Mizoram Educational Journal
ISSN (P): 2395-731X
Vol IX, Issue 3&4, Sept-Dec 2023

Feeding Practice and Malnutrition among Under-Five Children of Mizoram

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Abstract

Nutrition plays a crucial role in the maintenance of health as well as the growth and development of the body. The main objective of this study is to identify the feeding practice and find out association of feeding practice with malnutrition among the children. A descriptive cross sectional study was conducted in Mizoram among under 5 children during February 2023 to June 2023. Data was collected by structured interview and anthropometric measurement and analysed their weight for age, height for age and weight for height. The study results shows that among 288 breastfed children, 183(80.3%) initiated breastfeeding within 1 hour after birth, 184 (80.7%) do not give pre lacteal feed, exclusive breastfeeding. for 6 months was practiced by 173(75.9) and weaning was started at 6 months by 174(76.3%) 22 (9.4%) of the children were under weight, 29 (12.4%) were stunted, 10 (4.3%) were wasted. There was significant association between a child's weight for height (wasting) status and initiation of breastfeeding after birth and duration of breastfeeding after the introduction of complementary feeding (P<0.05).The results shoed the need to improve the nutritional status of the vulnerable age group of children. It needs more support and awareness on the importance of infant young children feeding practice to follow recommended guidelines.

Keywords: *Children, Feeding, Malnutrition*

Introduction

Malnutrition is major public health problem particularly in those children under five of age. According to the World Health Organization, malnutrition refers to

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deficiencies, excesses, or imbalances in a person's intake of energy and/or nutrients. Under nutrition is estimated to be associated with 2.7 million deaths annually or 45% of all child deaths (World Health Organization, 2021).Globally 49.5 million children under 5 years of age are wasted, and 149 million are stunted. According to National Family Health Survey-5 India, 36 percent of children under age five years are stunted (too short for their age). Nineteen percent of children under age five years are wasted (too thin for their height), which is a sign of acute under nutrition; while 32 percent of children under age five years are underweight.

Nutrition, growth and development in children are intricately inter-linked aberrations of one aspect tend to significantly influence the others (Elizabeth, 2010). Infant and young child feeding is a key area to improve child survival and promote healthy growth and development.

World Health Organization recommend early initiation of breastfeeding within 1 hour of birth, exclusive breastfeeding for the first six months of life and introduction of complementary foods at 6 months together with continued breastfeeding up to 2 years of age or beyond. Child needs the right foods at the right time to grow and develop to their full potential. The most important time for good nutrition is during the 1000 day period from pregnancy until a child's second birthday (UNICEF report). Approximately two-thirds of child's deaths occur in the first year of life are linked to improper feeding practices (Singh, 2004). When children are undernourished over an extended period of time, there are various outcomes such as delayed mental development; reduced intellectual capacity, it may also result in heightened severity and susceptibility to infections, and increased mortality risk. (WHO Newsletter). The Government of India has strongly committed to the achievement of one of the important developmental goal 'Erase Hunger' which aims to eliminate hunger and all forms of malnutrition by 2030 (United Nations India, 2023).

Review of Related Literature

Khobragade & Yadav (2019) studied in one of the Integrated Development Scheme (ICDS) project area of rural India regarding nutritional status of under five children including 354 study subjects. The study found that the prevalence of underweight, stunting, and wasting were 15.8 %, 35% and 6.4% respectively.

Divya, Murthy, Nimithamohan &Amoghashree (2022) in Mysuru investigated on infant and young child feeding practices among 261 samples between the ages of 6 months to 5 years of age. It was found that the prevalence of underweight, stunting and wasting were 13.8%, 16.5% and 5.7% respectively.70.1% received breastfeeding within an hour of birth and exclusive breastfeeding for 6 months was given for 67.4% of the children.

Study conducted by Haradanhalli R et al (2016) on infant feeding practice and its association to nutritional status of under 5 children including 200 children in urban poor locality of Bangalore showed that 49.7% of the children were given pre lacteal feed, 49.5% of the children were exclusively breastfed for 6 months and 49.1% weaned at 6 months of age. They found that there was significant association between undernutrition status and feeding practice of the children.

Ahmad S & Mishra S (2018) in Lucknow District found that total 70.7% of the children were breastfed in an hour, colostrum was given to only 61.9% children while only 52.4% were given breastfeeding exclusively for 6 months and the study identified that children who have started feeding after one hour of birth were found to be more stunted than children who were breastfed earlier ($p<0.001$) and children with non-exclusive breastfeeding were significantly underweight than who were exclusively breastfeed.

Varma P (2015) in Hyderabad conducted a study on infant and young feeding practices and prevalence of under nutrition. The study concluded that children who initiated breast feeding within an hour were found not to be stunted in comparison to others.

Study conducted by Palupi (2016) in Indonesia regarding feeding practice and nutritional status among children. The study shows that most of the children had good feeding practices in terms of breastfeeding practices and found that there was no significant association between feeding practice behaviors and nutritional status among the study participants.

Understanding the significance of feeding practice for the maintenance of nutritional status of the children, various research studies related to feeding practice and nutritional status of children were undertaken, but this area is not adequately explored in Mizoram. This study is undertaken to fill this research gap so that the research will contribute in this unexplored area.

Rationale of the study

Malnutrition is universal problem and it can severely affect the vulnerable children especially under five years of age. Children of today are our future citizens. In North east India, Meghalaya Mizoram, Nagaland and Tripura saw an increase in stunting among children (Saigal, 2021). As per National Family Health Survey-5 report, the prevalence of under nutrition in Mizoram is also increasing. Massive increase in child malnutrition and rising levels of anemia in women and pregnant women in Mizoram indicate that the children born during 2015-2019 might be suffering from nutritional deficiencies (NHFS-5, Mizoram). It was also found that there is deterioration of infant

and young child feeding indicators in north east states. Tripura, Nagaland, Mizoram and Assam saw a decrease in the proportion of children receiving adequate diets (Chakraborty, 2021).

Hence the assessment of the ground reality on the feeding practice and its association with prevalence of malnutrition of children becomes very significant so that appropriate intervention can be implemented which will improve the nutritional status of the target population.

Statement of the problem

The problem of the study is stated as '*Feeding Practice and Malnutrition of under Five Children of Mizoram.'*

Objectives

The objectives of this study are:

1. To identify the feeding practice among children
2. To find out association of feeding practice with malnutrition among the children.

Material and methods

Study design

This study was designed as a community based cross-sectional study

Study setting

This study was carried out in the selected areas of Aizawl district, Mizoram.

Study population

Two hundred thirty three children between age group of 6- 59 months and their mothers were included in the study.

Inclusion criteria

1. Children between age group of 6- 59 months
2. Mothers giving consent and willing to participate in this study.

Exclusion criteria

1. Children who were suffering from chronic illness or congenital anomalies
2. Children who are uncooperative and their mother not willing to participate

Study duration

This study was conducted from February 2023 - June2023.

Sample size calculation

The sample size of 233 was calculated based on the prevalence of under nutrition 13% at 5% level of significance and an absolute precision of 4%, sample size was estimated to be 233 using Cochran's formula:

$$n \geq \frac{z^2_{1-\alpha/2}\ p(1-p)}{d^2}$$

Sampling Technique

A multi stage random sampling technique has been used to select the required sample size. Study was done in Aizawl East District. Aizawl East district covers 47 local council areas. 10 local council areas were selected by random sampling and samples are selected randomly based on population proportionate to size sampling technique.

Ethical Consideration

The Institutional Human Ethics Committee of Mizoram University reviewed and approved this study (approval number: MZU/HEC/2022/008). Permission was taken from Chief Medical Officer, Aizawl East District to conduct research study in the area. Participants (mothers) have given written consent before participating in the study.

Data Collection Details

A structured interview schedule was used to collect data on demographic characteristics, feeding practice and anthropometric measurements was done by using standard method. The weight and height measurement were converted to identify the three nutritional indices such as weight for age, height forage and weight for height. These are interpreted by the WHO z score classification system. Children whose weight for age z-score of less than -2SD were graded as underweight and severe underweight are having z - score of less than -3SD. Children's height for age less than z score -2SD were graded as stunted and severely stunted are children's height for age less than z-score -3SD. Similarly, children were graded as wasted (weight for height z score of -2SD) and severely wasted (weight for height z score of -3SD). Socioeconomic status has been calculated using Modified Kuppuswamy Socioeconomic scale.

Data analysis

The data entry was done in Microsoft offices excel and IBM SPSS Statistics Version 20 was used to analyze the data. Frequencies and percentages were used for analysis of categorical data. The z scores for the different nutritional indices such as weight for age, height for age and weight for height were calculated based on the WHO growth standards. Chi square test and Fisher exact test were used to test the significance wherever indicated, p value less than 0.05 was considered statistically significant.

Results

Table No.1

Distribution of participants' socio-demographic characteristics (N=233)

Variables		Frequency	Percentage
Age	6-11 months	31	13.3
	12-23 months	58	24.9
	24-35 months	47	20.2
	36-47 months	62	26.6
	48-59 months	35	15
Gender	Male	117	50.2
	Female	116	49.8
Type of family	Nuclear	152	65.2
	Joint family	72	30.9
	Single parent family	9	3.9
Socioeconomic status	Upper (I)	3	1.3
	Upper middle (II)	15	6.4
	Lower middle (III)	48	20.6
	Upper lower (IV)	163	70
	Lower (V)	4	1.7

As depicted in Table 1, a total of 233 children aged 6 months to 59 months were included in the study. The mean age of the participant was 31 months. Among the participants, 50.2% are male and 49.8% were females. About 71.7% of children belonged to lower socioeconomic class while 1.3% belonged to upper class. Mothers of majority of the children (83.7%) were in the age group of 19-34 years.

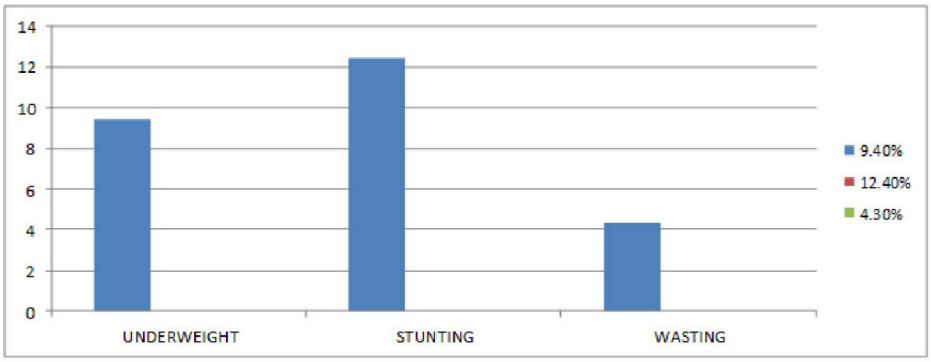
Table No.2

Distribution of feeding practices for breastfed children (N=228)

Variables		Frequency	Percentage
Initiation of breastfeeding after birth	Within 1 hour	183	80.3
	1-24 hours	35	15
	After 24 hours	10	4.3
Pre-lacteal feed given	Yes	44	19.3
	No	184	80.7
Type of pre-lacteal feeding (n=44)	Formula	43	97.7
	Boiled cool water	1	3.3
Exclusive breastfeeding done for 6 months	Yes	173	75.9
	No	55	24.1
Age at the start of weaning	<6 months	43	18.9
	6 months	174	76.3
	7-12 months	11	4.8
Continued breastfeeding after the introduction of complementary foods	1 year	11	4.8
	1 to ≤2 years	44	19.3
	2 years	45	19.7
	>2years	23	10.1
	Still breastfed	105	46.1

Feeding practice of children is presented in Table 2. Among the participants, 228(97.85%) were able to breastfeed their children, 5 (2.15%) were unable to feed with breast milk since birth. Early initiation of breastfeeding within an hour of birth was done by 80.3%. Pre lacteal feed was given by 19.3% and formula feeding was most common pre lacteal feed given to the children. Only 75.9% had exclusively breastfeed their child for the first complete 6 months while 24.1% were not able give exclusive breastfeeding for 6 months. 10.1 % of the sample continued breastfeeding for more than 2 years and 24.1% had discontinue breastfeeding before reaching 2 years of age. On examining the complementary feeding practice, 18.9% children were given complementary feeding before 6 months of age and 4.8% of mothers started giving complementary feeding between the age of 7-12 months. The mean age of food complementation was 5.8 months of age which was less than recommended age for starting complementary feeding.

Figure No 1: Nutritional status of participants (N=233)



Data presented in Figure 1 shows the prevalence of underweight, stunting and wasting were 9.4%, 12.4% and 4.3% respectively; stunting is the most common form of malnutrition.

Table No. 3

Association between underweight status and feeding practices for breastfed children (N=228)

Variables		Underweight (n=22)	Normal (n=206)	*P*-value
Initiation of breastfeeding after birth	Within 1 hour	20 (10.9)	163 (89.1)	0.07
	1-24 hours	0	35 (100.0)	
	After 24 hours	2 (20.0)	8 (80.0)	
Pre-lacteal feed given	Yes	4 (10)	36 (90.0)	0.934
	No	18 (9.6)	170 (90.4)	
Exclusive breastfeeding done for 6 months	Yes	15 (8.7)	158 (91.3)	0.375
	No	7 (12.7)	48 (87.3)	
Age at the start of weaning	<6 months	3 (7.0)	40 (93.0)	0.116
	6 months	16 (9.2)	158 (90.8)	
	7-12 months	3 (27.3)	8 (72.7)	
Continued breastfeeding after the introduction of complementary foods	1 year	2 (18.2)	9 (81.8)	0.041
	1 to ≤2 years	4 (9.1)	40 (90.9)	
	2 years	4 (8.9)	41 (91.1)	
	>2years	6 (26.1)	17 (73.9)	
	Still breastfed	6 (5.7)	99 (94.3)	

Chi-square test; Pd"0.05

Data in Table 3 shows that there was significant association between underweight status and duration of breastfeeding after introduction of complementary food with a P-value of 0.041.

Table No 4

Association between stunting status and feeding practices for breastfed children (N=228)

Variables		Stunting (n=29)	Normal (n=199)	*P*-value
Initiation of breastfeeding after birth	Within 1 hour	25 (13.7)	158 (86.3)	0.33
	1-24 hours	2 (5.7)	33 (94.3)	
	After 24 hours	2 (20.0)	8 (80.0)	
Pre-lacteal feed given	Yes	4 (10.0)	36 (90.0)	0.57
	No	25 (13.3)	163 (86.7)	
Exclusive breastfeeding done for 6 months	Yes	22 (12.7)	151 (87.3)	0.998
	No	7 (12.7)	48 (87.3)	
Age at the start of weaning	<6 months	5 (11.6)	38 (88.4)	0.898
	6 months	23 (13.2)	151 (86.8)	
	7-12 months	1 (9.1)	10 (90.9)	
Continued breastfeeding after the introduction of complementary foods	1 year	3 (27.3)	8 (72.7)	0.518
	1 to ≤2 years	4 (9.1)	40 (90.9)	
	2 years	6 (13.3)	39 (86.7)	
	>2years	4 (17.4)	19 (82.6)	
	Still breastfed	12 (11.4)	93 (88.6)	

Chi-square test; Pd”0.05

Data in Table 4 illustrates that there was no significant association between stunting status and feeding practice of children.

Table No. 5

Association between wasting status and feeding practices for breastfed children (N=228)

Variables		Wasting (n=10)	Normal (n=203)	Overweight (n=15)	*P*-value
Initiation of breastfeeding after birth[1]	Within 1 hour	8 (4.4)	166 (90.7)	9 (4.9)	**0.02**
	1-24 hours	0	30 (85.7)	5 (14.3)	
	After 24 hours	2 (20.0)	7 (70.0)	1 (10.0)	
Pre-lacteal feed given[1]	Yes	3 (7.5)	32 (80.0)	5 (12.5)	0.129
	No	7 (3.7)	171 (91.0)	10 (5.3)	
Exclusive breastfeeding done for 6 months[1]	Yes	8 (4.6)	155 (89.6)	10 (5.8)	0.666
	No	2 (3.6)	48 (87.3)	5 (9.1)	
Age at the start of weaning[1]	<6 months	1 (2.3)	39 (90.7)	3 (7.0)	0.777
	6 months	8 (4.6)	154 (88.5)	12 (6.9)	
	7-12 months	1 (9.1)	10 (90.9)	0	
Continued breastfeeding after the introduction of complementary foods[2]	1 year	2 (18.2)	9 (81.8)	0	**0.02**
	1 to ≤2 years	2 (4.5)	42 (95.5)	0	
	2 years	2 (4.4)	40 (88.9)	3 (6.7)	
	>2years	3 (13.0)	19 (82.6)	1 94.3)	
	Still breastfed	1 (1.0)	93 (88.6)	11 (10.5)	

[1]Chi-square test; [2]Fisher’s exact test; Pd”0.05

Data in Table 5 shows that there was significant association between a child's weight for height (wasting) status and initiation of breastfeeding after birth and their decision to keep breastfeeding after the introduction of complementary feeding with a P-value of 0.020.

Discussion and Conclusions

In this study, 86.3%of children were normal for weight for age, 9.4 % were moderately underweight. 87.6% children had normal height for age while only 12.4 % are moderately stunted. 88.8% children had normal weight for height and 6.9 % had weight for height between -2SD to -3SD. As per NFHS-5 in India, 32% children below 5 years are underweight which is higher than the present study showing Mizoram children nutritional status is better than the other cities.

The present study revealed the common form of malnutrition was stunting, followed by underweight and wasting which indicate undernourished children in the study are chronic malnutrition which may occur as a result of inappropriate feeding practice in early life.

80.3% of the children were given breastfeeding within one hour after birth which was one of the important indicators of correct breastfeeding practice. 19.3% of the mothers offer pre lacteal feed where most of them given formula feeding. One hour after birth is regarded as the golden hour for initiation of breastfeeding. Encouragement and support from professional and family during this period is very important. The Government of India is promoting institutional delivery where there is more opportunity to give support for the promotion of early initiation of breastfeeding and avoidance of practicing pre lacteal feed.

The present study revealed that breastfeeding was given exclusively for 6 months by 75.9% of the children and complementary feeding was started on time by 76.3%. The mean age of starting complementary feeding is 5.8 months. Complementary feeding was started earlier than the recommended months which can influence the nutritional status of the children. Therefore, mothers need more encouragement to practice the recommended duration of exclusive breastfeeding for 6 months and timely introduction of complementary food.

There was significant association observed between feeding practices and nutritional status of children. Among the breastfed children, initiated early breastfeeding and continue breastfeeding for more than 2 years have better nutritional status than other groups. Children who have started breastfeeding after one hour of birth were found to be more wasted than children who were breastfeed earlier and children who continued breastfeeding more than 2 years were found to be less wasted and underweight

than children who completed breastfeeding less than 2 years of age. From the study finding, more attention to be given on the promotion of early initiation of breastfeeding within 1 hour after birth and increase duration of breastfeeding along with complementary feeding for the improvement of the nutritional status of under five children.

Recommendations

Effective promotion of the recommended practice of young child feeding practice is very essential. It is very urgent to explore the underlying detail of the situation and the true reason for the inability to follow the recommended feeding practice. Infant feeding practices need to be monitored and provide the required information on a regular basis for the caregiver. Mothers need to be informed and educate about exclusive breastfeeding, avoiding pre-lacteal feedings, and right time to introduce complementary feedings from the beginning of pregnancy for the promotion of better infant feeding practices. Reinforcement of correct feeding practice to be given during postnatal and immunization visits which might improve feeding practices. Raising public awareness of the recommendation of feeding and strengthening the intention of mother to breastfeed could lead to adopt correct feeding practice of the children.

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