

**Complementary Feeding Practice and Nutritional Status of Children Between 6-23 Months Attending Pediatric OPD of Bharatpur Hospital Chitwan**Asha Thapa,<sup>1</sup> Devi Kumari Sapkota,<sup>1</sup> Sumitra Parajuli,<sup>1</sup> Bijaya Dhakal,<sup>1</sup> Rama Kumari Lamichhane,<sup>1</sup> Ashmita Sharma,<sup>1</sup><sup>1</sup>Bharatpur Hospital Nursing College, Bharatpur 10, Chitwan, Nepal**ABSTRACT**

**Background:** Malnutrition is responsible directly or indirectly for over half of all childhood deaths. Infants and young children are higher risk of malnutrition from six months of age onwards. The aim of the present study was to assess the complementary feeding practice and nutritional status of children between 6-23 months attending pediatric OPD of Bharatpur Hospital, Chitwan, Nepal.

**Methods:** A cross sectional, study was conducted among 333 mothers and their children aged 6-23 months from July to November 2022. The data was collected through semi-structured interview schedule from mothers along with infant anthropometric measurement. The data was analyzed in SPSS 26 version.

**Results:** Overall prevalence of malnutrition was 46%. Among them the prevalence of wasting, stunting and underweight were 35.29%, 32.67% and 32.02%, respectively. There were significant association between the education qualification, occupation of mother, type of delivery, number of children, timely introduction of complementary feeding, egg consumption, and on demand breastfeeding with wasting.

**Conclusions:** Quiet practice of complementary feeding and noticeable prevalence of malnutrition were found among children 6-23 months of age children. These outcomes focus the need to increase the complementary feeding practices ultimately improve the nutritional status of children.

**Keywords:** Complementary Feeding; nutritional Status; infant.

**Received:** 13<sup>th</sup> February 2023**Accepted:** 17<sup>th</sup> May 2023**Published:** 6<sup>th</sup> June, 2023**INTRODUCTION**

Complementary feeding is a process of starting when breast milk alone is no longer sufficient to meet the nutritional requirements of infants, and therefore other foods and liquids are needed, along with breast milk. The target age range for complementary feeding is generally taken to be 6 to 24 months of age, even though breastfeeding may continue beyond two year.<sup>1</sup> Child malnutrition is the single biggest contributor to under-five mortality due to greater susceptibility to infections and slow recovery from illness. Children who continuously lose weight during childhood or do not grow to their ideal height are negatively impacted in a variety of ways in the long run. The degree of cognitive impairments caused by child malnutrition is closely correlated with the severity of stunting and Iron Deficiency Anaemia, which affects educational achievement, mental health, and economic production.<sup>2</sup> The "Convention on the Rights of the Child" states that every infant and child have a right to a healthy diet.<sup>3</sup> Insufficient nutrition is a factor in 45% of child fatalities. In 2016, it was predicted that 155 million children under the age of five were stunted, 52 million were wasting, and 41 million were overweight or obese.<sup>4</sup> In Nepal, 36% of children are stunting, 10% of children are wasted and 27% of all children under 5 are underweight. Sixty

six percent of the infants under 6 months were found to be exclusively breast fed.<sup>5</sup>

**METHODS**

A cross sectional descriptive study design was implemented with the objective to assess the complementary feeding practice and nutritional status of children between 6-23 months of age at Bharatpur Hospital, Pediatric OPD, Bharatpur Chitwan Nepal. Bharatpur Hospital is a central Hospital where around 100 cases visits in pediatric OPD daily. All the infants age between 6-23 months and their mothers were the population of the study. Non-probability purposive sampling technique was used to identify the sample and sample size calculated according to prevalence of feeding practice i.e., 27 %.<sup>9</sup> Total sample size was 333 with 10% non-response error. Data was collected researcher herself using Semi-structure interview schedule and anthropometric measurement of infants. Administrative permission and ethical approval were obtained from Institutional Review Committee Bharatpur Hospital Chitwan. The verbal informed consent was obtained from each respondent after clarifying the purpose of the study prior to data collection. Respondent's dignity was maintained by giving right to reject or discontinue from the research study at any time. Confidentiali-

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ty of the information was maintained by ensuring not to disclose the information and using it only for the research purpose. Collected data was analyzed in SPSS 26 version following descriptive as well as inferential statistics.

## RESULTS

Among 333 respondents, more than half (59%) were male, 41% were female and 64% were age group 12-23 months. Regarding birth weight; more than three quarters (86%) of respondents were  $\geq 2.5$  kg, and concerning chronic disease, only 2.1% children and 3.6% mothers of child had chronic disease. About 90% of respondents followed Hindu religion and 40% of respondents belong to Brahmin and Chhetri. In addition, nearly all 98% of respondents were literate and among them, more than half (54.5%) of respondents had secondary level education. likewise, more than 3 diggings (84.1%) of respondents were house maker though the literacy rate was high. Furthermore, about 60% of respondents belongs to joint family. Regarding number of children, nearly half 47.4% of respondents had two kids. Concerning to the obstetric history, majority of the respondents (89.5%) had more than 3 times ANC visit, almost all 95.2% of respondents had

**Table 1. Demographic profile of Children**

Characteristics	Frequency(%)
<b>Sex of Child</b>	
Male	196 (58.9)
Female	137 (41.1)
<b>Age of Child in Month</b>	
6-8 months	57 (17.1)
9-11 months	63 (18.9)
12-23 months	213 (64)
<b>Birth Weight in kg</b>	
<2.5 kg	44 (13.21)
$\geq 2.5$ kg	289 (86.78)
<b>Chronic Disease in Child</b>	
Yes	7 (2.1)
No	326 (97.9)
<b>Age of the mother in year</b>	
$\leq 20$	28 (8.4)
21-25	110(33.0)
26-30	129 (38.7)
$\geq 30$	66 (19.8)
<b>Religion</b>	
Hindu	301 (90.4)
Buddhist	21 (6.3)
Christian	9 (2.7)
Others	2 (0.6)
<b>Ethnicity</b>	
Brhamin/chhetri	134 (40.2)
Janjati	131 (39.3)
Madhesi/dalit	68 (20.4)

## Educational Qualification

illiterate	5 (1.5)
literate	328 (98.4)

## Education level of mother (328)

Can read and write	23 (7.01)
Basic/Primary level	39 (11.8)
Secondary level	179 (54.5)
Higher level	87 (26.5)

## Occupation of Mother

House Maker	280 (84.1)
Agriculture	15 (4.5)
Business	15 (4.5)
Service	23 (6.9)

## Family Type

Nuclear	133 (39.9)
Joint	200 (60.1)

## Number of Child

One child	136 (40.8)
Two child	158 (47.4)
$\geq 3$ child	39 (11.7)

## Number of ANC visit

No ANC	2 (0.6)
1-3 times	33 (9.9)
>3 times	298 (89.5)

## Place of delivery

Home delivery	15 (4.5)
Hospital	317 (95.2)

## Types of delivery

Normal	217 (64.9)
Cesarean Section	117 (35.1)

## Chronic disease of mother

Yes	12 (3.6)
No	321 (96.4)

hospital delivery and around 65% of respondents had Normal delivery (Table 1).

Nearly 3 quarters (70%) of respondents complied with the indicator Minimum Meal Frequency (Table 2).

**Table 2. Food consumption among children**

Food Characteristics	Frequency/Percentage
<b>Minimal meal frequency</b>	
Yes	233 (70)
No	100 (30)
<b>Minimum Diet Diversity</b>	
Yes	149 (44.7)
No	184(55.3)
<b>Minimum Acceptable Diet</b>	
Yes	118 (35.4)
No	215 (64.6)

Infant who breast feed within 1 hour, feed colostrum, having colostrum as their first food after delivery, exclusive breast feeding, bottle use for milk: 59.5%, 87.7%,54.4%, 37.5%, and 45.6% respec-

tively. The children who introduced complementary foods at 6 months was 60.4% (Table 3).

Breast feeding in 1 hr. of delivery	Frequency (%)
Yes	59.5
No	40.5
<b>Feed colostrum</b>	
Yes	87.7
No	12.3
<b>First food after delivery</b>	
Colostrum	54.4
Infant formula milk	45
Cow milk	0.3
Glucose	0.3
<b>Exclusive Breast Feeding</b>	
Yes	37.5
No	62.5
<b>Bottle use for milk</b>	
Yes	45.6
No	54.12
<b>Introduction of Complementary Feeding</b>	
<6 months	32.4
6 months	60.4
>6 months	7.2

Minimum dietary diversity was determined by consuming various group of foods by the child in the previous 24 hours. All the children were under breast fed. In addition, more than 1/3<sup>rd</sup> quarter of respondents fed their children grains, roots and tubers and only 20.7% of

**Table 4. Dietary Diversity among Children**

Variables	Percentage
Breast feeding	100
Grains, Roots and Tubers	80.8
Legumes and tuber	68
Diary product	60.4
Egg	26.1
Meat and fish	20.7
Vitamin A rich food	30.3
Others fruit and vegetables	30.6

respondents fed their child non vegetarian food like meat, fish, etc (Table 4).

**Table 5. Distribution of malnutrition among children (in percentage)**

Month	Wasting	Stunting	Underweight
6-8 Month	14	16	12
9-11 Month	29	12	40
12-23 Month	55	72	46

Majority of respondents were malnourished in between the ages of 12 and 23 months and among them 72% of the respondents were stunted (Table 5).

Analysis showed that education qualification ( $p=0.03$ ), occupation of mother ( $p=0.028$ ), type of delivery

( $p=0.029$ ), number of child ( $p=0.05$ ), timely introduce of complementary feeding ( $p=0.05$ ), egg consumption ( $p=0.046$ ) and on demand ( $p=0.034$ ) were associated with wasting. Birth weight ( $p=0.000$ ), Types of family ( $p=0.028$ ), ANC visit ( $p=0.018$ ) and on demand breast feeding ( $p=0.028$ ) were associated with stunting. Gender ( $p=0.03$ ) birth weight ( $p=0.000$ ), ANC visit ( $p=0.014$ ), feeding colostrum ( $p=0.05$ ), egg consumption ( $p=0.029$ ) and on demand breast feeding ( $p=0.000$ ) were associated with underweight (Table 6).

## DISCUSSION

Timely introduction of complementary feeding has major role to reduce the children malnutrition. Nepal has got improvement in reducing malnutrition of children under 5 years however, nutrition remains major public health concern specially in young children. Still there is high proportion of children who are affected from malnutrition.<sup>6</sup>

This study analyzed the complementary feeding practice and nutritional status as well as their association of the children among 6-23 months in Bharatpur Hospital Chitwan. In this study, the proportion of early breast feeding and exclusive breast-feeding practice were 59.5% and 37.5%, respectively. The study of NDHS, (2022) revealed early initiation of breast feeding was 55% which was similar to current study while exclusive breast feeding was higher 56%.<sup>7</sup> Another study done by Ahmad et al. (2018) found almost similar result with early initiation of breast milk and exclusive breast feeding (45.7%, and 39%, respectively).<sup>8</sup> But in contrary, Upadhaya and Sharma (2021) showed, early initiation of breast feeding and exclusive breast feeding were 44.2% and 75.9%, respectively.<sup>9</sup> Sharma and Kafle (2020) showed initiation of breast feeding and exclusive breast feeding in 55% and 50.5%, respectively.<sup>10</sup>

The study found, MMF, MDD and MAD were 70 %, 44.7% and 35.4%, respectively. These findings were almost similar with the findings of Khanal et al. (2013) where, MMF, MDD and MAD were 76.6%, 30.4% and 26.5%, respectively.<sup>11</sup> In contrary, study by Chhabra et al. (2021) reported MMF, MDD, and MAD in 60.6 %, 15.2% and 9%, respectively.<sup>12</sup> Another reverse result of Kyaw et al. (2018) showed, MMF in 57.6%, MDD in 24.8% and MAD in 15.9%.<sup>13</sup> It suggested, MMF is most likely met by the children than MDD and MAD. This variation could be due to geographical area, availability of food and accessibility to other services.

This study revealed that all the children (100%) received complementary foods along with breast feeding. Among them 60.4%, 32.4% and 7.2% of children introduced complementary feeding at 6 months, earlier than 6 months and after 6 months, respectively. The study of Kimwele and Ochola and Upadhaya and Sharma found almost similar results.<sup>14,9</sup>

In this study, Overall prevalence of malnutrition was 46 %. Among them the prevalence of wasting, stunting and underweight were 35.29%, 32.67% and 32.02% respectively. It was prevalent in males (63.39%) than in female children. According to age, malnutrition was seen more among 12-23 months children and the stunting was most

Variables	Wasting n(%)	P value	Stunting n(%)	P value	Underweight n(%)	P value
<b>Gender</b>						
Boy	36(18.36)	0.8	34(17.34)	0.1	16 (8.16)	<b>0.03</b>
Girl	18(13.13)		16(11.67)		33 (24.08)	
<b>Birth weight in kg</b>						
<2.5	10(22.72)	0.374	15 (34)	<0.001	14(31.81)	<0.001
≥2.5-3.5	38(15.83)		33(13.75)		34(14.16)	
>3.5	6(12.24)		2 (4.08)		1(2.04)	
<b>Age group of children</b>						
6-8 months	8 (14.0)	0.09	7 (12.28)	0.253	6 (10.52)	0.586
9-11 months	16(25.39)		6 (9.52)		9 (14.28)	
12-23 months	30(14.08)		37(17.37)		34 (15.96)	
<b>Mother's age in years</b>						
<30 years	38(12.83)	0.803	36(12.28)	0.969	31(10.58)	0.152
≥30 years	16(17.02)		14(14.89)		18 (19.14)	
<b>Religion</b>						
Hindu	51(16.94)	0.269	47(15.61)	0.443	44 (14.61)	0.797
Others	3 (9.37)		3 (9.37)		5 (15.62)	
<b>Education Qualification of mother</b>						
Literate	51(15.54)	0.03	50(15.24)	1	48 (14.63)	0.5
Illiterate	3 ((60)		0		1 (20)	
<b>Occupation of mother</b>						
House maker	40(14.28)	<b>0.028</b>	38(13.57)	0.09	37 (13.21)	0.076
Job holder	14(26.41)		12(22.64)		12 (22.64)	
<b>Types of family</b>						
Nuclear	23(17.29)	0.664	27(20.30)	0.028	21(15.78)	0.652
Joint	31(15.5)		23 (11.5)		28 (14)	
<b>ANC Visit</b>						
<3	7 (20)	0.521	10(28.57)	<b>0.018</b>	10 (28.57)	<b>0.014</b>
≥ 3	47(15.77)		40(13.42)		39 (13.08)	
<b>Type of delivery</b>						
Normal	28(12.96)	0.029	34(15.74)	0.614	31(14.35)	0.8
Caesarian Section	26(22.22)		16(13.67)		18 (15.38)	
<b>Number of children</b>						
Single	23(16.91)	<b>0.05</b>	21(15.44)	0.976	18 (13.23)	0.288
Two children	20(10.63)		23(12.23)		22 (11.70)	
>2	11(28.20)		6 (15.38)		9 (23.07)	
<b>Breast feeding within 1 hour</b>						
Yes	28(14.14)	0.214	29(14.64)	0.82	27 (13.63)	0.501
No	26 (19.25)		21 (15.55)		22 (16.29)	
<b>Feed colostrum</b>						
Yes	46(15.75)	0.541	40(13.69)	0.073	37 (12.49)	0.005
No	8 (19.51)		10 (24.39)		12 (29.26)	
<b>Exclusive breast feeding</b>						
Yes	17 (13.6)	0.315	15 (12)	0.232	17 (13.6)	0.656
No	37(17.78)		35(16.82)		32 (15.38)	
<b>Introduce of complementary feeding</b>						
<6 months	17(15.74)	<b>0.059</b>	16(14.81)	0.972	15 (13.88)	0.336
6 months	29(14.42)		30(14.92)		28 (13.93)	
>6 months	8 (33.33)		4 (16.64)		6 (25)	

Variables	Wasting n(%)	P value	Stunting n(%)	P value	Underweight n(%)	P value
<b>MMF met</b>						
Yes	33(14.16)	0.121	38(16.30)	0.313	36 (15.45)	0.563
No	21 (21)		12 (12)		13 (13)	
<b>MAD met</b>						
Yes	17(14.40)	0.507	18(15.25)	0.928	20 (16.94)	0.394
No	37(17.20)		32(14.88)		29 (13.48)	
<b>MDD met</b>						
Yes	26(17.44)	0.583	25(16.77)	0.418	24 (16.10)	0.519
No	28(15.21)		25(13.58)		25 (13.58)	
<b>Grain, root and tubers</b>						
Yes	42(15.55)	0.49	41(15.18)	0.85	37 (13.70)	0.28
No	12(19.04)		9 (14.28)		12 (19.04)	
<b>Legumes and nuts</b>						
Yes	36(13.53)	0.79	36(15.92)	0.52	37 (16.37)	0.23
No	18(16.82)		14(13.08)		12 (11.21)	
<b>Dairy Products</b>						
Yes	31(15.19)	0.52	28(13.72)	0.4	24 (11.76)	0.56
No	23(17.89)		32(24.80)		25 (19.37)	
<b>Meat/fish</b>						
Yes	15(21.37)	0.16	12(17.39)	0.53	8 (11.59)	0.41
No	39(14.77)		28(10.60)		41 (15.53)	
<b>Egg consumption</b>						
Yes	20(22.98)	0.046	18(20.68)	0.08	19 (21.83)	0.029
No	34(13.82)		32(13.00)		30 (12.19)	
<b>Vitamin A riches food</b>						
Yes	22(21.78)	0.078	17(16.83)	0.57	20 (19.80)	0.09
No	32(13.79)		33(14.22)		29 (12.5)	
<b>Other fruits consumption</b>						
Yes	18(17.67)	0.63	17(16.66)	0.57	17 (16.66)	0.5
No	36(15.58)		33(14.28)		32 (13.85)	

common malnutrition (72%) in these age group. It showed that as children's age increased the number of malnourished children also increased. Sixty three percent of children were moderately malnourished (<-2sd). The similar results were found by Ahamad et al. (2018).<sup>8</sup> In contrast, results of Chhabra et.al showed the prevalence of wasting, underweight, stunting was 43.7%, 43.4%, 29.1%, respectively.<sup>12</sup> Ariyo et al. revealed that the proportion of wasting and underweight were lower 12.8% and 22.3%, respectively while stunting was higher (37.4%).<sup>15</sup> The study found a significant association between the education qualification, occupation of mother, type of delivery, number of children, timely introduction of complementary feeding, egg consumption, and on demand breastfeeding with wasting. Other factors like Birth weight, types of family, ANC visit and on demand breast feeding were associated with stunting. Sex of the

child birth weight, ANC visit, feeding colostrum, egg consumption and on demand breast feeding were associated with underweight. However, this study did not show association of the complementary feeding practice namely MMF, MDD and MAD with stunting wasting and underweight. Similar findings were found by Ahmad et al.<sup>8</sup> But the study of kimiywele and Ochola noted that there was significant relationship between complementary feeding practices and nutritional status.<sup>14</sup> The study was conducted only in a single setting of Bharatpur hospital, Chitwan so the finding of the study may not be generalized in other setting.

## CONCLUSIONS

Among three main indicators of the complementary feeding practice, the proportion of children meeting

MAD was very low though the most of the children introduced their complementary food timely. High prevalence of Malnutrition was found in age group 12-23 months. Prevalence of Malnutrition was directly proportional to child's age. Therefore, Interventional programmes should be focused to educate mothers to improve complementary feeding practices.

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**Citation:** Thapa A, Sapkota DK, Parajuli S, Dhakal B, Lamichhane RK, Sharma A, Complementary Feeding Practice and Nutritional Status of Children Between 6-23 Months Attending Pediatric OPD of Bharatpur Hospital Chitwan. IJSIRT. 2023; 1(1):12-17.