

Complementary feeding practices among mothers of 6-23 months of aged children at a tertiary level hospital in Nepal

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ABSTRACT

Introduction: Complementary feeding is defined as the process starting when breast milk is no longer sufficient to meet the nutritional requirements of infants then other foods and liquids are needed, along with breast milk. This study was conducted to assess the complementary feeding practice among mothers of 6-23 months of aged children. **Methods:** A cross-sectional study was conducted in Kathmandu among 240 mothers of 6-23 months of aged children attending the pediatric outpatient department and community medicine from June to September, 2022. A purposive sampling technique was used and data were collected using a structured questionnaire through a face-to-face interview. The obtained data were entered into Epi-data and converted into Statistical Package for the Social Sciences-20. Descriptive and inferential statistics were used for statistical analysis. **Results:** The prevalence of Minimum Dietary Diversity (MDD), Minimum Meal Frequency (MMF), and Minimum Acceptable Diet (MAD) was 49.16% (0.42-0.55, 95% Confidence Interval), 44.58% (0.48-0.61, 95% Confidence Interval) and 27.91% (0.65-0.77, 95% Confidence Interval) respectively. Children of age 18-23 months were statistically significantly associated with MDD, MMF, and MAD respectively. Type of family, listening to radio as media, along with breastfeeding and bottle feeding since six months were statistically significantly associated with MMF and along with breastfeeding as well as bottle feeding since birth to six months were statistically significantly associated with MAD. **Conclusions:** This study concluded that the children aged 18-23 months were more likely to have recommended standard complementary feeding practices than other younger-aged groups.

Keywords: Children, complementary feeding practices, tertiary level hospital.

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INTRODUCTION

Child feeding practices, an important for child growth and development moreover help to make lower morbidity and mortality for less than two years. More than two-thirds of malnutrition occurs during the golden 1000 days of life due to inappropriate feeding practices.¹ Appropriate feeding practices enhance the nutrition, survival, growth, and development of infants and young children which include exclusive breastfeeding for six months and providing nutritionally adequate complementary feeding starting from six months with continued breastfeeding to two years of age or beyond.² Whether it is breastfeeding or complementary feeding, the practices adopted by mothers or caretakers have a direct effect on child health.³

World Health Organization (WHO) and United Nations International Children's Emergency Fund (UNICEF) define complementary feeding as the process of starting solid, semi-solid, or other food to

the child along with breastfeeding when breast milk alone is no longer sufficient to meet the nutritional requirements of infants.⁴ Complementary feeds bridge the energy, vitamin A, and iron gaps that arise in breastfed infants at six months of age⁵ and are often inadequate if they are given too early or too late, in too small amounts, or not frequently enough.⁶

Globally, one in three children under five are not growing well due to malnutrition and one in two suffers from hidden hunger, undermining the capacity of millions of children to grow and develop to their full potential.⁵ Poor complementary foods in quantities and quality in children less than two years of age have a detrimental effect on their health and growth. Even with exclusive breastfeeding, children do not receive sufficient dietary diversity and meal frequency after six months of age.⁷

The WHO minimum acceptable diet recommendation, which combines minimum dietary diversity and minimum meal frequency, differs between breastfed and non-breastfed children.⁸ It is estimated that only one in three Nepali children is fed with the minimum frequency and dietary diversity.⁹

According to Nepal Demographic Health Survey (NDHS) 2016, eighty-three percent of children ages 6-8 months receive timely complementary foods, and only 10% of children aged 18- 23 months have been weaned.^{8, 10} The golden thousand days starting from the women's pregnancy till the child's second birthday is an extraordinary period wherein malnutrition and its consequences can be prevented by focusing on breastfeeding, micronutrient supplementation, and timely and appropriate initiation of complementary feeding practices.¹¹ Hence, the study was conducted to identify the prevalence of complementary feeding practices among mothers of children aged 6-23 months and to find out the association of complementary feeding practices with selected independent variables such as the age of the child, type of family, exposure to mass media, initiation of breastfeeding, along with breastfeeding, bottle feeding.

METHODS

A hospital-based analytical cross-sectional study was conducted in the pediatric OPD and community medicine department of Nepal Medical College and Teaching Hospital, Attarkhel, Kathmandu, Nepal. The hospital has got major health care services including pediatric OPD, and a community medicine department that used to provide services on immunization according to the National immunization program, where the study has been carried out. The study population was all mothers of child (6-23

months) attending pediatric OPD and community medicine department who meets the set inclusion criteria and willing to participate in the study and mothers having twins, mothers whose two children are below two years of age, a child who has not yet initiated complementary feeding and mothers with babies suffering from chronic illness were excluded. A purposive sampling technique was adopted and the sample size was calculated at a 95% confidence level based on the prevalence of correct complementary feeding practices (83%).¹⁰ The sample size was estimated to be 240 participants after adding a non-response rate of 10%. A pre-tested semi-structured questionnaire was developed after an extensive literature review and consulting with experts. The tool was translated into Nepali language and back-translated into English; the Nepali version of the tool was then pretested among 24 participants (10% of the total participants) for validation before the final administration.

The research instrument consisted of the following parts:

Part one: Socio-demographic and obstetric characteristics such as mother and child age, gender of the child, type of delivery, birth order of the child, literacy, and occupation of the family.

Part two: Feeding practices related information like timely initiation of breastfeeding, exclusive breastfeeding, age of cessation of breastfeeding, the introduction of pre-lacteal feeding/its type, age of introduction of solid food, complementary feeding with breastfeeding, and bottle feeding with complementary feeding.

Part three: Information related to complementary feeding practices which include the following components according to WHO Infant and Young Child Feeding (IYCF) guidelines:

a) Minimum Dietary Diversity (MDD): Proportion of children 6–23 months of age who received foods from four or more food groups of the seven food groups such as grains, roots, and tubers; legumes and nuts; dairy products (milk, yogurt); Flesh foods (meat, fish, poultry and liver/organ meats); eggs; vitamin A rich fruits and vegetables; and other fruits and vegetables.¹³

b) Minimum Meal Frequency (MMF): Proportion of breastfed and non-breastfed children 6–23 months of age, who receive solid, semi-solid, or soft foods (but also including milk feeds for non-breastfed children). This indicator was defined as: twice for breastfed infants 6–8 months, three times for breastfed children 9–23 months, and four times for non-breastfed children 6–23 months.¹³

c) Minimum acceptable diet (MAD): The proportion of children 6–23 months of age who received both minimum dietary diversity and minimum meal frequency.¹³

The study was carried out after obtaining formal permission from the Institutional Review Committee of Nepal Medical College with ethical reference number 075-078/079 from June 1 to September 30, 2022, in the pediatric OPD and community medicine department of Nepal Medical College Teaching Hospital through face to face interviews. Permission for data collection was obtained from the hospital director and head of the department of pediatric OPD and community medicine department of the hospital. The participants of the children were asked for general information about the child and the child's family. Most of the participants were mothers of the child. The procedure and purpose of the study were explained to the participants who were recruited based on inclusion and exclusion criteria. Those willing to participate were interviewed in the waiting area of the pediatric OPD and community medicine department. Written informed consent was taken from the parents after explaining the objectives of the study. Privacy and confidentiality were maintained throughout the study. None of the respondents were forced to participate in the study.

The collected data was entered into Epi-data which was finally converted into Statistical Package for Social Sciences (SPSS-20) for statistical analysis. Descriptive statistics such as frequency and percentage distribution were used. A chi-square test and multivariate analysis were performed to find out the association between MDD, MMF, and MAD with selected demographic variables. The level of significance was set at a p-value <0.05 and a 95% confidence interval.

RESULTS

The prevalence of MDD, MMF, and MAD was found to be 49.16% (0.42-0.55), 44.58% (0.48-0.61), and 27.91% (0.65-0.77) respectively (Table 1).

Table 1: Prevalence of Complementary Feeding Practices (N=240)

Characteristics	Frequency	Percentage	95% C.I.
Minimum Dietary Diversity (MDD)	118	49.16	0.42-0.55
Minimum Meal Frequency (MMF)	107	44.58	0.48-0.61
Minimum Acceptable Diet (MAD)	67	27.91	0.65-0.77

Nearly one-fourth (23.33%) belonged to 6-9 months, 31.25% belong to 9-12 months, 34.58% belong to 12-18 months and 10.83% belong to 18-23 months. More than half (60.41%) belong to a nuclear family which is statistically significant (p-value= 0.04) in MMF. Regarding exposed to

mass media in which only 16.66% of them listen to the radio which is statistically significant (p-value 0.01) in MMF. More than half (55.41%) babies were initiated breast feeding within an hour which is statistically significant (p-value= 0.01). Likewise, half of the babies (50.41%) were fed breast feed only which is statically significant (p-value = 0.01) in MMF and (0.03) in MAD respectively. Nearly one third (33.33%) used to bottle feeding which is statistically significant (p-value= 0.03) in MDD and (p-value= 0.03) in MMF respectively. More than one-fourth (27.08%) of the baby was bottle feeding since birth to six months and 9.58% of the baby were bottle feeding from 6 months and above which is statically significant with p-value <0.001 in MDD, 0.02 in MMF, and 0.002 in MAD respectively (Table 2).

Table 2: Association of socio-demographic variables with MDD, MMF, and MAD (N=240)

Socio-demographic Characteristics	Total n (%)	MDD n (%)	CHI-SQUARE (p-value)	MMF n (%)	CHI-SQUARE (p-value)	MAD n (%)	CHI-SQUARE (p-value)
Age of the Child							
6-9 Months	56 (23.33)	15 (26.78)		41 (73.21)		12 (21.42)	
9-12 Months	75 (31.25)	36 (48.00)	18.073 (<0.001)	25 (33.33)	28.205 (<0.001)	18 (24.00)	8.085 (0.04)
12-18 Months	83 (34.58)	50 (60.24)		27 (32.53)		24 (28.91)	
18-23months	26 (10.83)	17 (65.38)		14 (53.84)		13 (50.00)	
Type of family							
Nuclear	145 (60.41)	69 (47.58)	0.366 (0.54)	57 (39.31)	4.122 (0.04)	36 (24.82)	1.737 (0.18)
Joint	95 (39.58)	49 (51.57)		50 (52.63)		31 (32.63)	
Exposure to mass media (Radio)							
Yes	40 (16.66)	23 (57.50)	1.334 (0.24)	25 (62.50)	6.237 (0.01)	16 (40.00)	3.483 (0.06)
No	200 (83.33)	95 (47.50)		82 (41.00)		51 (25.50)	
Initiation of breastfeeding							
Yes	133 (55.41)	69 (51.87)	0.879 (0.34)	66 (49.62)	3.068 (0.08)	46 (34.58)	6.595 (0.010)
No	107 (44.58)	49 (45.79)		41 (38.31)		21 (19.62)	
Along with breastfeeding							
Only breast milk	121 (50.41)	64 (52.89)	1.355 (0.24)	63 (52.06)	5.530 (0.01)	41 (33.88)	4.319 (0.03)
Other than breast milk	119 (49.58)	54 (45.37)		44 (36.97)		26 (21.84)	
Bottle feeding							
Yes	80 (33.33)	47 (58.75)	4.410 (0.03)	28 (35.00)	4.461 (0.03)	21 (26.25)	0.166 (0.68)
No	160 (66.66)	71 (44.37)		79 (49.37)		46 (28.75)	
Bottle feeding since							
Never	152 (63.33)	65 (42.76)	15.703 (<0.001)	74 (48.68)	7.382 (0.02)	42 (27.63)	12.246 (0.002)
Since birth-6 months	65 (27.08)	33 (50.76)		20 (30.76)		12 (18.46)	
6 months and above	23 (9.58)	20 (86.95)		13 (56.52)		13 (56.52)	

All of them (100.0%) consumed grains, roots, and legumes

in 18-23 months whereas more than 90% consumed in all other three groups. The pattern of feeding legumes and nuts was increased with increasing age reaching 100.0% feeding in 18-23 months. Dairy product consumption was seen more in the 12-18 months group (56.62%). Half of the children were fed with flesh food in 18-23 months which was the highest among all groups. Most of all babies were introduced to eggs in all age groups except in the 6-9 months age group. Other various fruits and vegetables were the least introduced in feedings (Table 3).

Table 3: Feeding practices of Minimum Dietary Diversity among 6-24 months children according to their age (N=240)

Food groups	Age of Child			
	6-9 Months n (%)	9-12 Months n (%)	12-18 Months n (%)	18-23 Months n (%)
Grains, roots and tubers	53(94.64)	73(97.33)	80(96.38)	26(100.0)
Legumes and nuts	51(91.07)	73(97.33)	81(97.59)	26(100.0)
Dairy products	17(30.35)	33(44.00)	47(56.62)	13(50.00)
Flesh food	11(19.64)	21(28.00)	35(42.16)	13(50.00)
Eggs	18(32.14)	49(65.33)	54(65.06)	20(76.92)
Vitamins A rich fruits and vegetables	10(17.85)	22(29.33)	21(25.30)	5(19.23)
Grains, roots and tubers	53(94.64)	73(97.33)	80(96.38)	26(100.0)

The age of the child and bottle feeding since were significantly associated with MDD. The children aged 18-23 months [AOR 6.60 (2.29-19.01)] were more likely than 6-9 months of the child to be fed with proper MDD. Those with never introduced bottle feeding [AOR 0.05, (0.006-0.471)] were less likely than bottle feeding since six months and above.

The age of the child and listening radio along with breastfeeding were statistically significantly associated with MMF. It was found that aged 18-23 months child [AOR 0.36, (0.12-1.0)] were less likely than 6-9 months aged children to meet the recommendation of MMF. Likewise related to listening to the radio as a mass media [AOR 2.30, (1.034-5.11)] was more likely than not listening to the radio as mass media.

The age of the child, along with breastfeeding and bottle feeding since were significantly associated with the recommended MAD. It was found that aged 18-24 months child [AOR 3.59, 95% C.I. (1.25-10.27)] were more likely than 6-9months aged children to meet the recommendation of MAD. Likewise, only breast milk introductions [AOR 2.21, (1.05-4.65)] were more likely to provide the recommended minimum acceptable diet than other than breast milk. Regarding bottle feeding, those who never bottle feed [AOR 0.17, (0.06-0.49)] were less likely than bottle feeding from

birth to six months and above (Table 4).

Table 4: Multivariate analysis of MDD, MMF, and MAD with selected socio-demographic variables (n=240)

Variables	MDD		MMF		MAD	
	AOR with 95% C.I.	p-value	AOR with 95% C.I.	p-value	AOR with 95% C.I.	p-value
Age of the child						
6-9 months	1	-	1	-	1	-
9-12 months	2.94 (1.32-6.51)	0.008	0.16 (0.07-0.38)	<0.001	1.20 (0.50-2.88)	0.67
12-18 months	4.75 (2.15-10.48)	<0.001	0.14 (0.06-0.32)	<0.001	1.31 (0.57-3.04)	0.51
18-23 months	6.60 (2.29-19.01)	<0.001	0.36 (0.12-1.03)	0.05	3.59 (1.25-10.27)	0.01
Introduction of bottle feeding						
No	1	-	1	-	-	-
Yes	0.53 (0.07-3.67)	0.52	0.46 (0.08-2.54)	0.37	-	-
Bottle feeding since						
6 months and above	1	-	1	-	1	-
Never	0.05 (0.006-0.47)	0.008	0.34 (0.06-1.94)	0.22	0.17 (0.06-0.49)	0.001
Birth to	0.15 (0.04-0.61)	0.008	0.33 (0.11-1.03)	0.05	0.20 (0.07-0.61)	0.004
Type of Family						
Joint	-	-	1	-	-	-
Nuclear	-	-	1.66 (0.91-3.04)	0.09	-	-
Listening radio						
No	-	-	1	-	-	-
Yes	-	-	2.30 (1.03-5.11)	0.04	-	-
Along with BF						
Other than breast milk	-	-	1	-	1	-
Only breast	-	-	1.99 (1.02-3.90)	0.44	2.21 (1.05-4.65)	0.03
Initiation of breastfeeding						
No	-	-	-	-	1	-
Yes	-	-	-	-	1.77 (0.93-3.38)	0.08

Note: Only significant predictors have been shown in table 4 and “-“ no any significant association.

DISCUSSION

In this study, the prevalence of Minimum Dietary Diversity among children aged 6-23 months was 49.16% where the findings were higher than the study conducted in North West Iran (42.3%),¹² Nepal (34%),¹³ (30.4%),¹⁴ and (35%),¹⁵ respectively and lower than the study conducted in Nepal (72.3%),¹⁶ (61.5%)¹⁷ and India (57%)¹⁸ respectively. This might be due to the fact that there are educational, socioeconomic, and cultural differences.

In this present study, Minimum Meal Frequency was 44.58% which is higher than the study conducted in North West Iran (42.7%)¹² and contrary to the study conducted in Nigeria (46.9%).¹⁹ Even some studies conducted in

Nepal too has got contrasting findings having low feeding practices.^{10, 14, 20, 21} This might be due to study area, country context, and educational level of parents regarding complementary feeding practices.

The current study determined that the minimum acceptable diet was 27.91% which is almost similar to the study conducted in Nepal (26.5%)¹⁷ but lower than the study conducted in Bangladesh (36%)⁴ and India (58%)¹⁸ respectively. This study is higher than the study conducted in Southern Benin²² only 12.3% of them got MAD. The findings of the study are different due to the differences in the research methodology, the availability of the food, and the education level of the parents.

In the present study, the minimum dietary diversity rate was almost similar i.e. more than 90% in each age group mothers tried to feed their baby grains, roots, and tubers. The finding is consistent with the study conducted in Nepal²⁰ and Southern Benin.²² Likewise, regarding legumes the finding of the study is in contrast with the study conducted in Nepal¹³ and Southern Benin.²² Near about 50% of babies were fed dairy products which is consistency with the study conducted in Nepal.²⁰ The study findings showed that the increasing age group from 6-9 months to 6-23 months was uniformly lowered in offering flesh food.^{17,20} Similarly, regarding eggs with increasing age more than 50% were fed which very essential for proper nourishment which is consistency with the study conducted in Nepal.²⁰ Only one-third of the babies consume Vitamin A rich fruits and vegetables and less than one-third of babies only consume other fruits and vegetables which is consistency to the study conducted in Nepal¹³ and Southern Benin.²² Various studies showed that there is a lack of variety of nutritious diets and believed that green leafy vegetables are considered cold and are not given to children at an early age. Therefore, emphasis on the need for improved dietary quality of complementary foods and the inclusion of animal-source foods, vegetables, and fruits in the diet of children needs to be addressed.

The minimum dietary diversity rate was statically significant with the age of the child which was six times more likely to meet the MDD which is consistent with the study conducted in Nepal^{10,13} and contradictory with the study conducted in Southern Ethiopia²⁴ and Bangladesh²⁵ where children aged 18-23 months were nearly two to three times. This finding suggested that the youngest age group 6-9 months received the lowest proportion of food from all seven categories of food which was least likely to meet the recommended meal diversity and acceptable diet standard than the older aged (12-18) children.

The minimum meal frequency rate was statistically significant with the age of 18-23 months which was less likely to meet the minimum meal frequency which is contradictory with the study conducted in Nigeria¹⁹ and Bangladesh²⁵ was nearly two to three or four times more like to have MMF.

Regarding the type of family, the nuclear family was nearly two to four times more likely to feed MMF than the joint family. This study is supported by the study conducted in South Ethiopia²⁴ and North West Ethiopia²³ more than twelve times more likely than joint family. The probable reason behind this finding may be the decision-making by their parents, mothers having enough time to prepare food or to feed their children, and maybe the educational level and awareness of their parents regarding food as well as the availability of the food.

The present study reported that those parents who listen to the radio as a mass media were two to five times more likely than not listening to the radio as mass media to meet the recommendation of MMF. This study is in congruence with the study conducted in Bangladesh²⁵ and Nepal¹ where the findings were nearly two to seven times more likely than not listening to radio as mass media and contrast with the findings of the study conducted in Ethiopia.²³

In this study, the introduction of breast milk only was nearly two times more likely than other breast milk such as lito, cow milk, formula feeding, cerelac, etc to meet the recommended MMF. These findings support the study conducted in Nigeria¹² was two to five times more likely to have breast milk. On the contrary, the study conducted in Nepal²⁰ showed that not enough mother milk was the reason to introduce early complementary feeding.

Regarding bottle feeding since, those who never bottle feed were less likely than bottle feeding since birth to six months and above to meet the recommendation of MMF. The study was contrast with the study conducted in Nepal.²⁶ The possible reason behind it may be those mothers who underwent cesarean section were usually advised or preferred to give bottle-feeding and had easy access to infant formulas.

There was statistically significant with age of 18-23 months child which were three to ten times more likely to meet the minimum acceptable diet which is consistent with the study conducted in Nepal¹³, Southern Ethiopia²⁴, and Bangladesh²⁵ were nearly two to seven times more likely to have MAD. This study is contradictory to the study conducted in Nepal.³

Regarding initiation of breastfeeding, those who initiate

within an hour were nearly two to three times more likely to meet the recommendation of MAD than those who does not initiate breastfeeding on time. On the contrary, the study conducted in India (59.5%)¹⁸ and Ethiopia (68.6%)²³ initiate breastfeeding within an hour.

In this study introduction of breast milk only was statistically significant two to four times more likely to provide the recommended MAD than other than breast milk. The study conducted in India (41%)¹⁸ and Pakistan(32.3%)²⁷ respectively introduced only breastfeeding rather than other feedings.

This was a hospital-based study and may not reflect values present in the general population. Recall bias may have occurred regarding the initiation of feeding complementary food. Further in-depth studies are needed to explore complementary feeding practices in Nepal to generalize the results.

CONCLUSIONS

The prevalence of MDD, MMF and MAD among children aged between 6 and 23 months was found to be sub-optimal. Age of the child, the introduction of bottle feeding, and bottle feeding since were significantly associated with MDD. Likewise, the age of the child, type of family, listening to radio as media, along with breastfeeding, introducing bottle feeding, and bottle feeding since birth to six months and above were significantly associated with MMF. Similarly, the age of the child, initiation breastfeeding, along with breastfeeding and bottle feeding since birth to six months and above were significantly associated with MAD. Hence, this study concluded that there is a need for special attention and complementary feeding practices counseling to improve the practice of appropriate feeding of young children to the parents. Further programs incorporating infant feeding guidelines in health workers' training manuals and more focus on educating mothers and caregivers may improve complementary feeding practices.

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PG, PP, BG, PP, KS, RR, and PG were involved in conceptual design. PG, PP, BG, and KS were involved in data collection. PG, PP, and BG were involved in the statistical analysis and interpretation of the data. PG, PP, PP, RR, and PG were involved in preparing the draft and completion of the manuscript. A manuscript was reviewed by all the authors.

REFERENCES

1. Sah AK, Paudel R, Devkota MD, Sigdel R, Pandey A. Minimum acceptable diet and stunting among children aged 6-23 months in Dalit and Non-Dalit and associated factors: A cross-sectional comparative study of Dhanusha district, Nepal. Res Sq. 2019. [preprint]. DOI:10.21203/rs.3.rs-93727/v1
2. Government of Nepal, Ministry of Health and Population and Department of Health Service. 2019 Annual Report 2018/2019. Kathmandu, Nepal: Department of Health Services. Available from: <https://dohs.gov.np/wp-content/uploads/2020/11/DoHS-Annual-Report-FY-075-76-.pdf>. [Accessed 22nd March, 2022].
3. Subba SH, Chandrashekhar TS, Binu VS, Joshi HS, Rana MS, Dixit SB. Infant feeding practices of mothers in an urban area in Nepal. Kathmandu Univ Med J. 2007;5(1):42-7. PMID: 18603985.
4. World Health Organization. Complementary Feeding: Summary of Guiding Principles. Report of the Global Consultation, 10-13 December 2001. Geneva, Switzerland: World Health Organization; 2002. Available from: <https://www.who.int/publications/i/item/924154614X>. [Accessed 22nd March 2022].
5. Chapagain RH. Factors affecting complementary feeding practices of Nepali mothers for 6 months to 24 months children. J Nepal Health Res Counc. 2013; 11(24):205-7. PMID: 24362612.
6. World Health Organization. Infant and Young Child Feeding: Model Chapter for textbook for medical students and allied health professionals. Available from: https://www.ncbi.nlm.nih.gov/books/NBK148965/pdf/Bookshelf_NBK148965.pdf. [Accessed 26th March 2022].
7. United Nations International Children's Emergency Fund: Office of innovation. Available from: <https://www.unicef.org/innovation/complementary-feeding-bowl>. [Accessed on 21st March 2022].
8. Basnet S, Sathian B, Malla K, Koirala DP. Reasons for early or late initiation of complementary feeding: a study in Pokhara. Am J Public Health Res.

- 2015;3(4A):69-75. DOI: 10.12691/ajphr-3-4A-15
9. Ministry of Health Nepal, New ERA and ICF. 2017. Nepal Demographic and Health Survey 2016. Kathmandu Nepal: Ministry of Health, Nepal. Available from: <https://www.healthynewbornnetwork.org/hnn-content/uploads/Nepal-DHS-2016-Key-indicators.pdf>. [Accessed 26th March 2022].
 10. Ulak N, KC D, Tiwari K. Complementary Feeding Practices and its Associated Factors among Mothers in Selected Urban Area of Nepal. *Asp Biomed Clin Case Rep.* 2020;3(1):6-14. DOI: 10.36502/2020/ASJBCCR.6176
 11. Na M, Aguayo VM, Arimond M, Dahal P, Lamichhane B, Pokharel R, et al. Trends and predictors of appropriate complementary feeding practices in Nepal: An analysis of national household survey data collected between 2001 and 2014. *Matern Child Nutr.* 2018;14:1-13. DOI: 10.1111/mcn.12564 PMID: 29148183.
 12. Kamran A, Sharifirad G, Nasiri K, Soleymanifard P, Savadpour M, Akbar Haghghat M. Determinants of complementary feeding practices among children aged 6-23: a community based study. *Int J Pediatr.* 2017;5(3):4551-60. DOI: 10.22038/ijp.2016.7811
 13. Joshi N, Agho KE, Dibley MJ, Senarath U, Tiwari K. Determinants of inappropriate complementary feeding practices in young children in Nepal: secondary data analysis of Demographic and Health Survey 2006. *Matern Child Nutr.* 2012;8:45-59. DOI: 10.1111/j.1740-8709.2011.00384.x PMID: 22168518.
 14. Khanal V, Sauer K, Zhao Y. Determinants of complementary feeding practices among Nepalese children aged 6–23 months: findings from demographic and health survey 2011. *BMC Pediatr.* 2013;13(1):1-3. DOI: 10.1186/1471-2431-13-131
 15. Gautam KP, Adhikari M, Khatri RB, Devkota MD. Determinants of infant and young child feeding practices in Rupandehi, Nepal. *BMC Res Notes.* 2016;9(1):1-7. DOI 10.1186/s13104-016-1956-z
 16. Sapkota, S. and Shrestha, S. Complementary feeding practices among the caretakers of the young children at Kathmandu. *J Chitwan Med Coll.* 2013;3(4):25-29. DOI: 10.3126/jcmc.v3i4.9550
 17. Adhikari N, Acharya K, Upadhya DP, Pathak S, Pokharel S, Pradhan PM. Infant and young child feeding practices and its associated factors among mothers of under two years children in a western hilly region of Nepal. *PloS One.* 2021;16(12):1-15. DOI: 10.1371/journal.pone.0261301 PMID: 34914802.
 18. Jain S, Bhan BD, Bhatt GC. Complementary feeding practices and their determinants among children 6–23 months of age in an outpatient hospital setting in Central India: A cross-sectional study. *J Family Med Prim Care.* 2020;9(2):1187-90. DOI: 10.4103/jfmpc.jfmpc_958_19 PMID: 32318490.
 19. Ariyo O, Aderibigbe OR, Ojo TJ, Sturm B, Hensel O. Determinants of appropriate complementary feeding practices among women with children aged 6-23 months in Iseyin, Nigeria. *Sci Afr.* 2021;13:1-10. DOI:10.1016/j.sciaf.2021.e00848
 20. Kandel KP, Sah BK, Kafle S, Khanal S, Adhikari B. Factors affecting complementary feeding among mothers of under two years children in Darai and Kumal communities of Mangalpur, Chitwan. *J Chitwan Med Coll.* 2016;6(4):24-30. DOI:10.3126/jcmc.v6i4.16711
 21. Locks LM, Dahal P, Pokharel R, Joshi N, Paudyal N, Whitehead Jr RD, et al. Infant and young child feeding (IYCF) practices improved in 2 districts in Nepal during the scale-up of an integrated IYCF and micronutrient powder program. *Curr Dev Nutr.* 2018;2(6):1-14. DOI: 10.1093/cdn/nzy019 PMID: 29984348.
 22. Mitchodigni IM, Amoussa Hounkpatin W, Ntandou-Bouzitou G, Avohou H, Termote C, Kennedy G, et al. Complementary feeding practices: determinants of dietary diversity and meal frequency among children aged 6–23 months in Southern Benin. *Food Secur.* 2017;9:1117-30. DOI 10.1007/s12571-017-0722-y
 23. Ayana D, Tariku A, Feleke A, Woldie H. Complementary feeding practices among children in Benishangul Gumuz Region, Ethiopia. *BMC Res Notes.* 2017;10(1):1-8. DOI: 10.1186/s13104-017-2663-0
 24. Kassa T, Meshesha B, Haji Y, Ebrahim J. Appropriate complementary feeding practices and associated factors among mothers of children age 6–23 months in Southern Ethiopia, 2015. *BMC Pediatr.* 2016;16(1):1-10. DOI: 10.1186/s12887-016-0675-x PMID: 27542833.
 25. Kabir I, Khanam M, Agho KE, Mihrshahi S, Dibley MJ, Roy SK. Determinants of inappropriate complementary feeding practices in infant and young children in Bangladesh: secondary data analysis of Demographic Health Survey 2007. *Matern Child Nutr.* 2012;8:11-27. DOI: 10.1111/j.1740-8709.2011.00379.x PMID:

22168516.

26. Pandey S, Tiwari K, Senarath U, Agho KE, Dibley MJ. South Asia Infant Feeding Research Network (SAIFRN)*. Determinants of infant and young child feeding practices in Nepal: secondary data analysis of Demographic and Health Survey 2006. *Food Nutr Bull.* 2010;31(2):334-51. DOI: 10.1177/156482651003100222 PMID:

20707237.

27. Ariff S, Saddiq K, Khalid J, Sikanderali L, Tariq B, Shaheen F, et al. Determinants of infant and young complementary feeding practices among children 6–23 months of age in urban Pakistan: a multicenter longitudinal study. *BMC Nutr.* 2020;6(1):1-9. DOI: 10.1186/s40795-020-00401-3