



A survey of infant feeding practices in rural and urban area of Western U.P.

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ABSTRACT : The choice of breast or bottle feeding among the mothers depends upon several factors like age, literacy and socio-economic status of the mothers. Due to urbanization, a rapid decline in breast feeding is anticipated even a country like India where breast feeding is a traditional approach to infant feeding. The survey was conducted in Meerut district of western U.P. in the year 2009-10 to obtain relevant information regarding general feeding practices in infant food users. 100 families from rural area and 100 families from urban area having infants were selected, randomly for the study. The data were collected with the help of prepared schedule and questionnaire by personal interview method with the four or five meetings with the respondent. The survey of infant feeding practices indicates that the 39.50 per cent of mother were following breast feeding and 60.50 per cent were following bottle feeding. The current study also projected that majority of the literate mothers 71.90 per cent adopted bottles feeding. The trend was much lower in illiterate mothers. However, among the users, a small section of mothers 30.58 per cent was unable to give any specific reason for breast feeding. However, among the users, 35.54 per cent were working mothers, 15.70 per cent experienced lactation failure and 18.18 per cent had inadequate milk in flow. This observation is of great significance, as reconstituted feed may serve as an excellent medium for growth multiplication and elaboration of toxic metabolites endangering the health of babies. Mothers belonging to low income group having less formal literate need especial attention if they practices bottle feeding.

KEY WORDS : Feeding practices, Infant feeding, Survey, Bottles feeding, Breast feeding

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INTRODUCTION

Breast feeding is ideal for the infant. Exclusive breast feeding can be defined as a practice whereby the infants receive only breast milk and not even water, other liquids, tea, herbal preparations, or food during the first six months of life, with the exception of vitamins, mineral supplements, or medicines (Clegg *et al.*, 1977). Some of

the major factors that affect exclusivity and duration of breast feeding include breast problems such as sore nipples or mother's perceptions that she is producing inadequate milk (Nkala and Msuya, 2011; Cherop *et al.*, 2009 and Thurman and Allen, 2008), societal barriers such as employment and length of maternity leave (Thurman and Allen, 2008), inadequate breast feeding knowledge (Cherop *et al.*, 2009), lack of familial and societal support; lack of guidance and encouragement from health care professionals (Ku and Chow, 2010 and Thurman and Allen, 2008). These factors in turn promote the early use of breast milk substitute. Bottle feeding become essential under certain circumstances when breast feeding is not possible. In a developing countries, feeding infant with

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substitutes of breast milk may sometime become hazardous due to unhygienic practices involved in the chain of event. The possible chance mishandling of infant foods at consumer level may also endangers the delicate health of the infants. Moreover, diarrhea and respiratory tract infection in partially breast fed and totally bottle fed children was higher than exclusively breast fed children (Fouzia *et al.*, 1995). The health status of lactating mothers, malnourishment environmental insanitation and lack of education are affected the feeding practices (Sharma and Sharma, 2003). Mothers martial status, mother's employment status, friends way of feeding their babies, social support and babies age were also influential in infant feeding practices (Bright, 2010). A survey of infant food practice also emphasized the importance of quality of water storage and time of storage feed. Improper care of infant feeding bottles and nipple storage of prepared feed even for a few hours may increase the risks. Factors that influence the weaning process include infant feeding problems such as refusal to eat, colic, and vomiting among others (Hagekull *et al.*, 2007). These factors represent challenges for mothers and in turn may either directly or indirectly influence the feeding pattern. The main drawback of infant feeding through bottles is the abuses of the system due to ignorance about hygiene and sanitation. The choice of bottle feeding among the mothers depends upon several factors like age, literacy and socio-economic status of the mothers. The present study aims to determine infant feeding pattern and its predictors among to mother with the following objects age of mother, type of education, income group, their occupation and health of baby.

MATERIAL AND METHODS

A survey of infant feeding practices was confined to Meerut district of western Uttar Pradesh in the year 2009-10. The survey was conducted in Meerut district to obtain relevant information regarding general feeding practices in infant food users. 100 families from rural area and 100 families from urban area having infants were selected, randomly for the survey. The data were collected with the help of prepared schedules and the questionnaire by personal interview method with the four or five meeting with the respondent. The survey was undertaken to cover some aspects of infant feeding practices such as age of the mother (below 28 and above 28 years), her education (illiterate and literate), her

occupation (working and house women) and family income (low, middle and high). The data obtained from different families was analysed with the help of tabular analysis for drawing the results. However, percentage have been calculated for interpretation of data and results. The percentage increase/decrease is the way to express a change in percentage to a number with respect to the reference number. The simplest way to calculate percentage increase/decrease is to divide the difference between relative number and reference number and then multiplying to answer by 100 will give the percentage increase/decrease. Percentage decrease/increase can be mathematically derived from the below formula.

$$\text{Percentage increase / decrease} = \frac{\text{Relative difference}}{\text{Reference number}} \times 100$$

RESULTS AND DISCUSSION

The results of the present study as well as relevant discussions have been presented under following sub heads:

Influencing factors :

The factors influencing infant feeding practices are documented in Table 1. It is evident from the data that young mothers below 28 years old (56.16%) preferred breast feeding as compared to mothers above 28 years old (29.92%). Contrary to this, a large section of the mother age 28 years (43.84%) and above (70.08%) adopted bottle feeding. The education standard of the mothers also reflected the trend of infant feeding significantly (Hoque *et al.*, 2010). Also reported that a large portion of the respondent (61.3%) breast feed their children. A majority of the respondent were housewife and had primary education. Although majority of the literate mothers (70.73%) practiced bottle feedings the trend was much lower in illiterate mothers who, by and large, followed breast feeding (Chia, 1992) The another researcher reported that 61.8 per cent of mother with primary or less education breast fed, while 61.1 per cent mother with secondary or high education did so. 58.8 per cent of working mother breast fed compared with 65.1 per cent of housewife. While Onyechi and Nwabuzor (2010) also found in their study that 70 per cent of the mothers breast fed only, 1.8 per cent formula fed their babies and 27 per cent practiced mixed feeding. A critical appraisal of the observations further revealed that grouping of the mothers as per their family income did

not affect the feeding practices significantly. The practice of both breast and bottle feeding was almost evenly followed by the mothers belonging to the three income groups. The Table 1 further shows that the normal baby was (52.54%) and malnourished baby was (20.73%) practiced breast feeding while, normal baby and malnourished baby was 47.46 per cent. and 79.27 per cent, respectively practiced bottle feeding (Awogbenja and Ndife, 2012). In their study estimated that 50 per cent of case of malnutrition are associated with repeated diarrhoea and intestinal infections.

It can be concluded from the Table 1 that above 28 years old literate higher income group mothers were more adopted bottle feeding than below 28 years old illiterate lower income group mothers. It was further noted that malnourished baby practiced adopted bottle feeding than

normal baby. Thus, there is a need to given advise to literate mothers for importance of breastfeed, which includes a mother antibodies that help the baby to avoid or fight off infections and give his immature immune system.

Reason of bottle feeding :

As regards specific reason for adoption of bottle feeding, the present study revealed that out of the 121 mothers practicing bottle feeding, 43 followed this by virtue of being working women, 19 did so because of lactation failure and 22 resorted to this practice due to inadequate milk inflow. The remaining 37 mothers did not reveal any specific reason for practicing bottle feeding (Table 2). While (Chia, 1992) the comparatively value of results were reported by in 49 complained of poor lactation for resorting to artificial feeding, 14 out of 20 mothers who give inconvenience as the reason for artificial feeding were working mother and 16 give no reason for not breast feeding. The lactation failure was more evident among housewife above 28 years old mothers particularly belonging to high income group. Although literate mothers does not appear to more influence any of the four reason for bottle feeding practices, appreciably, occupational status of the mothers did influence this system of feeding considerably (Table 2). Other researcher (Onyechi and Nwabuzor, 2010) found in their study that 15 per cent of the mother were housewife and 84.9 per cent had some from

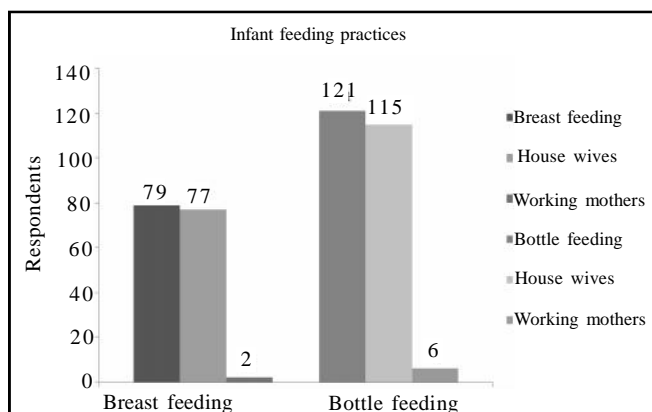


Fig. 1 : Reasons of bottle feeding to infants

Table 1 : Factors influencing infant feeding practices

Category	Breast feeding		Bottle feeding	
	Respondents	Per cent	Respondents	Per cent
Age (years)				
Below 28	41	56.16	32	43.84
28 and above	38	29.92	89	70.08
Education				
Illiterate	43	55.84	34	44.16
Literate	36	29.27	87	70.73
Income group				
High	12	26.67	83	73.33
Middle	52	43.70	67	56.30
Lower	15	41.67	21	58.33
Health of baby				
Normal	62	52.54	56	47.46
Malnourished	17	20.73	65	79.27

occupation. Similarly, among the different income groups as many as 37.04 per cent of the mothers belonging to high income groups adopted bottle feeding mainly because of lactation failure. A high proportion of the mothers (39.13%) having no specific reason for bottle feeding were housewife of the low income group.

From Table 2 it can be concluded that working mothers were more compelling factors for the adoption of bottle feeding than lactation failure and inadequate milk inflow (Fig. 2). It was due to working mothers have not sufficient time for breast feeding for the babies. The main reason of bottle feeding is that some mothers are unable to breastfed due to some problems like lactation failure, inadequate milk inflow of the mother and other reason is lack of time due to working outside of the mother.

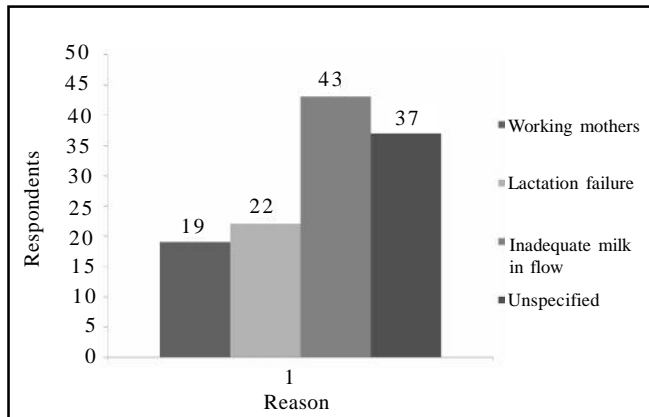


Fig. 2 : Reasons of bottle feeding

Sterilization of feeding bottles and nipples :

Sterilizing feeding bottles is a very integral part of feeding. Feeding bottles and nipples needs to be sterilization because infant immunity level are very low. The use sterilized bottles and nipples by mothers can keep his baby away from germs. So, it is goes without saying that sterilizing bottles and nipples is one of the most important part of the baby care which follow before the first use and after each use. Now, without sterilization feeding bottles and nipples it may contain bacteria, which will be harmful for infant health.

The data pertaining to practice of sterilization of feeding bottles and nipples by mothers is recorded in Table 3. From the results it is fairly evident that this practice was more prevalent in case of literate mothers (97.59%), preferably 28 years above old mothers (90.48%). Another researcher (Chia, 1992) found in their study that the number of sterile bottle had risen to 98.1 per cent, sterile teats to 90.6 per cent. These improved standards may be an indication of better education of mother. Occupational status of the mothers did not influence this sterilization habit significantly, as a sizeable number of both working (85.48%) and housewife (86.44%) followed this practices. Majority of the mothers (89.86%) resorting to sterilization of feeding bottle belonged to middle income groups. However, illiterate mothers were approximately ignored about the necessity of sterilization. Other researcher (Chia, 1992) results are in general agreement in finding that 68 per cent mothers did not sterilize there feeding and utensils, with 29 per cent sterilizing feeding

Table 2: Reasons of bottle feeding to infants

Category	Lactation failure		Inadequate milk inflow		Working mother		Unspecified	
	Respondent	Per cent	Respondent	Per cent	Respondent	Per cent	Respondent	Per cent
Age (years)								
Below 28	4	10.26	5	12.82	14	35.89	16	41.03
28 and above	15	18.29	17	20.73	29	35.37	21	25.61
Education								
Illiterate	10	20.00	12	24.00	5	10.00	23	46.00
Literate	09	12.68	10	14.08	38	53.52	14	19.72
Occupation								
Working	11	18.33	9	15.00	32	53.33	8	13.33
Housewife	8	13.11	13	21.31	11	18.03	29	47.54
Income group								
High	10	37.04	9	33.33	6	22.22	2	7.41
Middle	8	11.27	11	15.16	26	36.62	26	36.62
Low	1	4.35	2	18.69	11	47.83	9	39.13

utensils some time and the remaining 8 per cent every time and almost a similar trend was observed in low income group mothers.

It can be concluded from Table 3 that above 28 years old literate mothers used more sterilized feeding bottles and nipples as comparison to below 28 years old illiterate mothers. It may be due to literate mothers is known importance of sterilized feeding bottles and nipples to protect their baby for any infections. Thus, there is an urgent need for below 28 years old illiterate mothers for adaptation of proper sterilized bottles and nipples used for infant feeding in the area.

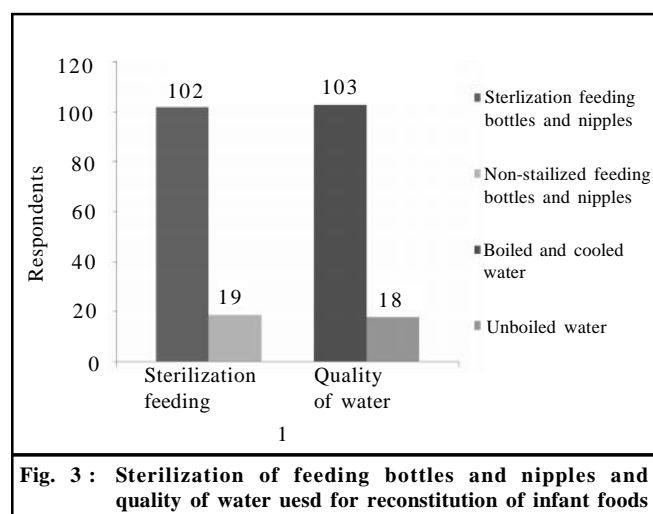


Fig. 3 : Sterilization of feeding bottles and nipples and quality of water used for reconstitution of infant foods

Quality of water :

The quality of water for reconstitution of infant foods merits special mention, as unclean water can invariably become a source of contamination in the final products and hence, can endanger the health of baby. The results of the present investigation revealed that more than (93.24%) of literate housewife belonging to high income group used boiled and subsequently cooled water for preparation of the feed (Table 4). However, the virtues of using boiled and cooled water was not known to illiterate mothers particularly belonging to low income group. While, other researcher (Awogbenja and Ndife, 2012) studies on the hygienic practices of the respondent shows that majority 84 per cent of the respondent did not boil their water before drinking, 10 per cent sometime while 6 per cent boiled there water every time. These improved standard may be an indication of better education of mother.

It can be concluded from the Table 4 that above 28 years old literate housewife mothers were adopted the boiled water and subsequently cooled water as comparison to below 28 years old illiterate working mothers. It was due to that literate housewife mothers have knowledge to adopted boiled and cooled water because they known that water may sometime proves to be major source of pathogen in reconstituted infant foods. Thus, there is an urgent need to popularized the importance of boiled water used for reconstitution of infant

Table 3: Sterilization of feeding bottles and nipples used for infants

Category	Sterilized		Non-sterilized	
	Respondents	Per cent	Respondents	Per cent
Age (years)				
Below 28	26	70.27	11	29.73
28 and above	76	90.48	8	9.52
Education				
Illiterate	04	10.53	34	89.47
Literate	81	97.59	2	2.41
Occupation				
Working	53	85.48	9	14.52
Housewife	51	86.44	8	13.56
Income group				
High	31	88.57	4	11.43
Middle	62	89.86	7	10.14
Low	06	35.29	11	64.71

feed among the illiterate mothers to prevent the disease of water in the area.

Effect of storage time :

Reconstituted infant food decomposed on some larger storage at ambient temperature. Main reason of this decomposition is occurrence of various nutrients in balanced amount in infant milk food. Due to presence of balance composition in nutrients in infant food microorganisms grow faster at ambient temperature. These organisms secrete various chemicals (enzymes) which decomposed reconstituted infant food and these foods become useless for infant consumption. To prevent the growth of such organisms these foods should stored at low temperature, so that they remain use for infant consumption for longer duration and food not decomposed. The reconstituted infant food can be stored for longer time for infant consumption by giving it cooling treatment.

Table 5 records the data pertaining to practice of frequent holding of reconstituted infant feed. Out of 121 mothers following bottle feeding, only 54 mothers (44.63%) were holding the prepared feed for few hours and using it for re-feeding. Again, this measure was more often followed among the mothers belonging to illiterate group. However, 63.64 per cent of the literate mothers also stored the prepared feed for at least 3 hours. The equal section of the housewife was storing the feed less than 3 hours and over than 3 hours. While, the general trend among working mothers was to hold

the prepared infant feed for less than 3 hours.

It can be concluded from the Table 5 that a middle income group illiterate housewife mothers were used above to 3 hours reconstituted infant food for re-fed as compared to higher income group literate working mothers. It may be due to a middle income group illiterate housewife mothers did not know that a long duration period of prepared feed are endanger for the baby health. Thus, there is a need to promote the middle income group illiterate housewife mothers that the prepared infant food should not be stored even for a long duration because holding of prepared feed will harmful for the health of baby.

Effect of storage temperature :

Reconstituted feed may survive as an excellent

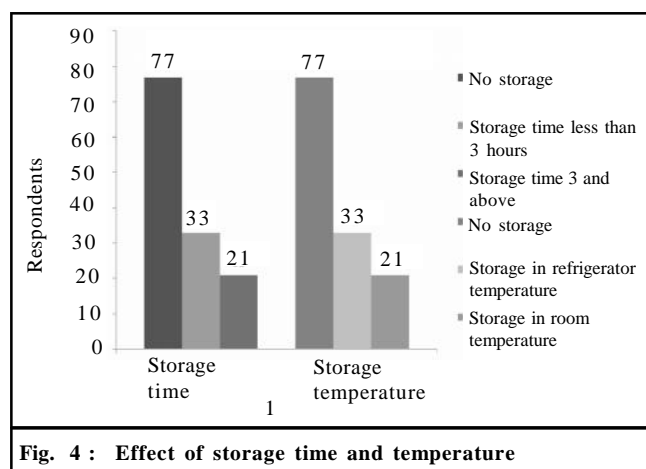


Fig. 4 : Effect of storage time and temperature

Table 4 : Quality of water used for reconstitution of infant foods

Category	Water			
	Boiled and cooled		Un-boiled	
	Respondents	Per cent	Respondents	Per cent
Age (years)				
Below 28	31	75.61	10	24.39
28 and above	72	90.00	8	10.00
Education				
Illiterate	34	72.34	13	27.66
Literate	69	93.24	5	6.76
Occupation				
Working	39	78.00	11	22.00
Housewife	64	90.14	7	9.86
Income group				
High	31	91.18	3	8.82
Middle	58	87.88	8	12.12
Lower	14	66.67	7	33.33

medium for the growth, multiplication and elaboration of toxic metabolites endangering the health of babies. On close scrutiny, the investigation revealed that reconstituted infant feed stored at room temperature and in refrigerator. From the results it is fairly evident that majority of mothers (94.44%) stored reconstituted food in refrigerator belonged to higher income groups. However, 73.33 per cent of above 28 years old mothers were also stored reconstituted food in refrigerators. While (Awogbenja and Ndife, 2012) reported that 75 per cent of the respondents had no specific means of storing food while, the remaining 25 per cent said they stored their food in refrigerator. Although education and occupational status does not affect the storage condition while, 54.17 and 70.59 per cent of below 28 years old, lower income group mothers stored reconstitution feed in room temperature, respectively.

From the Table 6 it can be concluded that higher income group mothers stored reconstituted feed in refrigerator while, lower income group mothers stored its in room temperature. It was due to illiterate mothers of lower income group have no knowledge about the

Table 5: Storage time of reconstituted infant foods

Category	Storage time (hours)			
	Less than 3		3 and above	
	Respondents	Per cent	Respondents	Per cent
Age (years)				
Below 28	9	42.86	12	57.14
28 and above	24	72.73	9	27.27
Education				
Illiterate	12	57.14	9	42.86
Literate	21	63.64	12	36.36
Occupation				
Working	21	70.00	9	30.00
Housewife	12	50.00	12	50.00
Income group				
High	6	100.00	0	0.00
Middle	9	42.86	12	57.14
Lower	18	66.67	9	33.33

Table 6 : Storage temperature of reconstituted infant foods

Category	Storage (temperature)			
	Refrigerator temperature		Room temperature	
	Respondents	Per cent	Respondents	Per cent
Age (years)				
Below 28	11	45.83	13	54.17
28 and above	22	73.33	8	26.67
Education				
Illiterate	9	56.25	7	43.75
Literate	24	63.16	14	36.84
Occupation				
Working	22	66.67	11	33.33
Housewife	11	52.38	10	47.62
Income group				
High	17	94.44	1	5.56
Middle	11	57.89	8	42.11
Lower	5	29.41	12	70.59

refrigerator and lack of refrigerator in comparison to literate higher income group. Thus, there is a need to popularized the importance of storage for reconstituted infant food among the illiterate lower income group mothers in the area.

Conclusion :

Based on the above results it may be concluded that the majority of the literate mothers adopted bottle feeding. The two major reasons for adopting bottle feeding have been found occupational status and lactation period. The survey revealed that above 28 years old literate mothers were largely following the standard method of cleaning and sterilize of feeding bottles and nipples and completely ignored to below 28 years old low income groups illiterate mothers adopted the boiled and cool water above 28 years old literate housewife mothers than below 28 years old illiterate working mothers. It is concluded on basis of above investigation that the present survey was holding of prepared feed by a sizable portion of mother for a considerable period. The above observation is of great significance, as reconstituted feed may serve as an excellent medium for growth multiplication and elaboration of toxic metabolites endangering the health of babies. The mothers belonging to low income group having less formal literate need especial attention if they practices bottle feeding. It also suggest that there is an urgent need for mothers to adopt proper cleaning and sterilization techniques for bottles and nipples to keep bottle fed babies healthy and vigorous. The unboiled water, unboiled bottle or incorrect dilution can make the baby ill. The incorrect storage, handling, preparation and feeding can potentially lead to adverse effect for the health of baby.

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