nutritional Status (MUAC)	Frequency	Range	Percent
11.5 cm to 12.4 cm	237	MAM	59%
12.5 cm to 13.4 cm	163	At Risk	41%

Table-06 shows the nutritional status (MUAC) of the respondents. Observed that the MUAC ranged were from 11.5 cm to 13.4 cm. The table shows that 59 percent were MAM category and 41 percent were at risk category.

D) 24 hours Dietary History

Table-07: 24 hours food intake of the respondent's

24 hours recall method		Frequency	Percent
Starch		367	92%
Protein	Chicken	79	20%
	Fish	102	25%
	Egg	30	8%
	Pulse	141	35%
Vegetables	Green leafy	146	37%
	Red or Yellow	100	25%
Sugar		27	7%
Breast milk		313	78%
Fruits		102	26%
Drinks		15	4%
Miscellaneous		147	37%

Table-07 shows that 24 hour food intake of the respondents. From the observed here starch were 92 percent, protein intake into different categories such as chicken were 20 percent and fish were

25 percent, egg were 8 percent and pulse 35 percent, vegetables were intake two categories green leafy vegetables 37 percent and Red or Yellow vegetable 25 percent, sugar were 7 percent, breast milk were 78 percent, fruits were 26 percent, drinks were 4 percent and miscellaneous were 37 percent respondents intake last 24 hour.

E) Dietary Practice

Table- 08: Distribution of the bottle feeding of the respondents.

Bottle feeding	Frequency	Percent
No	400	100%

Table- 08 shows the bottle feeding of the respondents. Here no one was bottle feeding.

Table-09: Introducing of complementary feeding of the respondents

Introducing complementary feeding	Frequency	Percent
2 to 6 months	226	56%
7 to 10 months	160	40%
11 to 14 months	11	3%
Don't know exactly	3	1%

Table-09 shows that introducing of complementary feeding of the respondents. Observed that 56 percent of the respondents were started introducing of complementary feeding at 2 to 6 months, 40 percent were started introducing of complementary feeding at 7 to 10 months, 3 percent were started introducing of complementary feeding at 11 to 14 months and 1 percent were didn't know the exact months.

Table-10: Knowledge regarding complementary feeding among mothers.

Know the complementary feeding	Frequency	Percent
Yes	291	73%
No	109	27%

Table-10 shows know the complementary feeding among mother. On the table were 73 percent of mothers know the complementary feeding and were 27 percent of mothers didn't know the complementary feeding.

Table-11: Daily feeding times of the respondents

Feeding times	Frequency	Percent
< 3 times	97	24%
4 times	131	33%
5 times	120	30%
6 times	52	13%

Table-11 shows the daily feeding times of the respondents. Here less than 3 times per day were 24 percent, 4 times per day were 33 percent, 5 times per day were 30 percent and 6 times per day were 13 percent.

Table-12: Distribution of the respondents of food intake regularly

Regular meat	Frequency	Percent
No	56	14%
Sometimes	344	86%

Table-12 shows the respondents of food intake regularly. Here sometimes meat intake were 86 percent and no meat intake were 14 percent.

Table-13: Distribution of the respondent's food preference of food intake

Prefer meat	Frequency	Percent
Chicken	304	76%
Beef	53	13%
Mutton	6	2%
No	37	9%

Table-13 shows the preference of food intake of the respondents. Here chicken preference were 76 percent, beef preference were 13 percent, mutton preference were 2 percent and no preference were 9 percent.

Table-14: Distribution of the respondents of food intake regularly

Regular fish	Frequency	Percent
No	36	9%
Sometimes	364	91%

Table-14 shows the respondents of the food intake regularly. Here no regular fish intake were 9 percent and sometimes fish intake were 91 percent.

Table-15: Distribution of the respondent's food preference of food intake

Prefer fish	Frequency	Percent
Big	260	65%
Small	102	25%
No	38	10%

Table-15 shows the food preference of the respondents. Here big fish preference were 65 percent, small fish preference were 25 percent and no preference fish were 10 percent.

Table-16: Distribution of the respondents of food intake regularly

Regular egg	Frequency	Percent
No	15	4%
Sometimes	385	96%

Table-16 shows the respondents of food intake regularly. In the table 4 percent were no regular egg intake and 96 percent were intake sometimes.

Table-17: Distribution of the respondents of food intake regularly

Vegetable regular	Frequency	Percent
Yes	121	30%
No	21	5%
Sometimes	258	65%

Table-17 shows the respondents of food intake regularly. Here 30 percent were vegetable intake regularly, 5 percent were not intake regularly and 65 percent were intake sometimes.

Table-18: Distribution of the respondents of food intake regularly

Feeding fruits	Frequency	Percent
No	81	20%
Sometimes	319	80%

Table-18 shows that the respondents of food intake regularly. In the table 20 percent were not fruit intake regularly and 80 percent were fruit intake sometimes.

Table-19: Distribution of the respondent's food preference of food intake

Prefer fruit	Frequency	Percent
Sweet	308	77%
Sour	8	2%
Sweet and Sour	4	1%
No	80	20%

Table shows the food preference of the respondents. Sweet fruit preference were 77 percent, sour fruit were 2 percent, sweet and sour fruit preference were 1 percent and no fruit preference were 20 percent.

Table-20: Distribution of the respondent's food preference of food intake

Outside snacks	Frequency	Percent
Yes	335	84%
No	65	16%

The table shows the respondents food preference of the food intake. Here outside snacks intake were 84 percent and not intake were 16 percent.

Table-21: Distribution of the hygiene maintain in the respondents household

Hygiene maintain	Frequency	Percent
Yes	400	100%

The table shows the hygiene maintain in the respondent's household. They were maintained hygiene 100 percent.

Table-22: Comparison of mother education and introducing of complementary feeding

Mother education	Introducing of complementary feeding			
	2 to 6 months	7 to 10 months	11 to 14 months	Don't know exactly
Illiterate	206	147	9	3
Class 1 to 5	17	13	2	0
More than class 5	3	0	0	0

The table shows a comparison of mother education and introducing of complementary feeding. From the observed, illiterate mothers were started introducing of complementary feeding too early for 206 children than other educated mothers. Delay introducing of complementary feeding were more in illiterate mothers than educated mothers.

Table-23: Comparison of mother education and know the complementary feeding.

Mother education	Know the ingredient of complementary feeding	
	Yes	No
Illiterate	265	100
Class 1 to 5	24	8
More than class 5	2	1

In the table shows that know the ingredients of complementary feeding rate were more in illiterate mothers. Overall here illiterate mothers knew the ingredients of complementary feeding more than educated mothers.

Table-24: Comparison of mother education and feeding time to children

Mother education	Feeding time to children			
	3 times	4 times	5 times	6 times
Illiterate	90	119	109	47
Class 1 to 5	6	11	11	4
More than class 5	1	1	0	1

The table shows that illiterate mothers more feeding foods to children than educated mothers. Here 4 times feeding were more than another feeding time.

Table-25: Comparison of mother education and feed of breast milk to children

Mother education	Milk	
	Breast milk	No milk
Illiterate	285	80
Class 1 to 5	25	7
More than class 5	3	0

Here illiterate mothers more feed breast milk than educated mothers and some children were no interested to feed breast milk.

Table-26: Comparison of father education and miscellaneous

Father education	Miscellaneous	
	Yes	No
Illiterate	230	128
Class 1 to 5	17	15
More than class 5	6	4

The table shows that miscellaneous food more given to children. Illiterate fathers were more given miscellaneous foods than educated fathers.

Table-27: Comparison of family size and regular meat

Family size	Regular meat	
	No	**Sometimes**
3 to 6	40	229
7 to 12	14	111
13 to above	2	4

The table shows that they liked to feed sometimes than regular. From the observed those family size were small they feed meat more than a big family size.

Table-28: Comparison of family size and regular fish

Family size	Regular fish	
	No	**Sometimes**
3 to 6	28	241
7 to 12	7	118
13 to above	1	5

The table shows that they feed fish to children sometimes than regular. From the observed those family size was small they were feed fish more than a big family size.

Table-29: Comparison of family size and regular egg

Family size	Regular egg	
	No	**Sometimes**
3 to 6	13	256
7 to 12	2	123
13 to above	0	6

The table shows that they liked to feed egg. From the observed those family size was small they feed egg sometimes more than regular from big family size.

Table-30: Comparison of family size and regular vegetable

Family size	Regular vegetable		
	Yes	No	Sometimes
3 to 6	86	16	167
7 to 12	32	4	89
13 to above	3	1	2

The table shows that they liked to feed vegetable sometimes. From the observed those family size was small they feed more vegetables than a big family size and also some family feed regularly vegetables.

Table-31: Comparison of family size and regular fruits

Family size	Regular fruits	
	No	Sometimes
3 to 6	58	211
7 to 12	21	104
13 to above	2	4

On the table shows that fruits feed sometimes than regular. Here showed that fruits feed to children dependent on family size. Those family size was small they feed fruits sometimes than regular from other big family size.

Table-32: Comparison of initiation of complementary feeding and MUAC

Initiation of complementary feeding	MUAC	
	11.5 to 12.4	12.5 to 13.4
2 to 6 months	145	81
7 to 10 months	89	71
11 to 14 months	1	10
Don't know exactly	2	1

The table-32 shows that early initiation of complementary feeding were more than normal or delay the initiation of complementary feeding. Early initiation of complementary feeding aged 2 to 6 months of child and MUAC range were MAM.

Table-33: Comparison of MUAC and feeding time

MUAC	Feeding times			
	3 times	4 times	5 times	6 times
11.5 to 12.4	48	86	73	30
12.5 to 13.4	49	45	47	22

Here MAM children feeding times were more than at risk children. In MAM range 4 feeding times were more than other feeding times and in at risk range 3 feeding times were more than other feeding times.

4.2 Discussion

In the study nutritional status and feeding patterns are very much important between 6 to 24 months of children. This age group is most vulnerable group. So to maintain a proper nutrition status and diversity diet. These findings of the study have been compared with different international level studies. Total 400 mother with children were participating in the survey. In all participated male were 52 percent and female were 48 percent. Socio-demographic information included family size, mother education and father education. 67 percent were consists of 3 to 6 family members, 31 percent were consists of 7 to 12 family members and 2 percent were consists of 13 to 16 family members. Among mothers, 91 percent were illiterate, 8 percent were up to class five and 1 percent were more than class 5. 89 percent fathers were illiterate, 8 percent fathers were up to class five and 3 percent fathers were more than class five. Anthropometric information included age, length, weight and MUAC. In the survey, 45 percent respondent's age were between 6 to 12 months, 13 percent respondent's age was between 13 to 17 months and 42 percent respondent's age were between 18 to 24 months. 22 percent respondents length range was between 58.0 to 66.6 cm, 58 percent respondents length were ranging between 66.7 to 77.7 cm and 20 percent respondents length were ranging between 77.8 to 89.8 cm. Weight range between 4.5 to 5.5 kg were 10 percent, between 5.6 to 10.0 kg were 88 percent and between 10.1 to 11.7 kg were 2 cm. 59 percent respondents MUAC were between 11.5 to 12.4 cm and 41 percent respondents were between 12.5 to 13.4 cm. 24 hour dietary history measuring intake of food or drink. Maximum respondents starch intake were 92 percent, chicken intake were 20 percent, fish intake were 25 percent, egg intake were 8 percent, pulse intake were 35 percent and green leafy vegetable intake were 37 percent and red or yellow leafy vegetable intake were 25 percent and sugar intake were 7 percent, breast milk intake were 78 percent, fruits intake were 26 percent, drinks intake were 4 percent and miscellaneous intake were 37 percent [26]. Dietary practice which determines the nutritional status of the respondents. In the survey total respondents didn't bottle feeding. Among the respondents, 56 percent of respondents introducing their complementary feeding at 2 to 6 months, 40 percent of respondents introduced their complementary feeding at 7 to 10 months, 3 percent of respondents introduced their complementary feeding at 11 to 14 months and 1 percent of respondents were no exact months [8]. 73 percent of mothers knew the complementary feeding and 27 percent of mothers didn't

know the complementary feeding. Among them per day less than 3 times feeding were 24 percent, per day 4 times feeding were 33 percent, per day 5 times feeding were 30 percent and per day 6 times feeding were 13 percent[15]. 86 percent of respondents were meat intake sometimes and 14 percent of respondents were no meat intake. Chicken preference were 76 percent, beef preference were 13 percent, mutton preference were 2 percent and no preference were 9 percent. Sometimes fish intake were 91 percent and no fish intake were 9 percent. Maximum respondent's preference were big fish percentage was 65, small fish preference were 25 percent and no one preference were 10 percent. No egg intake were 4 percent and sometimes egg intake were 96 percent. Vegetable regular, no and sometimes intake were 30 percent, 5 percent and 65 percent respectively. Sometimes fruits feeding were 80 percent and no fruits feeding were 20 percent. Preference fruits were sweet, sour, sweet and sour and no fruits were 77 percent, 2 percent, 1 percent and 20 percent respectively. The respondents outside snacks intake were 16 percent [14]. Hygiene maintained were 100 percent. Here early initiation of complementary feeding almost 50 percent of respondents. Initiation of complementary feeding was given to pretend more illiterate mother than educated mother [15]. Some respondents getting initiation of complementary feeding proper timely. Illiterate mothers knew the ingredient of complementary feeding more than educated mothers. Almost above 50 percent illiterate mothers and 6 percent literate mothers knew the ingredients of complementary feeding. Feeding times gradually increase were 6 times, 3 times, 5 times and 4 times respectively. Illiterate mothers more feeding than educated mothers. Maximum children were feeding of breast milk. Illiterate mothers more feed breast milk to children than other educated mothers. Illiterate father more given outside snacks foods to children than other educated fathers. Above 50 percent children were fed outside foods. Meat, fish, egg was intake sometimes and those family sizes were small. Vegetable intake was sometimes more than regular intake. Early and delay initiation of complementary feeding are not good for health that's why in the survey most of the respondents MUAC range were 11.5 to 12.4 cm. Between 2 to 6 months and 7 to 10 months of respondents of initiation of complementary feeding rate were more. In MUAC 11.5 to 12.4 cm range of respondents were more feed than MUAC 12.4 to 13.4 cm range of respondents. In MAM category respondents their daily more feeding times were 4 times and averagely feeding more than at risk category respondents. In at risk category respondents their daily more feeding times were 5 times.

Chapter 5

5.1 Conclusion

This is a cross sectional study which was conducted to assess the nutritional status and feeding patterns of selected children aged 6-24 months in Rohingya Refugee Camp. In the study, 52 percent were male and 48 percent were female. A cross sectional study was carried out among 400 respondents. 3 to 6 family size were 67 percent, 7 to 12 family size were 31 percent and 13 to 16 family size were 2 percent. Illiterate mothers were 91 percent, up to class five were 8 percent and more than class five was 1 percent. Illiterate fathers were 89 percent, up to class five were 8 percent and more than class five was 3 percent. The respondent's length range were 5.8 to 89.8 cm. The respondent's body weight ranged 4.5 to 11.7 kg. Again the respondents MUAC ranged 11.5 to 13.4 cm and 59 percent of respondents were MAM and 41 percent of respondents were at risk. Within 24 hour the respondents starch, protein, vegetable, breast milk, fruits drink, sugar and miscellaneous intake were 92 percent, 88 percent, 62 percent, 78 percent, 26 percent, 4 percent, 7 percent and 37 percent respectively. No one respondents were bottle feeding. Early, proper and delay introducing of complementary feeding were 56 percent, 40 percent, 3 percent and don't know exactly 1 percent respectively. Among mothers know about complementary feeding was 73 percent and didn't know about complementary feeding was 27 percent. Per day feeding times were less than 3 times (24%), 4 times (33%), 5 times (30%) and 6 times (13%). Sometimes meat, fish, egg and fruits were intake 86 percent, 91 percent, 96 percent, and 80 percent. Vegetables sometimes and regular intake were 65 percent and 30 percent. Maximum respondent's food preference were chicken, big fish and sweet fruits and it was 76 percent, 65 percent and 77 percent. 84 percent of respondents were intake outside snacks. All the respondent's mother maintained hygiene 100 percent. Illiterate mothers early introducing to the respondents of complementary feeding, know the ingredients of complementary feeding, more feed breast milk and more feed daily times than educated mothers. Illiterate fathers brings more outside foods to children. Those family sizes were small they feed to children sometimes meat, fish, egg and vegetables. The respondents those are getting early initiation of complementary feeding maximum respondents were MAM. The mothers are feeding more to respondents when maximum respondent's nutritional status was MAM.

5.2 Limitation

1. Due to shortage of time not able to got more sample.

2. Didn't assume the whole sample by the collected of small samples. It may be better if got more time to access the sample.

3. Faced some problem to collect the dietary history and dietary practice. Their assumption of food consumed may not be accurate.

4. This study was conducted in refugee camps so the main barrier was communication.

5. Some respondent's mother were less co-operative.

6. The respondent's mother felt bored to give their information.

5.3 Recommendations

I want to do research again when there have huge sample and enough time.

Some steps to improve their nutritional status and dietary behavior are given bellow:

1. They should be careful about their food and the balanced diet.

2. The foods should be cooked in the proper away.

3. Care should be taken by parents so that balanced diet and foods given at the proper time and regularly.

4. Children and environmental hygiene should be monitored more by parents.Care should be taken by the parents that sick children are given proper treatment and proper diet.

Chapter 6

6.1 References

1. Alamu, E. O., Gondwe, T., Eyinla, T. E., & Maziya-Dixon, B. (2019). Assessment of Dietary Diversity of Mothers and Children of 6–24 Months from Eastern and Southern Provinces of Zambia. *Journal of Nutrition and Metabolism*, *2019*.

2. Matthew, A. K., Amodu, A. D., Sani, I., & Solomon, S. D. (2009). Infant feeding practices and nutritional status of children in North Western Nigeria. *Asian J Clin Nutr*, *1*(1), 12-22.

3. https://www.assignmentpoint.com/science/report-on-nutritional-status-of-children-of-aged-6-to-24-months.

4. Mya, K. S., Kyaw, A. T., & Tun, T. (2019). Feeding practices and nutritional status of children age 6-23 months in Myanmar: A secondary analysis of the 2015-16 Demographic and Health Survey. *PloS one*, *14*(1), e0209044.

5. Alamu, E. O., Gondwe, T., Eyinla, T. E., & Maziya-Dixon, B. (2019). Assessment of Dietary Diversity of Mothers and Children of 6–24 Months from Eastern and Southern Provinces of Zambia. *Journal of Nutrition and Metabolism*, *2019*.

6. Matthew, A. K., Amodu, A. D., Sani, I., & Solomon, S. D. (2009). Infant feeding practices and nutritional status of children in North Western Nigeria. *Asian J Clin Nutr*, *1*(1), 12-22.

7. https://www.assignmentpoint.com/science/report-on-nutritional-status-of-children-of-aged-6-to-24-months.

8. Mya, K. S., Kyaw, A. T., & Tun, T. (2019). Feeding practices and nutritional status of children age 6-23 months in Myanmar: A secondary analysis of the 2015-16 Demographic and Health Survey. *PloS one*, *14*(1), e0209044.

9. Alamu, E. O., Gondwe, T., Eyinla, T. E., & Maziya-Dixon, B. (2019). Assessment of Dietary Diversity of Mothers and Children of 6–24 Months from Eastern and Southern Provinces of Zambia. *Journal of Nutrition and Metabolism*, *2019*.

10. Matthew, A. K., Amodu, A. D., Sani, I., & Solomon, S. D. (2009). Infant feeding practices and nutritional status of children in North Western Nigeria. *Asian J Clin Nutr*, *1*(1), 12-22.

11. https://www.assignmentpoint.com/science/report-on-nutritional-status-of-children-of-aged-6-to-24-months.

12. Mya, K. S., Kyaw, A. T., & Tun, T. (2019). Feeding practices and nutritional status of children age 6-23 months in Myanmar: A secondary analysis of the 2015-16 Demographic and Health Survey. *PloS one*, *14*(1), e0209044.

13. MUENI, K. A. (2007). Maternal knowledge on complementary feeding practices and nutritional status of children 6-23 months old, attending Kahawa west public health centre, Nairobi County.

14. Kuriyan, R., & Kurpad, A. V. (2012). Complementary feeding patterns in India. *Nutrition, Metabolism and Cardiovascular Diseases*, *22*(10), 799-805.

15. World Health Organization. (2005). Guiding principles for feeding non-breastfed children 6-24 months of age.

16. Ubeysekara, N. H., Jayathissa, R., & Wijesinghe, C. J. (2015). Nutritional status and associated feeding practices among children aged 6-24 months in a selected community in Sri Lanka: a cross sectional study. *Eur J Prev Med*, *3*(2-1), 15-23.

17. Soh, P., Ferguson, E. L., McKenzie, J. E., Skeaff, S., Parnell, W., & Gibson, R. S. (2002). Dietary intakes of 6–24-month-old urban South Island New Zealand children in relation to biochemical iron status. *Public health nutrition*, *5*(2), 339-346.

18. Al-Fawaz, I. M., Bamgboye, E. A., & Al-Eissa, Y. A. (1994). Factors influencing linear growth in Saudi Arabian children aged 6–24 months. *Journal of tropical pediatrics*, *40*(4), 235-239.

19. Derso, T., Tariku, A., Biks, G. A., & Wassie, M. M. (2017). Stunting, wasting and associated factors among children aged 6–24 months in Dabat health and demographic surveillance system site: A community based cross-sectional study in Ethiopia. *BMC pediatrics*, *17*(1), 96.

20. Köksal, E., Yalçin, S. S., Pekcan, G., Özbas, S., Tezel, B., & Köse, M. R. (2015). Complementary feeding practices of children aged 12-23 months in Turkey. *Central European journal of public health*, *23*(2), 149.

21. Faber, M., Laubscher, R., & Berti, C. (2016). Poor dietary diversity and low nutrient density of the complementary diet for 6-to 24-month-old children in urban and rural K wa Z ulu-N atal, S outh A frica. *Maternal & child nutrition*, *12*(3), 528-545.

22. Vakili, R., Kiani, M. A., Saeidi, M., Hoseini, B. L., & Alipour Anbarani, M. (2015). Junk food consumption and effects on growth status among children aged 6-24 months in Mashhad, Northeastern Iran. *International Journal of Pediatrics*, *3*(4.2), 817-822.

23. Haque, M. M., Nahar, N., Prodhania, M. S., Lima, F. R., Bhuiyan, M. R., & Hossain, S. A. (2016). Pattern of complementary feeding among mothers having child aged 6 to 12 months. *Delta Medical College Journal*, *4*(1), 13-17.

24. Cape, W., Faber, M., & Benadé, S. (2007). Breastfeeding, complementary feeding and nutritional status of 6–12-month-old infants in rural KwaZulu-Natal. *South African Journal of Clinical Nutrition*, *20*(1), 16-24.

25. Kusuma, I. R., Salimo, H., & Sulaeman, E. S. (2017). Path analysis on the effect of birthweight, maternal education, stimulation, exclusive breastfeeding, and nutritional status on motoric development in children aged 6-24 months in Banyumas District, Central Java. *Journal of Maternal and Child Health*, *2*(1), 64-75.

26. Yohannes, B., Ejamo, E., Thangavel, T., & Yohannis, M. (2018). Timely initiation of complementary feeding to children aged 6–23 months in rural Soro district of Southwest Ethiopia: a cross-sectional study. *BMC pediatrics*, *18*(1), 17.

27. Ayana, D., Tariku, A., Feleke, A., & Woldie, H. (2017). Complementary feeding practices among children in Benishangul Gumuz Region, Ethiopia. *BMC research notes*, *10*(1), 335.

28. Wright, M. J., Bentley, M. E., Mendez, M. A., & Adair, L. S. (2015). The interactive association of dietary diversity scores and breast-feeding status with weight and length in Filipino infants aged 6–24 months. *Public health nutrition*, *18*(10), 1762-1773.

29. Biks, G. A., Tariku, A., Wassie, M. M., & Derso, T. (2018). Mother's Infant and Young Child Feeding (IYCF) knowledge improved timely initiation of complementary feeding

of children aged 6–24 months in the rural population of northwest Ethiopia. *BMC research notes*, *11*(1), 593.

30. Berisha, M., Ramadani, N., Hoxha, R., Gashi, S., Zhjeqi, V., Zajmi, D., & Begolli, I. (2017). Knowledge, attitudes and practices of mothers in Kosova about complementary feeding for infant and children 6-24 months. *Medical Archives*, *71*(1), 37.

31. Setyowireni, D., & Surjono, A. (2007). Feeding pattern and nutritional status of infants in Belu District, East Nusa Tenggara. *Paediatrica Indonesiana*, *47*(6), 283-9.

32. Phu, K. W. W., Wittayasooporn, J., & Kongsaktrakul, C. (2019). Influence of child feeding practices and selected basic conditioning factors on stunting in children between 6 and 24 months of age in Myanmar. *Makara Journal of Health Research*, *23*(2), 6.

33. Ogunlesi, T. A., Ayeni, V. A., Adekanmbi, A. F., & Fetuga, B. M. (2014). Determinants of timely initiation of complementary feeding among children aged 6-24 months in Sagamu, Nigeria. *Nigerian journal of clinical practice*, *17*(6), 785-790.

34. Forsido, S. F., Kiyak, N., Belachew, T., & Hensel, O. (2019). Complementary feeding practices, dietary diversity, and nutrient composition of complementary foods of children 6–24 months old in Jimma Zone, Southwest Ethiopia. *Journal of Health, Population and Nutrition*, *38*(1), 14.

35. Anisa, A., Qomaruddin, M. B., & Fatah, M. Z. (2018). Factors Affecting Mother Behavior in Complementary Feeding Stunting Age 6-24 Months in Sidoarjo Regency. *Health Notions*, *2*(5), 615-618.

36. Adeladza, A. (2009). The influence of socio-economic and nutritional characteristics on child growth in Kwale District of Kenya. *African Journal of Food, Agriculture, Nutrition and Development*, *9*(7).

37. Lutter, C. K., Daelmans, B. M., de Onis, M., Kothari, M. T., Ruel, M. T., Arimond, M., ... & Borghi, E. (2011). Undernutrition, poor feeding practices, and low coverage of key nutrition interventions. *Pediatrics*, *128*(6), e1418-e1427.

6.2 Annex

Questionnaire

On

Nutritional Status and Feeding Patterns of Selected Children of 6-24 months

Serial no ……….

Personal Information

1. Camp no ………………………
2. Sex
   a) Male   b) Female

Socio-Demographic Information

3. Number of family members…………………………………
4. Mother education………………………………………….
5. Father education……………………………….

Anthropometric Information

6. Age (months)………………………..
7. Height…………………………………
8. Weight…………………………………
9. MUAC…………………………………

24 hours Dietary History

Feeding time	Items of food
Morning	
Mid-morning	
Lunch	
Evening	
Dinner	
Bed-time	

Dietary Practice

10. Do you practice bottle feeding to your child?
    a) Yes   b) No   c) Sometimes
11. If yes, do you wash the bottle?
    a) Yes   b) No   c) Sometimes
12. When you start to give your child complementary feeding?
    a) At 5 months   b) At 6 months   c) At 7 months   d) I don't know exactly
13. Do you know what types of ingredients are used for complementary feeding?
    a) Yes   b) No   c) Neutral
14. If yes, then what are the ingredients? ……………………………..
15. How many times do you feed your child daily?
    a) 3 times   b) 4 times   c) 5 times   d) 6 times

16. Do you feed your child meat regularly?
    a) Yes   b) No   c) Sometimes
17. Which meat you prefer?
    Chicken   b) Beef   c) Mutton

18. Do you feed your child fish regularly?
        a) Yes   b) No   c) Sometimes
19. Which types of fish you prefer?
    a) Big   b) Small

20. Do you feed your child egg regularly?

    a) Yes   b) No   c) Sometimes

21. Do you feed your child vegetable regularly?

    a) Yes   b) No   c) Sometimes

22. Do you feed your child fruits?

    a) Yes   b) No   c) Sometimes

23. If yes, then which types of fruits you prefer?

    a) Sweet   b) Sour   c) Sweet and Sour (both)

24. Do you give your child chocolate, chips, biscuits and other outside snacks?

    a) Yes   b) No

25. Do you cover the food properly?

    a) Yes   b) No   c) Sometimes

26. Do you wash your hand before preparing food?

    a) Yes   b) No   c) Sometimes

27. Do you clean the plate and glass before feeding your child?

    a) Yes   b) No   c) Sometime

28. Do you wash your hand before feeding your child?

    a) Yes   b) No   c) Sometimes

29. If yes, then how do you wash your hand?

    a) Soap   b) Others

30. Do you wash your hand after using toilet?

    a) Yes   b) No   c) Sometimes

31. Do you wash baby's hand before feeding him/her?

a) Yes   b) No   c) Sometimes