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Original Research Article

Are socio-economic characteristics and maternal dietary patterns dominant factors on four-star diet achievement of infants and young children (6-23 months)?

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ABSTRACT

Background: Nutritional deficiency is one of the challenging issues in developing countries, especially in infants and young children and maternal dietary diversity has influencing effects on children's complementary feeding. This study aimed to assess the influence of socio-economic characteristics and dietary patterns of mothers on four-star diet achievement of infants and young children in 3 townships in Magway region as well as perceived barriers of mothers on complementary feeding practices of infants and young children.
Methods: It was a cross-sectional descriptive study and mixed-method research. A total of 224 mothers were interrogated by pre-structured questionnaires. Moreover, in-depth interviews were done in 24 mothers.
Results: Education level of mothers and age of the children were observed as strong predictors on children's four-star diet achievement. In qualitative data analysis, misperceptions and lay beliefs of mothers on breastfeeding and complementary feeding practices of the children, adversities of mothers who worked outside of their home, influence of elder people in the family were identified as perceived barriers.
Conclusions: This study is expected to facilitate policy makers with relevant findings and highlight that factors involved in improving the nutritional status of the infants and children.

Keywords: Infants and young children, Maternal dietary diversity, Four-star diet, Perceived barriers

INTRODUCTION

Nutritional deficiency is still a challenging issue in developing countries, especially in infants and young children (6-23 months).[1] Poor feeding practices are a major threat to social and economic development and the most serious obstacles to attaining and maintaining health that occurred in this age group.

Generally, malnutrition perils human health and development and South-East Asia region is impacted obviously by child undernutrition. Some of the major risk factors responsible for disease burden are underweight, overweight and obesity, low fruit and vegetable intake and suboptimal breastfeeding.[2]

Globally, the prevalence of stunting is 21.9% and wasting of under-five is 7.3%. Moreover, the percentage of exclusive breastfeeding is less than 35% around the world.[3]

Under five children in Asia, stunting is 22.7% and wasting is 9.4% respectively.[3] In Myanmar, the prevalence of stunting is 29%, wasting is 7%, underweight is 19% and over half of infants under age 6 months are exclusively breastfed.[4]

Proper complementary feeding to the infant and young child is the world accepted way of improving nutritional status of the nation. The first 1000 days of life, from conception until the child's second birthday are

considered to be the critical window of opportunity for preventing undernutrition and its long-term consequences. Poor complementary feeding practices during this critical window (between 6 and 24 months of age) increase the risk of undernutrition, morbidity and mortality in infants and young children.[5] Four-star diet is a contemporary method mostly used for infants and young children to obtain proper complementary feeding and contains legumes, staples, vitamin A-rich foods and vegetables and animal-source foods.[6]

Enhanced infant and young child feeding originated from ensuring the health and nutritional status of women, over the course of life and continues with women as providers for their children and families. Therefore, it is necessary to unravel the issues of mothers and children simultaneously.[7]

Dietary pattern (DP) is better at predicting the risk of diseases than the analysis of isolated nutrients or foods.[8] The predominant dietary patterns in South-East Asia are plant-based, low in diversity and often inadequate in energy, proteins and micronutrients, giving rise to stunting, wasting and anaemia. Food insecurity, poor knowledge and practices are also contributory factors. Therefore, promoting a healthy diet with an adequate balance of nutrients from early childhood is vital in preventing malnutrition. Lack of access to nutritious foods, care, poor feeding practices, unhygienic overcrowded living conditions and poor access to safe water and sanitation facilities are underlying causes.[2]

Dietary diversity (DD) is adopted as a proxy indicator of adequacy of the diet in large surveys.[9] A study found that children whose mothers consumed >5 food groups (on a scale of 0-9 food groups) were 5-9 times more likely to achieve minimum DD compared with those whose mothers consumed <3 food groups.[10] In a study done in Bangladesh, Ethiopia and Vietnam, it was found that maternal DD that was strongly associated with child DD.[9] Malnutrition is a priority problem since 1970s and mothers/caretakers food preference may be the main contributor for child malnutrition.[11]

Moreover, the literature suggested that parents may play an important role in manipulating their children's eating habits by feeding a variety and quantity of foods available to their child or through parents' own food-related behaviours and parental feeding styles. Fruits and vegetables (vitamin A-rich or other) were the food groups that had the lowest agreement between mother and child and where consumption was markedly lower among children than mothers. Greater maternal education was associated with higher child DD and higher number of children in the family was associated with lower child DD in Bangladesh and Vietnam, but not in Ethiopia. Aside from maternal DD that was strongly associated with child DD, only child's age (being older) was positively and significantly associated with greater child DD in all 3 countries. Compared with the younger children (6-11 month old), the older group (12-23 month old) was more likely to achieve the minimum DD (OR=5.3, 3.7 and 3.1 in Bangladesh, Vietnam and Ethiopia, respectively).[9]

By reviewing the previous studies, quality of maternal diet was the crucial factor in achieving good complementary feeding practices for the children because the health and nutritional status of mothers and children were intimately linked. Therefore, what needed to be done was to solve these problems of mothers and children together.[7]

Robinson et al 2007 found that women who followed the dietary recommendations and who had high intakes of fruits and vegetables were probably to have children who have comparable diets, with high infant guidelines pattern score.[13]

Improving complementary feeding was one of the biggest challenges to meet the global nutrition targets by 2025. Qualitative studies done in rural Uganda and Ethiopia explored that knowledge, culture, workload and social status of primary caregivers were the major factors for contributing malnutrition.[14,15]

Despite locally available foods for adequate nutrition, the prevalence of stunting, wasting and underweight was relatively high to meet the global targets by 2025. Among six to twenty three month aged children in Myanmar, solely 16% of them were getting proper nutrition, minimum acceptable diet.[4] The first 1000 days of life was a unique period of opportunity for the optimum health, growth and neurodevelopment process. Around the aged of 6 months, infants needed energy and nutrients exceeded what was provided by breast milk and complementary foods were necessary to meet those needs. However, there were few studies about infant and young child feeding practices of Myanmar children and mothers played a vital role in the health care of their children and promotion of complementary feeding of children.

The prevalence of stunting in Magway region was 25.9% according to Myanmar demographic and health survey.[4] Moreover, there were limited studies for the influence of maternal dietary patterns on complementary feeding of infants and young children.

The study was expected to support future policy and strategies to improve the nutritional status of Myanmar children and to find out the perceived barriers of mothers on complementary feeding.

METHODS

Study design

Cross-sectional descriptive study, both quantitative and qualitative methods were used.

Study population

Infants and young children (6-23 months) in Magway district, Magway region; mothers who were the main feeders of respective infants and young children were the study population.

Inclusion criteria

Last-born child in family who was born in 2 years before the study; children who were living along with their mothers were included in the study.

Exclusion criteria

Children who were sick during the previous one week; children who had congenital anomalies; mothers who had mental problems, cannot properly answer the questionnaires and those who did not want to give informed consent; and pregnant mothers during the study were excluded.

Study area

Both urban (30%) and rural (70%) areas of Magway district (Yenan-Chaung, Myothit and Magway townships), Magway region were the study areas.

Study period

The study duration was from November 2019 to September 2020.

Sample size

A sample size of 224 mother-child dyads from Magway, Myothit and Yae-Nanchaung townships were determined for the quantitative study and 24 of them were selected for qualitative study.

Sampling procedure

Quantitative research

Among 6 townships in Magway district, 3 townships were randomly selected and 224 respondents were selected. Along with population distribution, 74 respondents from urban areas and the remaining 150 respondents from rural areas were selected.

In urban areas, respondents were selected by simple random sampling and in rural areas, one rural health center was randomly selected and the respondents were selected from the village where main rural health center located and another village of this rural health center.

When the required data did not obtain, the remaining were selected from adjacent villages.

Qualitative research

A total of 24 respondents were selected randomly from the children who did not follow recommend infant and young child feeding (IYCF) practices.

Data collection methods and tools

Quantitative data collection

Face to face interview of selected respondents was done by using pre-tested semi-structured questionnaires.

Qualitative data collection

Qualitative data collection was done by in-depth interview (IDI).

Dietary assessment

Mothers' dietary diversity score (DDS) was constructed based on 10 food groups (grains, white roots and tubers; pulses (beans, peas and lentils); nuts and seeds; dairy; meat, poultry and fish; eggs; dark green leafy vegetables; other vitamin-A rich fruits and vegetables; other vegetables; and other fruits).[16] Children's complementary feeding practices were constructed based on IYCF guidelines of Myanmar. Food groups were assigned to 1 if any food item within the group consumed, or 0, if not eaten in one day 17. A cut-off point of ≥5 groups was used to determine minimum dietary diversity score for mothers. For complementary feeding practices, children who achieved four-star diets were regarded as good practice and those did not follow were regarded as poor practice.

Data management and analysis

Data entry

Data entry was done with EpiData software version 3.1.

Data cleaning

Data was checked for incompleteness and missing data manually and then, data was processed and cleaned.

Data analysis

Quantitative data analysis

Data analysis was done by using SPSS (statistical package for social science) version 22. Descriptive statistics were used for description of background information and variables. Mean and standard deviation were used for normally distributed continuous variables, and median and inter quartile range for non-normally continuous variables, and frequency and percentage for categorical variables. Association between different

variables was tested by Chi square test. Consequently, the variables which showed a p value of less than 0.2 were selected and included in a binary logistic regression model to identify predictors for four-star diet achievement of infants and young children. A p value of less than 0.05 was set as cut-off point for statistically significant association.

Qualitative data analysis

Recordings of the interviews were transcribed into text and the themes were identified from the transcripts. Coding and data analysis were done manually by using thematic data analysis.

RESULTS

Socio-economic characteristics of mothers and children

Among 224 pairs of mothers and children, majority of mothers (91.6%) were between 20 and 40 years (mean: 30±6 years). Almost all respondents were Burma and Buddhists. Regarding education level, more than 80 percent of mothers were primary school and above levels of education. Looking into the occupation of mothers, 37.9% of interviewees were dependent and the remaining were manual labourers, own business, company staff and government staff respectively. Roughly eighty three percent of respondents have family numbers between 3 and 6, most families earned more than 100,000 kyats per month (mean: 287633.9±209092.9 kyats). Midwives (44.6%), lady health visitors (22.4%) and doctors (25.4%) were involved in a vast majority of main caregivers during pregnancy for mothers and about two-third of mothers had a frequency of 4-8 times antenatal care.

Only 71% of mothers had immunization card at the time of interview and 98.7% of them completed the immunization according to schedule (Table 1).

Maternal dietary patterns

Over eighty percent of respondents usually ate 3 times in a day and more than eighty five percent of them have a habit of eating snacks. It was clearly seen that about 40% of mothers tend to eat snacks 2 times per day, 25.5% eat 1 time per day, 24% eat 3 times per day respectively and the remaining eat more than 3 times per day. Moreover, it was found that most of the mothers (80.8%) consumed more than five groups in a day (Table 2).

Table 1: Socio-economic characteristics of mothers and children (n=224).

Variables	Number	Percent
Age (completed years)		
<20	4	1.8
20-29	107	47.8
30-39	98	43.8
>40	15	6.6
Race		
Burma	222	99.1
Others	2	0.9
Religion		
Buddhist	224	100
Education		
Illiterate	13	5.8
Read and write	13	5.8
Primary	71	31.7
Middle	61	27.2
High school and above	66	29.5
Occupation		
Dependent	85	37.9
Manual labourer	88	39.3
Own business	39	17.4
Company staff	4	1.8
Government staff	8	3.6
Total family members		
3-6	188	83.9
>6	36	16.1
Monthly family income (MMK)		
<100,000	22	9.8
100,000-300,000	130	58.0
>300,000	72	32.2

Continued.

Variables	Number	Percent
Number of children between 6-23 months		
1	221	98.7
2	3	1.3
Birth order		
1st	112	50
2nd-3rd	93	41.5
>3rd	19	8.5
Age of children (months)		
6-8	27	12.1
9-23	197	87.9
Gender of children		
Male	130	58.0
Female	94	42.0
Main caregiver during pregnancy		
Doctor	57	25.4
Health assistant	13	5.8
Lady health visitor	50	22.4
Midwife	100	44.7
Auxiliary midwife	2	0.9
Traditional birth attendant	1	0.4
Nil	1	0.4
Frequency of AN care		
<4	17	7.6
4-6	133	59.4
>8	74	33.0
Immunization card		
Present	159	71.0
No	65	29.0
Completeness of immunization according to child's age (n=159)		
Yes	157	98.7
No	2	1.3

Table 2: Maternal dietary patterns (n=224).

Variables	Number	Percent
Frequency of main meals		
2	7	3.1
3	190	84.8
4	27	12.1
Habit of eating snacks		
Yes	192	85.7
No	32	14.3
Frequency of snacks (n=192)		
1	49	25.5
2	82	42.7
3	46	24.0
4	11	5.7
5	4	2.1

Table 3: Breast feeding practices of mothers on infants and young children (n=224).

Variables	Number	Percentage
Exclusive breastfeeding		
Yes	198	88.4
No	26	11.6

Continued.

Variables	Number	Percentage
Current breastfeeding		
Yes	212	94.6
No	12	5.4
Number of breastfeeding/day (n=221)		
<4	12	5.4
4-8	111	50.3
>8	98	44.3
Pre-determined age of children for continued breastfeeding (n=220) (in years)		
<1	7	3.2
1-2	114	51.8
>2	99	45

Table 4: Complementary feeding practices of infants and young children (n=224).

Variables	Number	Percent
Complementary feeding		
Yes	224	100
No	0	0
Age that started complementary feeding (months)		
1-4	12	5.4
5-6	73	32.5
≥7	139	62.1
Feeding snacks		
Yes	219	97.8
No	5	2.2
Amount of complementary feeding for one time (based on 250 ml bowl)		
About half	99	44.2
About one-third	96	42.9
Full	9	4.0
Others	20	8.9
Viscosity		
Correct	197	87.9
Incorrect	27	12.1
Basic food (rice, wheat, potatoes, sweet potatoes)		
Yes	222	99.1
No	2	0.9
Feeding in every meal (n=222)		
Yes	188	84.7
No	34	15.3
Meat (chicken, poultry), eggs, dairy products		
Yes	211	94.2
No	13	5.8
Feeding in every meal (n=211)		
Yes	166	78.7
No	45	21.3
Variety of pulses (lentil, pigeon peas, hyacinth beans chickpea)		
Yes	196	87.5
No	28	12.5
Feeding in every meal (n=196)		
Yes	111	56.6
No	85	43.4
Green, yellow, and red vegetables (water cress, carrot, tomato)		
Yes	194	86.6
No	30	13.4
Feeding in every meal (n =194)		
Yes	127	65.5
No	67	34.5

Table 5: Association between socio-economic characteristics and dietary diversity of mothers and four-star diet achievement of infants and young children.

Socioeconomic factors	Four-star diet achievement		P value
	Yes N (%)	No N (%)	
Age of mothers (completed years)			
<30	77 (34.4)	34 (15.2)	0.734
≥30	76 (33.9)	37 (16.5)	
Education of mothers			
Up to primary	74 (33.04)	23 (10.27)	0.041
Middle	41 (18.30)	20 (8.93)	
High school and above	38 (16.96)	28 (12.5)	
Occupation of mothers			
Dependent	55 (24.55)	30(13.39)	0.365
Working	98(43.75)	41(18.30)	
Family members			
3-6	128 (57.14)	59 (26.34)	0.916
>6	25 (11.16)	12 (5.36)	
Monthly family income (kyats)			
<100,000	17 (7.59)	5 (2.23)	
100,000-300,000	93 (41.52)	37 (16.52)	0.143
>300,000	43 (19.20)	29 (12.95)	
Age of the children (months)			
6-11	47 (20.98)	10 (4.47)	0.008
12-23	106 (47.32)	61(27.23)	
Birth order of the child			
≤3	140 (62.5)	65 (29.02)	0.991
>3	13 (5.8)	6 (2.68)	
Health care provider during pregnancy			
(+)	153 (68.30)	0 (0)	0.141
(-)	70 (31.25)	1(0.45)	
Frequency of antenatal care			
<4 times	11 (4.91)	6 (2.68)	0.920
4-8 times	92 (41.07)	41 (18.30)	
>8 times	50 (22.32)	24 (10.71)	
Immunization care			
(+)	130 (58.4)	62 (27.68)	0.639
(-)	23 (10.27)	9 (4.02)	
Maternal dietary diversity			
<5	30 (13.39)	13 (5.8)	0.818
≥5	123 (54.91)	58 (25.89)	

Table 6: Factors influencing four-star diet achievement of 6-23 months old children in 3 townships in Magway region.

Factors	Odds ratio	95% CI	P value
Education of mothers			0.180
Up to primary (reference)	1.6526	0.79318-3.443379	
High school and above	2.3472	1.1559-4.76644	0.018
Monthly family income (kyats)			
<100, 000 (reference)			0.676
100,000-300,000	1.26653	0.4183273-3.834543	
>300,000	2.12804	0.6671787-6.78766	0.202
Age of the children (months)			

Continued.

Factors	Odds ratio	95% CI	P value
6-11 (reference)			
12-23	2.85481	1.315706-6.19435	0.008

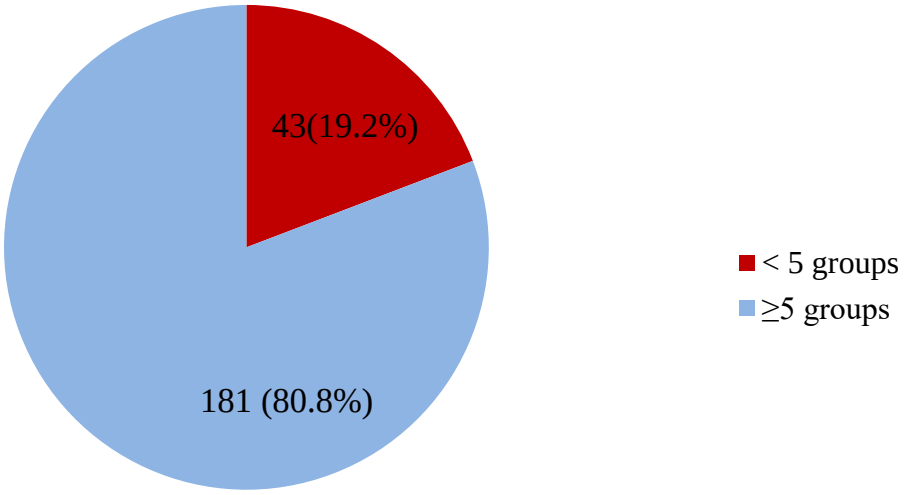

Figure 1: Dietary diversity of mothers (n=224).

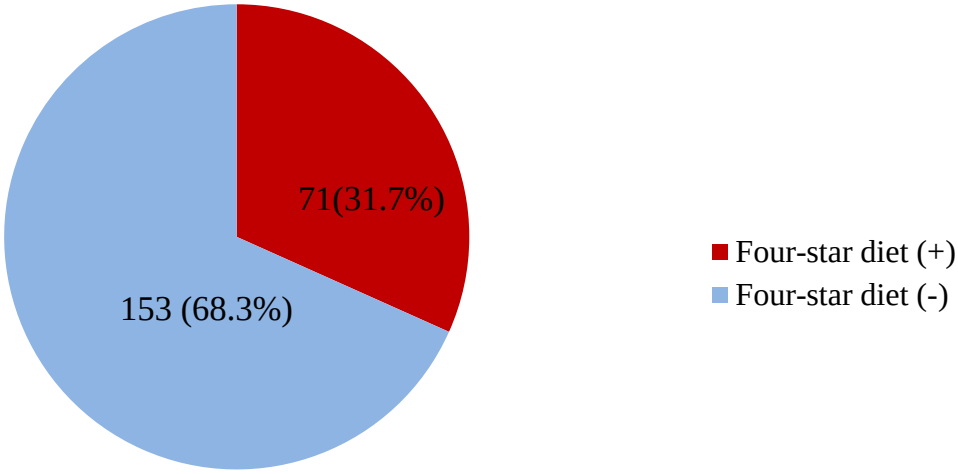

Figure 2: Four-star diet achievement of infants and young children (n=224).

Breast feeding practices of mothers on infants and young children

About 88.4% of children were exclusive breastfed and >90% of mothers was feeding the children with breastmilk. Most children were breastfed at least four times per day. The expected ages of children that mothers destined to continue breastfeeding were most in 1-2 years and >2 years category (Table 3).

Complementary feeding practices of infants and young children

All mothers had started complementary feeding and 32.5% of mothers initiated the breastfeeding according to correct weaning practice and 97.8% of children were fed snacks. In details, 44.2% of children were fed with half a bowl (250 ml) in one time, 42.9% with one third of a bowl, only 4% with full amount of a bowl and the viscosity of food given was 87.9% correct.

In four-star diet, almost all children were fed with basic food group and 84.7% of them were fed in every meal. About 94.2% of children were fed with meat, eggs, dairy products group and 87% of them were fed in every meal. Approximately 88% of children were fed with a variety of pulses group and 56.6% of them were fed in every meal. Over 86.6% were fed with green, yellow and red vegetables group and 64.8% of them were fed in every meal (Table 4).

Dietary diversity of mothers

Over eighty percent of respondents usually ate at least 5 food groups (Figure 1).

Four-star diet achievement of infants and young children

About 31% of children did receive four-star diet in the light of food groups and frequency in their daily meals (Figure 2).

Association between socio-economic characteristics and dietary diversity of mothers and four-star diet achievement of infants and young children

Among socio-economic characteristics and dietary diversity of mothers, only education, monthly family income and presence of healthcare provider during pregnancy and children's age were extracted for binary logistic regression (Table 5).

Factors influencing four-star diet achievement of 6-23 months old children in 3 townships in Magway region

By binary logistic regression predicted on the four-star diet achievement of children, mothers of middle-school education level had about 1.65 times the odds of achieving four-star diet compared with mothers of primary school and below education level (p=0.18). Moreover, mothers of high-school and above education level had about 2.35 times the odds of achieving four-star diet compared with mothers of primary school and below education level (p=0.018).

Furthermore, children from high-income families achieved four-star diet compared with children from low-income families although the findings were not statistically significant.

In children's age group, children of aged 6-11 months old group had 2.85 times the odds of achieving four-star diet compared with children of aged 12-23 months old group (p=0.008) (Table 6).

Qualitative findings

Qualitative research was done by conducting in-depth interviews of 24 mothers (8 mothers in each township) who did not follow the IYCF guidelines.

Knowledge of mothers on breastfeeding

Almost all mothers had known about exclusive breastfeeding and continued breastfeeding.

"Doctors said that the child must be exclusively breastfed until 6 months, continued breastfeeding until 2 years of age because mother's milk contains a variety of nutritious food and it is fresh to feed". A mother of 6 months old child from Yae-Nanchaung township said.

Practices of mothers on breastfeeding

Among the IDI respondents, about two third of mothers did continue breastfeeding after 6 months.

"I breastfed my baby since he was born, only mother's milk until six months, but gave water in about 2-3 months of age. Even though health staff advised me not to give water in order to be free diseases and healthy, I thought the baby must be thirsty like me and hence, I gave it. Besides, it was hot in summer and I would not give water if the season was winter". A mother of 14 months old child from Magway township said.

Attitude of mothers on exclusive breastfeeding

It was observed that all mothers had good attitude towards exclusive breastfeeding.

"I had known to exclusively breastfeed the child until 6 months because mother's milk involves all kinds of nutrition, clean and water is not clean". A mother of 18 months old child from Yae-Nanchaung township said.

Knowledge of mothers on complementary feeding

Although almost all respondents had known about 3 nutritious food groups (energy giving food group, body building food group and disease preventable food group), they didn't understand clearly the exact amount, correct proportion of food groups, viscosity of meal, age to continue breastfeeding.

"I don't know what is complementary feeding, but I feed my child with rice only after 6 months of age. I know about food groups because health assistant and midwives from my village told about this. Some organizations such as ENI foundation and PC Myanmar came to village to give health education about nutrition". A mother of 9 months old child from Yae-Nanchaung township said.

Complementary feeding practices of mothers

Although majority of mothers feed the child within the correct time frame, it was identified that lay beliefs, incorrect feeding because of unnecessary worrisome, feeding meals less than regular time when the child was ill. Moreover, mothers who worked outside of their homes could not feed the child properly.

"I fed the child with rice when the child was 6 months of age, feed just rice until 1 year of age and did not feed meat, vegetables because the child had no teeth at that time. I started to feed the child with rice, oil, salt, carrot, and meat after 1 year, but these could not involve in all meals". A mother of 16 months old child from Myothit township said.

"I started feeding child since 6 months of his age, fed 2 times per day, first I chewed the food and then feed it to the child. I didn't feed the child with leftover food. I also fed the child with snacks such as biscuits, cakes but not Myanmar traditional food as I think these can cause abdominal pain for the child. As I had to all day out of my home, I could not breastfeed regularly. And therefore, my sister and my mother usually feed the child when I am out". A mother of 19 months old child from Magway township said.

Attitude of mothers towards complementary feeding

Mothers have mixed perspectives on complementary feeding.

"Feeding eggs make the child sharp and clever, fried fishes strengthen the bones, but don't feed meat to child as this can cause helminthiasis. Nonetheless, I fed the child with vegetables". A mother of 14 months old child from Myothit township said.

"I am working outside and therefore, I usually eat a mixture of turmeric, salt and honey about 4-5 times per day. On top of that, I feed the child with a traditional medicine that can remove bad air, give Grovit and feed with seasonal foods in order that my baby could be strong and healthy". A mother of 8 months old child from Magway township said.

Misbeliefs on breastfeeding and complementary feeding

Notwithstanding that most interviewees did exclusive breastfeeding, feed complementary feeding correctly, some could not do because of their misperceptions themselves and influence of older people in their families.

"Baby's grandmother and grandfather can't accept exclusive breastfeeding and force me to feed the child with water, honey and rice because the child can be thirsty and hungry like us and told that feeding with rice can make resistance from bites of some insects such as mosquitoes and bugs". A mother of 17 months old child from Yae-Nanchaung township said.

DISCUSSION

Socio-economic characteristics of mothers and children

Most of the respondents were middle-aged women and almost all of them were Burmese. Therefore, there was no language barrier between interviewers and interviewees as we all spoke same language. Moreover, as all of them have same religion, their daily diet was supposed to be not much different. About 94.2% of women can read and write and the literacy rate was about 6% higher than the union literacy rate.[4] Over sixty percent of women were employed and it was lower than the national employment rate of women.[4] The average monthly income per family was about 330,000 kyats and it was approximately similar to union data.[18]

Among the 224 mothers, only one woman did not see with health professionals and 92.4% of mothers had at least 4 times of antennal care during their pregnancy and these results reflected the efforts of health professionals and it was obviously clear that mothers had increased awareness about antenatal care.

Although completeness of immunization was high (98.7%) among the mothers who had immunization card, certain amount of women (65 out of 224 women) did not keep the immunization card.

Maternal dietary patterns

The study observed that over 96% of respondents usually ate main meals for at least 3 times in a day and the percentage was much higher than the similar study done in Ethiopia.[19]

Besides, 85.7% of women had a habit of eating snacks and therefore, these women's practices were in line with recommended eating habits.[20] This study found that over 80% of interviewees ate at least 5 food groups in one meal and this figure was higher than a study conducted in Bangladesh, Vietnam and Ethiopia.[9]

Breast feeding practices of mothers on infants and young children

In this study, 88.4% of respondents had given exclusive breastfeeding to their children and this finding was higher than union level which was 51%.[4] However, fifty-five percentages of women had decided to stop breastfeeding not later than 2 year.

Hence, this finding pointed out all breastfed mothers needed to be encouraged to continue breastfeeding for more than 2 years of their children's age.

Complementary feeding practices of infants and young children

In this study, all children had already started complementary feeding and 32.5% of them initiated weaning diet within correct time frame.

Moreover, although mothers usually put most food groups in complementary feeding, the proportion of involvement in in every meal was significantly low and

so that it was necessary to educate mothers to give all food groups in every meal.

Factors influencing children's four-star diet obtainment

By binary logistic regression predicted on the four-star diet achievement of children, education level of mothers, and children's age were observed as strong predictors on four-star diet achievement of children. The findings were similar to a study done in India that found mothers with higher education, wealthier were probably to have appropriate complementary feeding practices and another study done in Bangladesh, Vietnam and Ethiopia that elucidated the children's age was associated with children's dietary diversity.[9,21]

Based on the findings, mother's education was the main contributor for children's achieving high dietary diversity and it was assumed that there would have improved the complementary feeding practices of infants and young children if the mothers have achieved higher education.

Moreover, there was no doubt that the older children were fed with all food groups in compared to younger children. Therefore, it was essential to initiate feeding the children with all food groups since the 6 months of age for improving their nutritional status.

CONCLUSION

This study illustrated the dominant factors on children's acquisition of four-star diet in 6-23 months aged children in 3 townships in Magway region. Moreover, it also elucidated the perceived barriers of mothers on breastfeeding and complementary feeding practices. In 224 mother-child dyads, education level of mothers, and age of the children were observed as significant predictors on children's four-star diet achievement. Moreover, perceived barriers of mothers such as misbeliefs, influence of elder people and no adequate time for feeding the child were also identified in thematic analysis. To conclude, this study is expected to provide useful information about dietary patterns of mothers, complementary feeding and breastfeeding practices of infants and young children for policy makers and paved the way for implementing further researches in order to find more dominant factors on child's complementary feeding practices.

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