Nutritional Status of Under Five Years Children in Hlaing Thar Yar Township, Yangon, Myanmar

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Abstract

Nutrition is the basic requirement for all human beings for everyday movement and daily activities. To become a well-being person, he or she needs to achieve full nourishment. In addition, nutrition for kids is also based on the same formulas as nutritional values for adults. This study aims to investigate the nutritional status of under five years children with the awareness of their mothers or caregivers on the value of nutrition. In this study, both quantitative and qualitative case study research design and cross-sectional descriptive method are used. Stata Software was used for analyzing the data and descriptive and inferential statistics (chi-square test) were also used to present the survey results. The study found that there was no Severe Acute Malnutrition and only 10 children (4.55%) are at Moderate Acute Malnutrition, 49 (22.27%) are At-Risk and 161 (73.18 %) are at the Normal stage. As a result, the nutritional status of under five years children was normal in this study. In addition, the awareness of mothers and child age, (P = 0.000) and (P = 0.015) are statistically significant in explaining under five years children's nutritional status. This study found that the child possessed a suitable nutrition level when the mother had the proper knowledge of nutrition, awareness, and infant and young children feeding practices.

keywords: Nutrition, Nutritional Values, Severe Acute Malnutrition, At Risk, Moderate Acute Malnutrition, Normal Stage.

1. Introduction

Nutrition is the basic requirement for all human beings for everyday movement and daily activities. To become a well-being person, he or she needs to achieve full nourishment. In every community, children are recognized as a valuable natural resource and the greatest human investment for the development of a society. But malnutrition remains a primary cause of ill-health among children in developing countries.

Considering the persistent high levels of acute and chronic malnutrition, the United Nations International Children's Emergency Fund (UNICEF), in partnership with local authorities, communities and implementing partners, supports the scaling-up of critical nutrition interventions. In both acute and protracted humanitarian situations, all women and children require a set of essential nutrition interventions to protect their health and well-being and to ensure every child achieves his or her full growth potential. These critical interventions include support for Infant and Young Child Feeding (IYCF) through counselling, micronutrient supplementation, community-based nutrition promotion, and the management of acute malnutrition (UNICEF, 2014).

Although Myanmar has shown a sound macroeconomic growth, the prevalence of undernutrition remains high among children and women. The most recent estimates from 2015-16 show a national prevalence of stunting of 29.2%, having declined from 40.8% in 2000. The prevalence of stunting in rural areas (31.6%) is higher than in urban areas (21.0%), and there are substantial differences by State/Region (Multi-sectoral National Plan of Action on Nutrition, MS-NAPAN, 2018).

Many children in Myanmar suffer from different forms of malnutrition. In Myanmar, 22.6% of under five years children are moderately stunted or too short for their age, while 12.7% are severely stunted; children who are moderately wasted or too thin for their height are 7.9%, while those severely wasted are 2.1%. In rural areas, children are more likely to be underweight and stunted than children in urban areas. Undernutrition is most common in Rakhine and Chin States than in other States and Divisions of the country, with a significant prevalence among the poorest families. According to the Demographic Health Survey [DHS] (2016), nationally, one out of three children under five years of age suffers from chronic undernutrition. It is caused by many factors: inadequate health; incorrect childcare and feeding; poor sanitation and hygiene behaviours; lack of diversified diet; limited access to basic social services; food insecurity and inadequate livelihoods; limited women's empowerment. Thus, in Myanmar, the World Food Programme [WFP], in partnership with the Government and UN agencies, is actively supporting the development of a new prioritized multi-sectoral Myanmar Action Plan for Food and Nutritional Security (2016-2025), as a response to the Zero Hunger Challenge (WFP Myanmar, 2016, Nutrition, Zero Hunger).

To grow healthy children, mothers or caregivers need to be fed the right amount of nutrients and follow a well-balanced diet which includes all of the food groups described in the food guide pyramid. Good nutrition is the source of child survival, health, and brain development as well as a well-balanced nourishment is a fundamental factor to grow and learn, to participate in, and contribute to their communities properly, which leads to substantial provision for the country's socioeconomic development. Actually, proper nutrition is not only crucial for

everybody but also important for kids because of their growth and development. Nutritional deficiencies affect physical growth development in the long run and it can lead to poor health and disability in old age. The high prevalence of malnutrition jeopardizes future economic growth by reducing the intellectual and physical potential of the entire population (Desalegn, D., Egata, G., Halala, Y., 2017).

Moreover, nutritional deficiencies become the main issue for developing countries. Health and Social Services agreed that young children need to develop healthy eating and physical activity habits early on. Children are at a time in their life when they are constantly growing and learning new knowledge (Kaban Montessori School, 2018). Children who follow a regular diet of healthy fats and high-fibre foods may lead to avoiding the chances of chronic illnesses even though the illness tends to be genetic within their families. Currently, less than a quarter of infants in Myanmar are exclusively breastfed and many young children are fed diets deficient in proteins, fats, and essential vitamins and minerals. Therefore, this study intended to investigate the nutritional status of under five years children and to find out how mothers or guardians perform on the health and nutritional value of their kids.

1.1 Objectives of the Study

The objectives of the study are to examine the nutritional status of under five years children and to know about the awareness of mothers or caregivers on the value of nutrition in Hlaing Thar Yar Township, Yangon, Myanmar.

1.2 Method of Study

Both quantitative and qualitative case study research design and cross-sectional descriptive methods were used for this study. A semi-structured interview questionnaire was prepared in order to obtain the intended information. Primary data were collected after getting ethical approval from the relevant authorities and the respondents. A stratified random sampling method was applied to select the sample of 200 households from four wards of Hlaing Thar Yar Township. Stata software was used for analyzing the data. Both descriptive and inferential statistics (chi-square test) were also used to present the survey results. Moreover, frequencies and cross-tabulation were applied to clean the data and describe

frequencies, means, the standard deviation in descriptive analysis on socio-demographic characteristics of households, and nutritional status of under five years children.

The questionnaire was designed to assess the nutritional status of children and its association with demographic characteristics of the households, socioeconomic factors, mothers' awareness, and dietary diversity intake of the under five years children. And a standard MUAC (Mid- Upper Arm Circumference) tape was used to measure the nutritional status of under-five years children. The measurement of the dietary diversity score of the children was constructed on simple counts of the number of food groups consumed by the child in the previous 24 hours. Generally, the seven food groups recommended by the World Health Organization (WHO) for Infant Young Children Feeding (IYCF) were used as guidelines for assessing individual dietary diversity.

1.3   Scope and Limitations of the Study

The focus of this study is to find out how mothers or guardians perform on the health and nutritional value of their children's nutritional status and to assess the nutritional status of under five years children using MUAC cut-off values for malnutrition. This study has some limitations. Firstly, as MUAC does not count body composition, it may be an equipment of a limited value in identifying overweight and obesity with low skeletal muscle mass. Secondly, the study sample was extracted from a single township and does not cover the wider Myanmar population, even though the participants were randomly selected in each ward.

2.   Survey analysis

2.1   Survey Profile

The survey area was focused on Hlaing Thar Yar Township which is located in the western part of Yangon, Myanmar. The township comprises twenty wards and nine village tracts and shares borders with Htantabin Township in the north and west, Insein Township, Mayangon Township, and Hlaing Township in the east

across the Yangon River, and Twante Township in the south (Yangon City Development Committee [YCDC], 2009). Hlaing Thar Yar Township's population is nearly 730,000 and about half of them are squatting illegally. Migration has been attracted by the development of fast-expanding industrial zones, such as garments and other light industries. After Cyclone Nargis, some of the affected population from the Delta region migrated to Hlaing TharYar. Hlaing Thar Yar Township can be known as a traditional township; poor people who moved out of traditional rural livelihoods, however, still work as low-skill casual laborers. In addition, Hlaing Thar Yar Township is a flooding and large slum area of Yangon in comparison to the other township. Therefore, the indicators for infant and young children feeding practices were poor, along with inappropriate health care seeking behaviour in case of children's illness.

2.2 Survey Design

The structured questionnaire was designed to assess the nutritional status of under five years children. It involved five sections; the first section was about the demographic characteristics of the participants; the second section was concerned with socioeconomic factors of the households; the third section related to the dietary diversity intake of the under five years children; mothers or caregivers' awareness was examined in the fourth section, to determine to what extent their attitude turn into some health knowledge indicators like the preventive method, personal hygiene, home sanitation, healthy food, chemical fertilization, etc. Likert Scale was used in determining awareness, attitude, and perception of mothers or caregivers. The last section was the anthropometric measurements of children under five with MUAC tape in this study. The sampling unit for this study was the households with children aged 6 to 60 months of age and the respondents were the mothers or the principal caregivers of the index child. Data were collected by three well-trained surveyors and the measurements were done by two nutritionists.

3. Survey results

3.1 Demographic Profile of the Children's Mothers or Caregivers

The following table shows the distribution of demographic characteristics of the under five years children's mothers and caregivers in Hlaing Thar Yar Township, including age, gender, marital status, education level, household income (Myanmar Kyats: MMKs), and occupation.

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Tab. 1 Demographic Characteristics of Mothers or Caregivers

Particular	Categories	Frequency	Percentage (%)	Mean ± Standard Deviation
Age (years)	17-19	20	10.00	
	20-29	42	21.00	33.29
	30-39	92	46.00	(10.3713)
	40-49	30	15.00	
	50-59	9	4.50	
	> 60	7	3.50	
Gender	Male	13	6.50	
	Female	187	93.50	1.935 (0.2471)
Marital Status	Single	-	-	-
	Married	164	82.00	1.16 (0.3675)
	Divorce/ Widow	36	18.00	
Education Level	Illiterate	6	3.00	
	Monastery	10	5.00	
	Primary School	53	26.50	
	Middle School	68	34.00	3.92 (1.1089)
	High School	51	25.50	
	University/ Graduate	12	6.00	
Income (MMKs)	(150,000-200,000)	19	9.50	
	(200,001-250,000)	132	66.00	
	(250,001-300,000)	30	15.00	244005
	(> 300,000)	14	7.00	(52063.69)
	Not Answer	5	2.50	
Occupation	Government Staff	3	1.50	
	Company Staff	9	4.50	
	Own Business	16	8.00	
	Factory Worker	25	12.50	5.345
	Shopkeeper	50	25.00	(1.5774)
	Casual Worker	29	14 .50	
	Dependent/ Housewife	68	34.00	
	Total	200	100	

Source: Survey Data (2018)

Table (1) reveals the distribution and relationship between demographic characteristics and socioeconomic factors of households. The mean age of the mothers or caregivers was 33.29 years, with the youngest being 18 years and the oldest 68 years old at the 95% confidence level, 33.29 ± 10.3713. Thus, the average age of a mother or caregiver was between 33 years and 43 years. A total of 200 households, including 187 (93.5%) female and 13 (6.5%) male respondents, including 220 under five children, participated, because households with more than one child aged (6 – 60) months were included in this study.

Concerning the marital status, there is no single, about 82 % of respondents were married, the remaining 18 % of respondents were divorced and some were widowed. In addition, 82 % of females were the mothers of under five years children, only 6.5% were their fathers and 11.5% were the head of households in their families.

Regarding the educational background, among 200 respondents 3% of females are illiterate, 5% of households' heads are learned by monastery education, most of the children's mothers and caregivers had completed Middle school (33%), Primary school (26%) and High school (25%), respectively. About 6% were attending University or graduated.

Concerning the household's monthly income, 2.5% of respondents refused to declare their family income. 9.5% of respondents were included in the low-income bracket (150,000-200,000) MMKs, while 66% of respondents were in the middle-income bracket (200,001-250,000) MMKs, considered as middle income. High-income respondents were 15 % and 7 % of respondents were classified as very high-income earners, respectively.

This study found that housewives or dependents were high up to 34 % of the sample, because most of the targeted respondents were females who were mothers of under five years children. The second most popular occupational group was shopkeepers (25%), while factory workers were 12.5%. About 8% were self-employed or engaged in their own business and 14.5% were casual workers. Company staffs were 4.5%, and only 1.5% were government staffs.

3.2 MUAC Measurement

According to the anthropometric method used to assess body composition, the body is considered to be made up of two components, such as the fat mass and the fat-free mass. Among the different measurements used to assess these two compartments, the Mid Upper Arm Circumference (MUAC) is an accurate way to measure fat-free mass. It is the easiest and simplest way to measure, as a special

tape is used for measuring the nutritional status of under five years children in this study.

The MUAC tape has three or four colours, with the red colour (i.e. MUAC less than 11.0 cm) indicating Severe Acute Malnutrition (SAM), in which case the child should be immediately treated. A MUAC of between 11.0 cm and 12.5 cm (with red colour in three-colours tape or orange colour in four-colours tape) indicates Moderate Acute Malnutrition (MAM), in which case the child should be immediately referred for supplementary treatment. A MUAC showing the yellow colour (between 12.6cm and 13.5cm) indicates that the child is At-Risk and should be counselled and followed-up for growth promotion and monitoring; finally, the green colour (above 13.5cm) 'indicates that the child is Normal stage or well-nourished'.

In 2013, the WHO postulated guidelines to use MUAC at the community level to test for SAM, while healthcare workers in primary healthcare facilities and hospitals can assess the nutritional status either with MUAC or WHZ (Weight for Height) and check the bilateral oedema in children aged 6–59 months and infants. Children with medical complications and SAM are treated as inpatients in facilities and hospitals, whereas, children without medical complications and SAM are treated at home, following a community-based program for the management of acute malnutrition (CMAM) (World Health Organization, 2003).

3.2.1   Severe Acute Malnutrition (SAM)

Severe acute malnutrition is characterized by the presence of oedema of both feet or severe wasting and remains a major cause of mortality among under five years children. According to the WHO growth standards, (2006), severe wasting or severe acute malnutrition is defined by a middle-upper arm circumference [MUAC] < 11.0 cm in children 6-59 months, or a weight-for-height/length<-3 Z scores in children aged 0 to 59 months. If children who suffer from Severe Acute Malnutrition show loss of appetite or any other medical complication, they should be admitted for inpatient care. Children who have a good appetite and no medical complications can be managed as outpatients (WHO, 2000). The weight and height of children under 59 months are used as proxy measures for the general health of the entire population. Weight-for-height (wasting) provides the clearest picture of acute malnutrition in a population at a specific point in time. Black R, Allen L, Bhutta Z, et al., (2008), asserted that SAM children have an approximately 10 times higher risk of mortality than their well-nourished peers.

Wasting and stunting are very different forms of malnutrition. Stunting is chronic and its causative factors are poorly understood. Stunting usually does not pose an

immediate threat to life and is relatively common in many populations in less-developed countries. This is not to say that it is unimportant, just less important than wasting in humanitarian emergencies. Wasting resulting from an acute shortage of food is reversible with refeeding and has a relatively high mortality rate. For these reasons, wasting is the highest priority form of malnutrition in humanitarian emergencies (London School of Hygiene and Tropical Medicine, 2009).

3.2.2. Moderate   Acute Malnutrition (MAM)

Moderate Acute Malnutrition (MAM) refers to moderate wasting, that is the weight for height < - 2 z - score and > - 3 z -score for 0 - 59 months children or MUAC < 12. 5 cm and >11.5 cm for 6 - 59 months children.

Acute malnutrition, or wasting, is an indicator of recent or current undernutrition and is often the result of short-term inadequacy of food, and a high burden of morbidity, such as diarrhoea or respiratory infection. It is accessed by measurements of weight-for-height, mid-upper arm circumference (MUAC), or the presence of oedema. According to the 2015-16 DHS, 7% of the children under five years of age are classified with acute malnutrition, which is a reduction of about a third from the level observed in 2000 of 10.7%. The prevalence of severe acute malnutrition (SAM) among under five children is only 1%, while the problem of moderate acute malnutrition (MAM) is significantly higher. Although younger children have a higher risk of wasting, there are no significant differences based on socioeconomic status, which implies that problems leading to acute short-term nutritional insults are widely distributed in the country and occur even among families who should be able to afford sufficient quality and quantity of food.

3.3   Nutritional Status of Under Five Years Children

The following table described the condition of nutritional status of under five years children in Hlaing Thar Yar Township, Yangon, Myanmar.

Tab. 2 Nutritional Status of Under-Five Years Children

MUAC Grading (cm)	Nutrition Level	Frequency	Percentage (%)
< 11.0	Severe Acute Malnutrition	0	0
11.0 to 12.5	Moderate Acute Malnutrition	10	4.50
12.6 to 13.5	At Risk	49	22.27
≥ 13.6	Normal	161	73.18
Total		220	100%

Source: Survey Data (2018)

Table (2) shows that there was no Severe Acute Malnutrition and only 10 children (4.5%) were at Moderate Acute Malnutrition, 49 children (22.27%) were At Risk, and 161 children (73.18%) were Normal nutritional status. As a result, the nutritional status of under five years children was normal in this study.

3.4   Children's Nutrition Level by Age and Gender

Age and gender of the children may be critical factors to determine the nutritional status of children. Similarly, Olack, B.; Burke, H.; Cosmas, L.; Bamrah, S.; Dooling, K.; Feikin, D.R.; Talley, L.E.; Breiman, R.F., (2011), stated that boys are more likely to be malnourished because they are more influenced by environmental stress, which largely contributes to malnutrition. Therefore, the study discusses the different nutritional statuses of under five years children by grouping them into each age level and gender point that can be seen in the following table (3) and table (4), respectively.

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Tab. 3 Classification of Children's Nutritional Status by Age Groups

Child's Age (months)	Severe Acute Malnutrition < 11.00 cm	Moderate (11.0-12.5cm)	At Risk (12.6-13.5cm)	Normal (≥ 13.6 cm)	Total
6-12	0	6 (60.00%)	20 (40.82%)	36 (22.36%)	62 (28.18%)
13-24	0	3 (30.00%)	12 (24.49%)	37 (22.98%)	52 (23.64%)
25-36	0	0 (0.00%)	6 (12.24%)	45 (27.95%)	51 (23.18%)
37-48	0	1 (10.00%)	5 (10.20%)	31(19.25%)	37 (16.82%)
49-60	0	0 (0.00%)	6 (12.24%)	12(7.45%)	18 (8.18%)
Total	0 (0.00 %)	10 (100%)	49 (100%)	161 (100%)	220 (100%)

Source: Survey Data (2018)   Chi2-P= 0.015

From table (3), there were 6 (about 60%) Moderate Acute Malnutrition Children among the under the one-year age group, 3 (about 30%) Moderate Acute Malnutrition children between one- and two-years age group and approximately, 1(about 10%) of Moderate Acute Malnutrition children are between three to four years of age. In summary, Moderate Acute Malnutrition commonly occurs in younger age groups, because of the need for supplementation for children of this age.

Moreover, the mean age of the sampled children was 26.6 months with the youngest being 6 months and the oldest 60 months old at the 95% confidence level, 26.64091 ± 1.95839. Thus, the average age of a child was between 28.6 months and 24.7 months. As a result of the P-value, P = 0.015, Pearson chi-square significant level indicates that age of the child may influence the nutritional status of the child was also supported by the findings from this review.

Tab. 4 Children's Nutrition Level by Gender

Gender	Moderate (11.0 to 12.5 cm)	At Risk (12.6 to 13.5 cm)	Normal ($\geq$ 13.6 cm)	Total (%)
Male	5 (50.00%)	27 (55.10%)	84 (52.17%)	116 (52.73%)
Female	5 (50.00%)	22 (44.90%)	77 (47.83%)	104 (47.27%)
Total	10 (100%)	49 (100%)	161(100%)	220 (100%)

Source: Survey Data (2018)   Chi2–P = 0.001

According to table (4), the nutritional status of under five years children by sex was classified into two groups to know the difference between male and female nutrition levels. The targeted sample of 200 households in this study is comprised of 116 male children and 104 female children, and a proportion of 52.73% boys and 47.27% girls, respectively. Results indicate that out of 220 children, there are five male and five female at Moderate Acute Malnutrition. Although several research studies describe that boys are more likely to suffer from malnutrition, as well as the growth rate of boys is slower than girls from the medical point of view, in this study the number of males and females at Moderate acute Malnutrition did not differ according to sex. However, male children in At-Risk and Normal Nutritional status are more frequent than females. Thus, the study found that the prevalence of malnutrition between males and females, showing significant differences at Pearson chi2 (4) = 18.2408, P = 0.001.

3.5   Mother's or Caregiver's Awareness

Definition of awareness is the quality of being aware: knowledge and understanding that something is happening or exist. Generally, awareness means the personal ability to know and perceive automatically, to believe, or to be conscious of being events. Awareness of mother or caregiver refers to knowledge, attitudes, and practices which can be acquired through many ways such as education, communication with each other around their environment, different types of media, self-experiences, etc. Knowledge is important to make someone's

activities. Mother's knowledge will affect the household consumption patterns and knowledge would change her attitudes. It was the approval of an action. A progressive attitude develops health values, particularly the value of nutrition manifested in response.

Similarly, feeding and caregiving practices are important contributing factors to the nutritional status of children. Care can be defined as the provision in the households and in the community of time, attention, and support required to meet the physical, mental and social needs of the growing child and other household members (Engle, Menon & Haddad, 1996). A caregiver's ability to provide adequate care is dependent on several factors, including, but not limited to, the caregiver's education, knowledge and beliefs, physical health, autonomy and control of resources, workload and time availability, and family and community social support (Engle, et al., 1996). Moreover, mothers or caregivers with a low educational level have a small chance of getting well-paying jobs. Phooko-Rabodiba et al. (2016) further elucidated that education enhances awareness and knowledge of health issues, hygiene practices, and household income. Thus, caregivers with a low educational level may lack an understanding of hygiene practices and other health issues.

In this study, mothers' or caregivers' awareness level was assessed by different indicators related to health knowledge such as healthy food, preventive methods, home sanitation, personal hygiene, self-medication, and hygienic practices. The perception of mothers was strongly influenced by the actual growth of their children.

Tab. 5 Mother's or Caregiver's Awareness Level on the Value of Nutrition

Level of Awareness	Poor	Basic	Good	Very Good	Total
Frequency	12	95	56	37	200
Percentage	6.00	47.50	28.00	18.00	100

Source: Survey Data (2018).

Table (5) describes the level of mothers or caregivers' awareness of the value of nutrition. The majority of the respondents (47.50%) had basic knowledge, while the minority of respondents (only 6.00%) had poor knowledge and practice level; about 28.00% and 18.50% of respondents had good and very good awareness levels, respectively.

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Tab. 6 Nutritional Status of Children and Mothers' or Caregivers' Awareness

Nutrition Level	Level of Awareness				
	Poor	Basic	Good	Very Good	Total
Moderate	5 (41.67%)	5 (5.26%)	0 (0.00 %)	0 (0.00%)	10 (5.00%)
At Risk	4 (33.33%)	35 (36.84 %)	6 (10.71%)	4 (10.81%)	49 (24.50%)
Normal	3 (25.00 %)	55 (57.89 %)	50 (89.29%)	33 (89.19%)	141 (70.50%)
Total	12 (100%)	95 (100%)	56 (100 %)	37 (100 %)	200 (100%)

Source: Survey Data (2018)   chi2- P = 0.000

Table (6) indicates that mothers' or caregivers' awareness has a highly significant impact on the nutritional status of children (p=0.000). The study reflects that the children whose mothers or caregivers were unaware or had poor or basic nutritional knowledge were not only suffering from Moderate Acute Malnutrition but were also found in a situation of At-Risk level, while mothers or caregivers with higher levels of awareness nurtured their children at Normal stage.

The children's nutritional status depends upon the mother's or caregivers' awareness level and the awareness of mothers strongly influenced the actual growth of their children. Thus, there was a positive relationship between the nutritional status of children and mothers' or caregivers' awareness.

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Tab. 7 Nutritional Status of Children and Households' Monthly Income

Nutrition Level	Income Level (Kyats)					
	Not Answer	Low income	Middle income	High income	Very High income	Total
Moderate	2(40.00%)	4(21.05%)	3(2.27%)	1(3.33%)	0(0.00%)	10 (5.00%)
At Risk	2(40.00%)	9(47.37%)	25(18.94%)	8 (26.67%)	5(35.71%)	49(24.50%)
Normal	1(20.00%)	6(31.58%)	104(78.79%)	21(70.00%)	9(64.29%)	141(70.50%)
Total	5(100%)	19(100%)	132(100%)	30(100%)	14(100%)	200 (100%)

Source: Survey Data (2018)   chi2- P = 0.000

Table (7) shows that 80.00% of respondents who refused to answer about their family income have under five years children with Moderate Acute Malnutrition or At-Risk, while only 20.00% of them were found at Normal stage. Similarly, 21.05% and 47.37% of low-income respondents have children in Moderate Acute and At-Risk level, while 31.58% of them were at Normal stage. Conversely, there was no Moderate Acute Malnutrition child in very high-income families, even though only 3.3% of respondents with high income have under-five children in Moderate Acute Malnutrition status. According to the study, high-income families were less likely to have child malnutrition and lower-income families are more likely to be malnourished. The study indicates that there was a statistically significant correlation between households' monthly income and nutritional status of under five years children (P = 0.000). As a result, low family income is a factor that influences the household consumption pattern, which turns into the nutritional status of the household, that will lead to the cause of malnutrition in children.

3.6   Dietary Diversity

In this study, the dietary diversity method is used to determine the nutritional status of under five years children in Hlaing Thar Yar Township, Yangon,

Myanmar. It is a measure of the number of food groups consumed over a reference period, usually within 24 hours. In general, there are seven major foods groups based on the WHO's Infant Young Children Feeding (IYCF) guidelines. These food groups are (1) grains, roots, and tubers (2) legumes and nuts (3) flesh foods like meat, fish, poultry, and liver or organ meats (4) eggs (5) Vitamin A-rich fruits and vegetables (6) dairy products like milk, yogurt and cheese and (7) other fruits and vegetables. To measure the dietary diversity score of the children, simple counts of the number of food groups consumed by the child in the past 24 hours were performed. Generally, the seven food groups recommended by WHO's Infant Young Children Feeding (IYCF) guidelines for assessing individual dietary diversity were used.

Tab. 8 Nutritional Status of Children concern with Dietary Diversity Score

Nutrition Level	Dietary Diversity Score			
	Low	Medium	High	total
Moderate Acute	9 (90.00)	1 (10.00%)	0 (0.00%)	10 (100%)
At Risk	31 (63.27%)	14 (28.57%)	4 (8.16%)	49 (100%)
Normal	92 (57.14%)	36 (22.36%)	33 (20.49%)	161(100%)
Total	132 (60.00%)	51 (23.18%)	37 (16.82%)	220 (100%)

Source: Survey Data (2018)

From table (8), in terms of dietary diversity score, the majority of the children, about 60%, had low dietary diversity (≤ 3 food groups), about 23.18% had medium dietary diversity (4 and 5 food groups) and 16.82% obtained high dietary diversity score (≥ 6 food groups). The study found that 90.00% of Moderate Acute Malnutrition were at low dietary diversity score, 10.00% of Moderate Acute Malnutrition were at medium dietary diversity score and there were no malnourished children who were included in the group with a high dietary diversity score. At the same time, the dietary diversity of children depends on the family income and awareness of mothers or caregivers. The cost of diet in poor households explored in this study showed that families in urban areas cannot afford a nutritious diet and essential expenditure on non-food items.

4. Conclusions

The nutritional status of Hlaing Thar Yar Township is not in severe condition and only 10 children (4.5%) were at Moderate Acute Malnutrition, 49 children (22.27%) were At Risk, and 161 children (73.18%) were at Normal nutritional status. As a result, in this study the nutritional status of under five years children was normal.

The study found that up to 6% of mothers or caregivers were unaware or had poor nutritional knowledge, 47.5% had basic knowledge and 46.5% of respondents had good nutritional knowledge. Especially, mothers' or caregivers' awareness has a highly significant impact on the nutritional status of children (P =0.000), at a 5% significance level. Thus, this study reflects that children whose mothers or caregivers had poor and basic nutritional knowledge not only suffered from Moderate Acute Malnutrition but were also found in a situation of At-Risk level, while mothers or caregivers with good nutritional knowledge nurtured their children at Normal stage. In addition, Moderate Acute Malnutrition was higher when mothers had Primary and Middle school education. On the other hand, higher education levels of mothers or caregivers resulted in a lower rate of malnutrition in their children. Similarly, the awareness of mothers or caregivers and dietary diversity were the strongest factors affecting children's nutritional status (P = 0.000).

According to the mothers' or caregivers' educational background, Moderate Acute Malnutrition highly occurred in children whose mothers had Primary and Middle school education, while higher education levels of mothers or caregivers resulted in a lower rate of malnutrition in children. The lack of education contributes to malnutrition in several ways, including a low family income. At the same time, the dietary diversity of children depends on the family income and awareness of mothers or caregivers, since the largest occurrence of Moderate Acute Malnutrition in children was related to a low dietary diversity score. The cost of diet in poor households explored in this study showed that families in urban areas cannot afford a nutritious diet and essential expenditure on non-food items. Ultimately, the awareness of mothers or caregivers is the most important factor for nutrition, including the means to achieve an optimal diet and other factors contributing to good nutrition.

Finally, this study explained that the children achieved a suitable nutrition level when the mothers or caregivers had the proper knowledge of nutrition, awareness, and infant and young children feeding practices. Many mothers or caregivers in Hlaing Thar Yar are at low socioeconomic status, such as lack of education, low family income, unstable jobs, etc, but they have good environmental knowledge and keep their children healthy, following the guidelines of the Child Health Seminars organized by World Health Organization

[WHO], United Nations International Children's Emergency Fund [UNICEF] Myanmar, World Food Programme [WFP], International Non-government Organizations [INGOs] and Non- government Organizations [NGOs]. Infants and young children may face hunger, inadequate nutrition, and impaired physical and neurological development as a cause of early death of their mothers, as the the utmost responsibility for child nutrition stays with the parents. In 2004, the Food and Agriculture Organization of the United Nations (FAO) and the World Health Organization (WHO) found out the vitamin and mineral requirements for all age groups.

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