

Reasons for Early or Late Initiation of Complementary Feeding: A Study in Pokhara

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Abstract Complementary feeding is introduced into an infant's diet at 6 months of age because at this age breast milk alone cannot adequately meet the child's nutritional requirement for their optimal health. This study has been undertaken to assess mothers' timely introduction of complementary feeding and to determine reasons for its early or delayed initiation. This was a cross sectional hospital based study conducted in Manipal Teaching Hospital, on 700 mothers from October 2013 to October 2014. Data was collected by face to face interview using a structured questionnaire. The mothers' understanding of the recommended time to start complementary feeding, and their actual practiced timing of complementary feeding was inquired. Where applicable, reason for early or late introduction to complementary feeding was determined. Out of the 700 mothers sampled, 544 (77.7%) knew that complementary feeding should be started at 6 months of age but only 359 (50%) were found to be practicing it. The most common cited reasons for early introduction of foods/liquids before the age of 6 months were as follows: "I did not have enough breast milk" (37.1%), "I had to return to my job" (15.1%), and "Relatives said that I should give my baby something other than breast milk" (8.3%). In order to improve infant feeding practices, there is a need for anticipatory guidance for the management of common breastfeeding difficulties. Also, considerations and strategies allowing more flexible working conditions such as improved maternity leave provisions may help mothers remain at home with their infants for longer, alleviating the need for early weaning.

Keywords: *complementary feeding, early initiation, delayed initiation*

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1. Introduction

As per World Health Organization (WHO), the period when other foods or liquids along with mothers milk are given to the baby is called complementary feeding period and any nutrient given to the baby during this period is regarded as complimentary foods. According to this definition, any human milk substitute (HMS), formulas, follow up formulas are to be considered as complementary foods. The inclusion of these substitutes as complementary foods is intended to discourage HMS and at the same time promote and emphasize the need for exclusive breast feeding particularly in developing countries [1].

The recommendation that complementary feeding be started at six months of age has its rationale based on the biological and developmental aspects of infants (i.e. renal, gastro-intestinal and neurodevelopmental maturity of infants) [1]. Also, early introduction to complementary feeding does not have any potential benefits in regards to improved growth velocities or food acceptance [2]. Rather, early introduction of complementary feeding is associated with increased morbidity due to gastro-intestinal diseases

particularly in areas where food and water hygiene is a concern. Conversely, delayed introduction to complementary feeding is also associated with negative consequences to the infants' health. As breast milk is no longer able to sustain the nutritional requirements of an infant after six months of age, continuing to feed only breast milk beyond this period leads to nutritional deficiencies and therefore as a consequence of malnutrition, child is susceptible to infections thus increasing morbidity [3].

Poor nutrition is a major factor attributing to underweight stunted infants. In Nepal, the demographic studies published in 2011 showed that 41% of the population were stunted and 29% were wasted [4,5]. Globally speaking, malnutrition is directly or indirectly responsible for 60% of the 10.9 million deaths annually among children less than 5 years old [6]. Inappropriate feeding practices attribute to over two thirds of these deaths, and occur during the period of infancy. Appropriate complementary feeding has the potential to prevent 6% of all under 5 deaths particularly in developing countries [7,8,9].

Optimal infant and young child feeding have the greatest single potential impact on child survival and the practice of complementary feeding must be start timely

[10]. To reiterate this statement, it has been shown that complementary feeding starting at 6 months of age was the third ranked intervention among 15 interventions among child survival interventions. It was estimated that complementary feeding alone helps in preventing about one fifth of under 5 mortality in developing countries [10].

A number of researches has been undertaken to identify complementary feeding practices; we, in our study sought to determine the timing of complementary feeding and the exact reason for its early or delayed initiation. The results could help us plan interventions that may culminate in prevention of untimely initiation of complementary feeding. It was also seen that some studies have mentioned that lack of privacy hinders exclusive breast feeding and may lead to early weaning. Thus, in addition, we tried to determine whether this factor played a role in early end of exclusive breast feeding, and thereby leading to premature complementary feeding in the studied population.

2. Methodology

2.1. Study Setting and Period

This study was conducted in Manipal Teaching Hospital, a 850 beds hospital in Pokhara, Nepal. Pokhara is the second largest city in Nepal and lies in the western region of Nepal, and as of the 2011 census, the population of the city was estimated to be 264,991. Manipal Teaching Hospital is the larger of the two medical college hospitals located in Pokhara. The study was undertaken over one year from October 2013 to October 2014.

2.2. Study Design and Sampling

This was an institution based cross sectional descriptive study. The 700 data accumulated were from mothers who had brought their children for treatment to either the out-patient or in-patient department of Pediatrics at Manipal Teaching Hospital. The sample size was calculated using the following formula [11]:

$$n = \frac{(Z_{\alpha/2})^2 p(1-p)}{d^2}$$

Where:

Z= standard normal variable at 95% confidence level (1.96)

p= estimated proportion of early introduction of complementary food, 70%

d= 3.5 (5% margin of error)

Required sample size =659

2.3. Data Collection

The study's data was collected by the first author of the study and the Post Graduate students of the Department of Pediatrics. The mothers were interviewed using a structured questionnaire; though the questionnaire was prepared in English, the contents were translated in Nepali during the interview. We decided on a face to face interview rather than handing out questionnaires, keeping in mind that a large number of mothers might not be able to follow the questionnaire, given the nature of Nepal's high illiteracy rate. Mothers who had brought in their child

for treatment were questioned, and skipped if they opted not to participate in this study. As for mothers who had more than one child, data was collected in regard to the last child as we believed that the recall knowledge would be the most accurate. The nature of the study was clarified to the mother before the interview was commenced. Every completed questionnaire was reviewed by the principal investigator after data collection to ensure the optimal quality of data collected. As thirty of the questionnaires were incomplete, they had to be discarded and therefore the overall response rate was calculated to be 95.9%.

2.4. Outcome Variables

Outcome variables were: the mother's knowledge regarding the age when complementary feeds should be started, the age at which she initiated complementary feeding for her baby, the age at which she stopped breast feeding completely and in cases where the mother was still breast feeding, the age at which she intended to discontinue and whether the mother breastfed in public places. In cases where complementary feeding was not timely initiated, i.e. at six months of age, the reason for early initiation or delayed initiation was sought.

2.5. Exposure Data

Exposure data were: age of the mother, number of children, her level of education, employment status and parity.

2.6. Approval of Ethical Committee

The Research was conducted in accordance to the latest version of the Declaration of Helsinki [12]. Written consent was obtained from the participants. Prior to the study, ethical committee approval was taken from the institutional ethical committee of Manipal Teaching Hospital, Pokhara, Nepal.

2.7. Data Management and Statistical Analysis

The data collected was analyzed using Excel 2003, R 2.8.0 Statistical Package for Social Sciences (SPSS) for Windows Version 16.0 (SPSS Inc; Chicago, IL, USA) and EPI Info 3.5.1 Windows Version. Chi square test was used to observe the difference between different variables and the strength of the relationship with logistic regression. P< 0.05 was considered as statistically significant. We calculated odds ratio and adjusted odds ratio (aOR) and its 95% confidence interval (95% CI). P< 0.05 was considered as statistically significant [13].

3. Results

3.1. Socio-Demographic Characteristics of the Mother

There were 700 data collected for this study. Table 1 presents the socio-demographic characteristics of the mothers enrolled in this study. It is seen that out of the 700 mothers, 440 (62.9%) were in the age group of 21-30 years. Only 32 (4.6%) were over the age of 40 years. Regarding the educational status of the mothers, only 42 (6%) had studied up to Masters, and 128 (18.3%) had

attended school between classes 1 to 5. However, the majority of the mothers, 288 (41.1%) had received an education between the classes of 5 to 10. Larger proportion of the mothers interviewed, 548 (78.3%), were home makers, the rest 152 (21.7%), were employed with paid jobs. Two hundred and ninety-seven (42.4%) of the mothers had a single child; this was closely followed by 294 (42%) mothers having two children. Only 19 (2.7%) of those interviewed had four children.

Table 1. Socio Demographic Characteristics of The Mother

Variable	Number	Percentage
Age group		
≤20	52	7.4
21-30	440	62.9
31-40	176	25.1
40>	32	4.6
Education		
<5	128	18.3
5-10	288	41.1
Intermediate	133	19.0
Bachelors	109	15.6
Masters	42	6.0
Job		
Yes	152	21.7
No	548	78.3
Parity		
1	297	42.4
2	294	42.0
3	90	12.9
4	19	2.7
Total	700	

3.2. Knowledge and Practices for Timely Initiation of Complementary Feeding

Five hundred and forty-four (77.7%) of the mothers knew that the correct age to start complementary feeding was at 6 months of age. Irrespective of whether the mothers knew the appropriate age to start complementary feeds, in practice, only 350 (50%) of the mothers started complementary feeds at 6 months of age. In this study population 282 (40.3%) of the mothers started complementary feeds before the recommended time and 68 (9.7%) delayed it beyond six months of age.

3.3. Factor Associated with Awareness of the Recommended Age to Initiate Complementary Feeding

Mothers with higher educational level were more likely to be aware of the appropriate age of starting complementary feeding. This difference in odds was found to be statistically significant; mothers educated up to Intermediate level or grade 12 [aOR 6.454; 95% CI (3.054-13.64)], Bachelors level [aOR 4.698; 95% CI(1.978-11.157)], and Masters level [aOR 5.606; 95% CI (1.697-18.517)].

The odds of non-working mothers knowledge with regards to when complementary feedings should be ideally started was statistically significantly lower [aOR 0.530; 95% CI (0.289- 0.975)] in comparison to mothers who were in paid employment (Table 2).

Table 2. Factors Associated with Awareness of Recommended Age of Starting Complementary Feedings

Variable	Aware that complementary feeding should be started at 6 months n (%)		P value	Adjusted odds ratio
	No	Yes		
Age group				
<20	16(30.8)	36(69.2)	-	1
20-30	89(20.2)	351(79.8)	0.459	1.296[CI(0.653, 2.570)]
30-40	40(22.7)	136(77.3)	0.338	1.477[CI(0.665, 3.278)]
40>	11(34.4)	21(65.6)	0.682	1.251[CI(0.429, 3.647)]
Education				
<5	55(43)	73(57)	-	1
5-10	72(25)	216(75)	0.002	2.146[CI(1.334, 3.452)]
Intermediate	12(9)	121(91)	0.0001	6.454[CI(3.054, 13.64)]
Bachelors	13(11.9)	96(88.1)	0.0001	4.698[CI(1.978, 11.157)]
Masters	4(9.5)	38(90.5)	0.005	5.606[CI(1.697, 18.517)]
Job				
Yes	16 [10.5]	136 [89.5]	-	1
No	140 [25.5]	408 [74.5]	0.04	0.530[CI(0.289, 0.971)]
Parity				
1	63(21.2)	234(78.8)	-	1
2	54(18.4)	240(81.6)	0.354	1.237[CI(0.789, 1.940)]
3	32(35.6)	58 (64.4)	0.213	0.675[CI(0.364, 1.253)]
4	7(36.8)	12(63.2)	0.647	0.779[CI(0.267, 2.272)]
Total	156 [22.3]	544 [77.3]		

3.4. Factors Associated with Timely Initiation of Complementary Feeding at 6 Months

In this study, it was found that the odds of timely initiation of complementary feeding was statistically significantly higher in non-working mothers [aOR 1.593; 95% CI (1.026- 2.319)] compared to working mothers. In addition, it was also seen that women having three children had statistically significant lower odds [aOR 0.548; 95% CI (0.315- 0.952)] of initiating complementary feeding at six months. Mothers with four children were also seen to have lesser chances of timely initiating complementary feeding though in their case it

was not statistically significant ($p=0.182$). This might be due to the small number of mothers included in this group as only 19 mothers out of the 700 sampled, had four children (Table 3).

A possible explanation to the finding that mothers with lesser number of children were initiating complementary feeding at the recommended time is that mothers having more children might have had to deal with an increased work load making timely initiation difficult. Similar findings were seen in a study done by Rao et al where they too found that mothers with lesser number of children tended to start complementary feeding on time [2].

Table 3. Factors Associated with Early or Delayed Complementary Feeding

Variable	Complementary feeding started timely at 6months of age n (%)		P value	Adjusted odds ratio
	Yes	No		
Age group				
<20	24(46.2)	28(53.8)	-	1
20-30	216(49.1)	224(50.9)	0.781	0.918 [CI(0.502, 1.680)]
30-40	92(52.3)	84(47.7)	0.884	1.053 [CI(0.528, 2.100)]
40>	18(56.2)	14(43.8)	0.852	1.098 [CI(0.412, 2.927)]
Education				
<5	73(57)	55(43)	-	1
5-10	140(48.6)	148(51.4)	0.305	1.266[CI(0.806, 1.989)]
Intermediate	57(42.9)	76(57.1)	0.069	1.663[CI(0.962, 2.877)]
Bachelors	53(48.6)	56(51.4)	0.414	1.305[CI(0.689, 2.470)]
Masters	27(64.3)	15(35.7)	0.443	0.730[CI(0.326, 1.633)]
Job				
Yes	87 [57.2]	65 [42.8]	-	1
No	263 [48]	285 [52]	0.037	1.543[CI(1.026, 2.319)]
Parity				
1	149(50.2)	148(49.8)	-	1
2	129(43.9)	165(56.1)	0.139	1.3[CI(0.918, 1.841)]
3	59(65.6)	31 (34.4)	0.033	0.548[CI(0.315, 0.952)]
4	13(68.4)	6(31.6)	0.182	0.490[CI(0.172, 1.397)]
Total	350 [50]	350 [50]		

3.5. Reasons for Early or Delayed Introduction to Complementary Feeding

Out of the 700 mothers interviewed, 350 commenced complementary feedings when their baby was six months of age; we endeavored to determine the reasons in the

remaining 350, their reasons for early or delayed introduction to complementary feeding. The particular reasons as reported by the mothers for early or delayed introduction have been detailed in [Table 4](#).

Table 4. Reasons for Early or Delayed Initiation of Complementary Feeding at 6 Months

Reason for early or delayed introduction to complementary feeding	Total n= 350 Number (n)	Percentage (%)
not enough breast milk	130	37.1
Had to return to my job	53	15.1
Advice of others (family/friends)	29	8.3
Felt that it was the appropriate age to start complementary feeding	28	8
Felt that the child needed more than breast milk for better growth	14	4
Had to return to my studies	10	2.9
Infection of the nipples	10	2.9
Child seemed to show interest in other foods	6	1.7
Pregnant with another baby	2	0.6
Delayed introduction due to ample amount of breast milk	66	18.8
Delayed introduction as they felt child would become sick if fed other foods	2	0.6

3.6. Breast Feeding in Public

In order to assimilate whether lack of privacy for breastfeeding may play a role for some mothers to start complementary feeds earlier than the recommended time, we asked the mothers whether lack of privacy would hinder them or act as a barriers and therefore act as a factor for early introduction to complementary feeding. However, in the present study 591 (84.4%) said that they did not feel restricted in any way to feed in public places, and would feed at any location if the child was hungry.

3.7. Continuation of Breastfeeding

A little more than one third (262) of the mothers in this study continued or planned to continue to breast feed their child until 2 years of age. Similarly, 201 (28.7%) breast feed or thought to breast feed until the child was 3 years old; 106 (15.1%) continued to or planned to breast feed up

to 5 years of age; ninety-two (13.1%) of the interviewed mothers ceased or planned to cease breast feeding at around four years. Ten mothers (1.4%) said that they would breast feed or had breast fed beyond 5 years of age. Only 29 (4.2%) of the mothers planned to discontinue or discontinued breast feeding before the child's first birthday or when the child turned one year of age.

3.8. Factors Associated with Continuation of Breast Feeding up to Two Years of Age

[Table 5](#) shows that mothers who had received an education up to Masters level were more likely to breast feed their babies until the age of two years [aOR 7.137; 95% CI(3.074- 16.573)] than those who had not attended school beyond class 5. Similarly the difference in odds was also statistically significant for mothers educated up to the Bachelors level [aOR 3.844; 95% CI (1.951-7.570)] and Intermediate level [aOR 3.059; 95% CI (1.713-5.570)]

Table 5. Factors Associated with Total Duration of Breastfeeding

Variable	Child was breastfed up to 2 years of age n (%)		P value	Adjusted odds ratio
	Yes	No		
Age group				
<20	35(67.3)	17(32.7)	-	1
20-30	270(61.4)	170(38.6)	0.655	0.863 [CI(0.451, 1.649)]
30-40	108(61.4)	68(38.6)	0.589	0.816 [CI(0.39, 1.707)]
40>	25(78.1)	7(21.9)	0.249	0.518 [CI(0.169, 1.586)]
Education				
<5	99(77.3)	29(22.7)	-	1
5-10	198(68.8)	90(31.2)	0.080	1.575[CI(0.947, 2.619)]
Intermediate	71(53.4)	62(46.6)	0.0001	3.089[CI(1.713, 5.570)]
Bachelors	55(50.5)	54(49.5)	0.0001	3.844[CI(1.951, 7.570)]
Masters	15(35.7)	27(64.3)	0.0001	7.137[CI(3.074, 16.573)]
Job				
Yes	80 [52.6]	72 [47.4]	-	1
No	358 [65.3]	190 [34.7]	0.577	0.889[CI(0.587, 1.345)]
Parity				
1	190(64)	107(36)	-	1
2	176(59.9)	118(40.1)	0.084	1.383[CI(0.957, 1.997)]
3	58(64.4)	32 (35.6)	0.108	1.605[CI(0.902, 2.855)]
4	14(73.7)	5(26.3)	0.770	1.184[CI(0.381, 3.675)]
Total	438 [62.6]	262 [37.4]		

4. Discussions

The result of our study revealed that 77.7% of the mothers were well acquainted with the fact that complementary feeding was to be optimally started at six months of age. Our findings were slightly lower than in a study done in Kathmandu, Nepal where 87.3% were aware that complementary feeding should be initiated at six months of age [14]. The latter study was conducted in a tertiary level hospital in the capital of Nepal where mothers would probably be exposed to multiple sources of information on infant feeding, accounting for a higher awareness in their study.

In the present study, although 77.7% were familiar with regards to the timing when complementary feeding was to be started, in practice only 50% initiated it at the designated desirable time. Studies done in Taiwan, and West Bengal, India, presented similar figures at 50%, and 55.1% respectively [15,16]. The number in our study was higher than in findings from Lahore, Pakistan (43%), Kathmandu, Nepal (33%), Delhi, India (17.5%) and United Arab Emirates (<17%) [2,14,17,18], but lower than in studies done in Northern Ethiopia(80%)and South India (77.5%) [2,19].

This discrepancy in the knowledge (77.7%) and actual practice of initiating complementary feeding (50%) at six months of age in our study was attributed to common breast feeding problems in most of the cases. The majority of the mothers who did not start complementary feeds at six months of age (130 out of 350), which was 37.1%, indicated that milk production was not adequate for the needs of their baby and hence under these circumstances they felt the need to start complementary feeds early. A study done in South India has also cited inadequate amounts of breast milk as the commonest cause for stopping breast feeding early [2]. Another 15.1% in our study started complementary feeding prior to the stipulated time as they had to return to their jobs and couldn't maintain breast feeding. Other reasons given for starting complementary feeding early were: on advice of other family members or friends (8.3%); some lacked the proper knowledge concerning the appropriate time so they initiated when they believed their baby was old enough to

eat solids (8%). Similar reason was given as the main reason for early introduction to complementary feedings by 42.7% of the mothers in a study done in Eastern Ethiopia [10]. Four percent of the respondents in our study believed that giving their child something more than breast milk would help enhance their child's growth. Some mothers (2.9%) were still studying and they started their child on other foods as they had to return to their classes; another 2.9% stated that they developed infection of the nipples and therefore had to initiate complementary feeding early. Another group of respondents (1.7%) stated that they started their child on solids earlier because the child seemed to want or showed an interest in solid foods. Pregnancy was cited by 0.6% of the mothers as a reason for starting complementary feeding early; although we found this reason to be a relatively rare in our study, Rao et al found that in their study, this was one of the commonest reason to commence early complementary feeding [2].

Out of the 350 mothers who did not timely initiate complementary feeding, 68 (19.4%) delayed it beyond six months of age (out of the total sampled 700 mothers, this figure would be 9.7%). This figure is similar to the one found in a study in Kathmandu, Nepal where 9% of the mothers were practicing exclusive breast feeding for more than six months [14]. In the present study, 66 (18.8%) of them attributed this delay to the fact that they had plenty of breast milk and they did not believe that there was a need to initiate solids in the view of ample amounts of breast milk. The reasoning for the delay given in Chapagain's study was similar to the one we found in ours. Another two respondent (0.6%) delayed timely initiation as they felt that feeding the child something other than their breast milk would make the baby ill. Both these mothers believed that delaying complementary foods would prevent their child from developing gastro-enteritis.

In the current study, factors such as a higher level of education in mothers and those mothers in paid employment were more likely to be aware of the recommended age to instigate complementary feeding; mothers having an education up to the Intermediate level were more likely to have knowledge regarding the recommended age of introducing complementary feeding [aOR 6.454] than mothers who had no education. Also,

mothers who were homemakers were less likely to know about the ideal time to start complementary feedings [aOR 0.530] in comparison to those who were employed. A possible explanation for these findings could be that both these groups of mothers are more likely to have institutional deliveries where they are exposed to health care professionals who educate them regarding these matters especially during discharge from the hospital after deliveries and also during visits for primary vaccinations. In addition, education gives these mothers access to multiple sources of information regarding infant feeding.

Regarding the actual practice of initiating complementary feeds at six months, we found that mothers who were homemakers were 1.5 times more likely to initiate it timely in comparison to mothers who held paid jobs outside their homes. This finding was consistent with findings from other studies done in Mekelle, Ethiopia and Bavaria, Germany [19,20]. Mothers who are not working outside their homes are in a better condition to continue breast feeding, unlike employed mothers who may have to start other forms of feedings early as they have to leave their child in order to go to work. A higher maternal educational level was associated with timely initiation of complementary feedings in studies done in Germany [18], Hong Kong [21], and Belgium [22], but in this study though mothers having an Intermediate level education tended to start timely complementary feeds at 6 months, it was not statistically significant ($p=0.069$).

With regards to continuation of breast feeding along with complementary feeding, 409 (58.4%) mothers planned or breast fed up to or beyond 3 years of age. This high figure of breast feeding beyond two years of age, as is recommended by the WHO, probably reflects the decreased purchasing power and low economic status of the majority of the mothers. However, as the economic status and the reason for continuation of breast feeding for prolonged periods were not identified in this study, they might serve as topics for further research.

5. Conclusion

We can conclude from this study that there is a large gap between the mothers' knowledge and actual practice of timely initiation of complementary feeding. Since it was noted that most of the mothers cited lactation failure as the main cause for early start to complementary feeding, we perhaps need to focus on providing anticipatory guidance for the management of common breast feeding difficulties. The second most common reason for early initiation of complementary feeding was working mothers having to end exclusive breast feeding early so that they could return to work. Considerations and strategies allowing more flexible working conditions such as improved maternity leave provisions may help mothers remain at home longer, thereby removing the need for early introduction to complementary feeding. A large number of mothers in this study group also delayed introduction to solids. This is also a dangerous practice which can adversely affect the health of children. Better methods of dissemination of information on infant feeding needs to be delivered to mothers; perhaps the most

amenable time for mothers to absorb this information could be during the primary vaccinations.

Limitations

This was a hospital based study and may not reflect values present in the general population. Also, variables such as number of antenatal care visits and place of delivery were not included in the study. Information was taken from the mothers on a recall basis, and this itself is a reason for bias as the recall information may not be very accurate.

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Authors Contribution

SB designed the study, collected and collated the data. BS analyzed the data. All authors interpreted the findings. SB prepared the manuscript. SB, KM, DPK and BS reviewed the draft and final manuscript versions. All authors read and approved the final manuscript.

Declaration of Conflicting Interests

The authors declare that there is no potential conflicts of interest with respect to the research, authorship and /or publication of this article

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References

- [1] Agostoni C, Decsi T, Fewtrell M, Goulet O, Kolasek S, Koletzko B et al: Medical position paper on complementary feeding: a commentary by the ESPGHAN Committee on Nutrition. *J Pediatr Gastroenterol Nutr* 2008, 46 (1): 99-110.
- [2] Rao S, Swathi PM, Unnikrishnan B, Hegde A: A study of complementary feeding practices among children of mothers aged six months to two years- A study from coastal south India. *AMJ* 2011, 4 (5): 252-257.
- [3] Hasnain S, Majrooh M, Anjum R: Knowledge and practices of mothers for complementary feeding in babies visiting pediatrics outpatient department of Jinnah Hospital, Lahore. *Biomedica* 2013, 29 (4): 221-230.
- [4] Ministry of Health and Population (MOHP) [Nepal]. New ERA, ICF International Inc: Nepal Demographic and Health Survey 2011. In *Kathmandu, Nepal: Ministry of Health and Population*. Calverton, Maryland: New ERA, and ICF International; 2012.
- [5] Khanal V, Sauer K, Zhao Y: Determinants of complementary feeding practices among Nepalese children aged 6-12 months: findings from demographic and health survey 2011. *BMC Pediatrics* 2013, 13: 131.

- [6] Mekbib E, Shumey A, Ferede S, Haile F: Magnitude and Factors Associated with Appropriate Complementary Feeding among Mothers Having Children 6-23 Months-of-Age in Northern Ethiopia; A Community-Based Cross-Sectional Study. *Journal of Food and Nutrition Sciences* 2014, 2 (2): 36-42.
- [7] Saleh F, Ara F, Hoque MA, Alam MS: Complementary feeding Practices among Mothers in Selected Slums of Dhaka city: A Descriptive Study. *J Health Popul Nutr* 2014, 32 (1): 89-96.
- [8] Jones G, Steketee RW, Black RE, Bhutta ZA, Morris SS, Bellagio Child Survival Study Group: How many child deaths can we prevent this year?. *The lancet* 2003, 362 (9377): 65-71.
- [9] Lutter C: Meeting the challenges to improve complementary feeding. *Standard Committee on Nutrition News* 2003; 27: 4-9.
- [10] Semahegn A, Tesfaye G, Bogale A: Complementary feeding practice of mothers and associated factors in Hiwot Fana Specialized Hospital, Eastern Ethiopia. *Pan African Medical Journal* 2014, 18: 143.
- [11] Sathian B, Sreedharan J, Baboo NS, Sharan K, Abhilash ES, Rajesh E: Relevance of Sample Size Determination in Medical Research. *Nepal J Epidemiol* 2010, 1: 4-10.
- [12] WMA Declaration of Helsinki - Ethical Principles for Medical Research Involving Human Subjects [Internet]. 2013. Available from: <http://www.wma.net/en/30publications/10policies/b3/index.html>
- [13] Sathian B: Reporting dichotomous data using Logistic Regression in Medical Research: The scenario in developing countries. *Nepal J Epidemiol* 2011, 1 (4): 111-113.
- [14] Chapagain RH: Complementary feeding practices of Nepali mothers for 6 Months to 24 months children. *J Nepal Med Assoc* 2013, 52 (191): 443-448.
- [15] Lin JR, Tzeng MS, Kao MD, Yang YH, Pan W: Practice to introduce complementary foods to infants in Taiwan- changes from 1997 to 2008. *Asia Pac J Clin Nutr* 2011, 20 (2): 337-345.
- [16] Sinhababu A, Mukhopadhyay DK, Panja TK, Saren AB, Mandal NK, Biswas AB: Infant and young child-feeding practices in Bankura District, West Bengal, India. *J Health Popul Nutr* 2010, 28 (3): 294-299.
- [17] Aggrawal A, Verma S, Feridi MA, Chand D: Complementary feeding- reasons for inappropriateness in timing, quality and consistency. *Indian J Pediatr* 2008, 75: 49-56.
- [18] Radwan H: Patterns and determinants of breastfeeding and complementary feeding practices of Emirati Mothers in the United Arab Emirates. *BMC Public Health* 2013, 13: 171.
- [19] Shumey A, Demissie M, Berhane Y: Timely initiation of complementary feeding and associated factors among children aged 6 to 12 months in Northern Ethiopia: an institution-based cross-sectional study. *BMC Public Health* 2013, 13: 1050.
- [20] Barbara R, Martina K, Ursula S, Berthold VK, Herman F: Infant feeding practices and associated factors through the first 9 months of life in Bavaria, Germany. *J Pediatr Gastroenterol Nutr* 2009, 49 (4): 467-473.
- [21] Tarrant M, Fong DYT, Wu KM, Lee ILY, Wong EM, Sham A, et al: Breastfeeding and weaning practices among Hong Kong mothers: a prospective study. *BMC Pregnancy Childbirth* 2010, 10: 27.
- [22] Sonia S, Veit G, Silvia S, Veronica L, Francoise M, Anna S, et al: Introduction of complementary feeding in 5 European countries. *J Pediatr Gastroenterol Nutr* 2010, 50 (1): 92-98.