Infant and Young Child Feeding Practices and Their Association with Women's Autonomy: A Community-Based Study in Rural West Bengal

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Abstract:

Introduction: In majority of societies women are the primary caregivers of children. Poor feeding habits in early childhood contribute to malnutrition and child mortality in India. While the effects of some of the resources such as education on child feeding practices have been extensively evaluated, women's autonomy have received less attention. Objective: To assess feeding practices among the infants and young children in Budge-budge II block of West Bengal. Method: A descriptive study with cross-sectional design was conducted among 161 children between 6-23 months of age and their respondent mothers in Budge-Budge II block, West Bengal, using multistage random sampling. Mothers were interviewed face to face, and data were collected using a predesigned, pretested and structured IYCF practice schedule and a Likert-type women's autonomy measurement scale and analysed using SPSS v26.0. Multivariable binary logistic regression and the Pearson's correlation was done to find association. **Results:** Among the study participants, 155 (96.3%) reported being breastfed, 29 (18%) received pre-lacteal feed, 60 (37.3%) had not initiated breastfeeding early within 1 hour, 149 (92.5%) received colostrum, 39 (24.2%) were not exclusively breastfed; 119 (73.9%) of the study participants had adequate meal frequency whereas 87 (54%) and 97 (60.2%) had inadequate dietary diversity and acceptable diet respectively. Overall IYCF practice was significantly poor 113 (70.2%). Among the mothers 88 (54.7%) had lower level of autonomy. Conclusion: More than half of the study participants had poor overall IYCF practices. A majority of the mothers were having a lower level of autonomy. IYCF practices were found to be poorer among the female children and those delivered by Caesarean Section. Moderately positive correlation was found between mothers' autonomy and IYCF practices.

Keywords: Breast feeding, Dietary diversity, Female self-government, Growth and development

Introduction:

The practice of infant and young child feeding (IYCF) plays a critical role to improve child survival and promote their growth and development. According to the World Health Organization breastfeeding should begin within an hour of birth, exclusive breastfeeding for six months and initiation of complementary feeding along with breastfeeding from six months of birth.^[1] In low and middleincome countries, exclusive breastfeeding (EBF)

was observed among 37% of the children below six months of age.^[2] EBF rates in India range from 35.8% in Meghalaya to 77.2% in Chhattisgarh.^[3] Breastfeeding could prevent 8,23,000 deaths of under 5 children per year.^[4] It provides protection to a child against various infections, asthma, sudden infant death syndrome, misaligned dentition and improves intelligence and reduces the risk of overweight and diabetes.^[2,4] The duration of EBF is inversely proportional to prevalence of underweight and stunting.^[5]

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In order to provide effective care, women being the primary caregivers to their children require resources like education, physical and mental health, adequate time as well as social support and autonomy.^[6] Autonomy provides women with the opportunity to access and control resources and to use these resources in response to the food and health-care needs of their children. Children of women with lower autonomy have been shown to be at a higher risk of mortality, under-5 immunization and morbidity from acute respiratory infections.^[7-10]

From previous studies it was seen that greater women's autonomy has been associated with better child nutritional status in India and among children under 3 years of age in Jordan.^[11-13] By contrast, in Kenya, no such association was found among children less than 3 years of age.^[14] In a study conducted by Smith et al.^[15], higher women's autonomy was associated with shorter duration of breast-feeding in the three regions of South Asia, sub-Saharan Africa and Latin America, while in an Indian study conducted in 60 villages in the district of Nalgonda in the state of Andhra Pradesh, a positive association between women's autonomy and breast-feeding practices has been observed.^[12]

While the effects of some of the resources such as education on infant and young child feeding practices have been extensively evaluated, women's autonomy have received less attention. Keeping that in mind the present study was formulated.

Primary Objective:

1. To assess feeding practices among the infants and young children in Budge-budge II block of West Bengal

Secondary Objectives:

- 2. To evaluate the level of autonomy among the mothers of the study participants
- To identify the association of infant & young child feeding practices with their sociodemographic characteristics
- To examine the correlation between infant & young child feeding practices and women's autonomy

Method:

A descriptive study (community based) with crosssectional in design was conducted among the children between 6-23 months of age where respondent being their mothers. The study was conducted in three subcenters of Budge-Budge II block of West Bengal over a period of three months (19th February to 21st May 2024). Using Cochran's formula; $n=Z^2 pq/d^2 [Z (standard)]$ normal variate) =1.96 at 95% CI, p=30% based on a study done by Chakraborty et al.^[16], q=1-p, d=10% (absolute error)], adding a design effect of 1.5 and 10% of non-response, the sample size was calculated as 133. Finally, a total of 161 samples were collected. Multistage random sampling technique was followed as showed in Figure 1. Out of twenty-seven subcentres of Budge-Budge II block three subcentres were chosen via simple random sampling technique and then from those subcentres a list of infants and young children aged between 6 to 23 months was prepared with the help of ASHAs. A total of 161 samples were collected from the three selected subcentres using probability proportional to size (PPS) sampling technique, with simple random sampling employed within each subcentre.

Figure 1: Multistage Random Sampling Technique Used In The Study



Inclusion criteria:

- (i) Children between 6-23 months of age who lived in the village for more than six months.
- (ii) Mothers of the children who gave consent to participate in the study.

Exclusion Criteria:

- (i) Children whose mothers were not present at the time of data collection.
- (ii) Children who were very ill/sick while study had been carried out.
- (iii) Research participants who were not available even after three visits.

Selected mothers were interviewed face to face and data were collected using a predesigned, pretested & structured schedule for infant and young child feeding practices (taken and modified from IYCF guideline). Scoring was done from different IYCF parameters; for each parameter the highest score was '1' and lowest '0'. Less than equals to median score of the total IYCF practices score was considered to be poor.

Regarding mother's autonomy, a three-point (2,1,0) likert-type women's autonomy measurement scale^[17] (modified and pretested) was used, which consists of 18 questions; for each question maximum possible score was '2' and minimum possible score was '0'. The scale covers major three dimensions of women's autonomy i.e. decision-making autonomy, freedom for movement and financial autonomy which are most relevant in developing countries. Less than median score of the total women's autonomy score was considered to be lower.

Data were entered and analysed using SPSS v26.0. Categorical data were represented as proportions and with help of suitable diagrams. Chi-square test and binary logistic regression was done with AOR (in 95% CI); p-value< 0.05 was considered significant. Pearsons's correlation was done to find association between the dependent variables.

Ethical approval was obtained from the Institutional Ethics committee (IEC) of IPGME&R AND SSKM Hospital, Kolkata (Vide memo no. IPGME&R/IEC/2024/0096). An informed written consent was taken from the mothers. Anonymity and confidentiality were maintained.

Operational definitions:

- "Women's autonomy": The autonomy of women is the result of having the capacity to freely make decisions that affect their lives under conditions of equality.^[18]
- "IYCF": Infant and Young Child Feeding (IYCF) is a set of well-known, common and scientific recommendations for appropriate feeding of newborn and children under two years.^[19]
- 3. "Early initiation of breastfeeding": Newborns who were started on breastfeeding within an hour after birth.^[19]
- 4. "Exclusive breastfeeding (EBF)": For the first six months of life, no additional food or drink, including water, is allowed except breast milk, however the newborn on the other hand, is permitted to receive ORS, drops, and syrups (vitamins, minerals, and medicines).^[19]



Figure 2: Study Tools and Scoring Criteria

- "Continued breastfeeding at 2 years": Proportion of children more than 12 months of age who fed breast milk.^[19]
- 6. "Minimum dietary diversity (MDD)": Children aged 6–23 months who had consumed items from four or more dietary groups in the previous 24 hours (grains, roots and tubers, legumes and nuts, dairy products, meat foods, eggs, vitamin Arich fruits and vegetables, other fruits, and vegetables).^[19]
- "Minimum meal frequency (MMF)": Children aged 6–23 months who had solid, semisolid, or soft solids food in a minimum number of times (6–8 months 2 times/ 9–23 months 3 times/ nonbreastfeeding children 4 times a day) within the previous 24 hours.^[19]
- 8. "Minimum acceptable diet (MAD)": In the past 24 hrs, children aged 6–23 months had a sufficient minimum diet diversity and meal frequency.^[19]

Results:

General characteristics of study participants:

Table 1 describes the socio-demographic characteristics of the study participants. Out of 161 children, 79.5% belonged to 9-23 months of age whereas 20.5% belonged to 6-8 months; 32.3% delivered via LUCS. Among the mothers 77% were between the age group of 21-30 years; 67.1% studied higher secondary (HS) & above; 75.8% were homemakers whereas 24.2% were working mothers; 54.7% belonged to joint family; 61.5% belonged to lower-middle and lower socio-economic class.

Distribution of participants according to feeding practices:

Table 2 describes child feeding practices. Among the study participants 18% received pre-lacteal feed, 37.3% not initiated breastfeeding early within 1 hour, 7.5% not received colostrum, 24.2% were not exclusively breastfed, 93.2% continued breastfeeding beyond 1year of age, 81.8% were introduced to solid/semi-solid/soft food in age group 6 to 8 months whereas 96.9% in 8 to 23 months of age. Among the study participants 54% had inadequate dietary diversity, 26.1% had inadequate meal frequency, and 60.2% had inadequate acceptable diet (Figure 3).

Fable 1:	Distribution of the Study Participants
	According to Their Socio-Demographic
	Characteristics (N=161)

Variables	Frequency (%)				
Child's age (in completed months)					
6-8	33 (20.5)				
9-23	128 (79.5)				
Gender					
Male	86 (53.4)				
Female	75 (46.6)				
Mode of delivery					
Normal vaginal	109 (67.7)				
Lower Uterine segment	52 (32.3)				
Caesarean Section					
Type of family					
Nuclear	49 (30.4)				
Joint	88 (54.7)				
3 Generation	24 (14.9)				
Socio-economic status*					
Upper & Upper middle	9 (5.6)				
Middle	53 (32.9)				
Lower-middle & Lower	99 (61.5)				
Mother's age (years)					
15-20	21 (13)				
21-30	124 (77)				
31-40	16 (10)				
Educational qualification of the mot	hers				
Higher Secondary & above	108 (67.1)				
Below Higher Secondary	53 (32.9)				
Working status of the mothers					
No	122 (75.8)				
Yes	39 (24.2)				

Note. *Modified BG Prasad Scale, 2024

Table 2: Distribution of the Study ParticipantsAccording to Their Feeding Practices(N=161)

IYCF Indicator	Yes (%)
Ever Breastfed	155 (96.3)
Given Pre lacteal feed	29 (18)
Early initiation of breastfeeding	101 (62.7)
Received colostrum	149 (92.5)
Exclusive breastfeeding	122 (75.8)
Continued breastfeeding	96 (93.2)
(12-23 months) (n=103)	
Introduction of solid, semisolid or	27 (81.8)
soft food among children 68 months	. ,
(n=33)	
Introduction of solid, semisolid or	124 (96.9)
soft food among children 9-23 months	. ,
(n=128)	

Figure 3: Distribution of the Study Participants According to Their Minimum Meal Frequency, Minimum Dietary Diversity & Minimum Acceptable Diet (N=161)



Table 3: Association	of IYCF Practices	with Different Socio	o-Demographic Cl	haracteristics (N=161)
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Variables	IYCF Practices		Total	Chi-square	p-value	
	Poor	Good	n (%)			
	n (%)	n (%)				
Age group (months)						
6-8 months	6 (18.2)	27 (81.8)	33 (20.5)	0.825	0.364	
9-23 months	33 (25.8)	95 (74.2)	128 (79.5)			
Gender						
Male	53 (61.6)	33 (38.4)	86 (53.4)	6.462	0.011	
Female	60 (80.0)	15 (20.0)	75 (46.6)			
Mode of delivery						
Normal vaginal	67 (61.5)	42 (38.5)	109 (67.7)	12.259	0.001	
LUCS	46 (88.5)	6 (11.5)	52 (32.3)			
Type of family						
Nuclear	38 (74.5)	13 (25.5)	49 (30.4)	0.938	0.626	
Joint	61 (69.3)	27 (30.7)	88 (54.7)			
Three-generation	14 (63.6)	8 (36.4)	24 (14.9)			
Socio-economic status						
Upper & Uppermiddle	9 (100)	0 (0)	9 (5.6)	4.467	0.107	
Middle	38 (71.7)	15 (28.3)	53 (32.9)			
Lower-middle & Lower	66 (66.7)	33 (33.3)	99 (61.5)			
Mother's age (years)						
15-20	16 (76.2)	5 (23.8)	21 (13)	0.419	0.811	
21-30	86 (69.4)	38 (30.6)	124 (77)			
> 30	11 (68.8)	5 (31.3)	16 (10)			
Mother's educational qualification						
Higher Secondary & above	38 (71.7)	15 (28.3)	108 (67.1)	0.086	0.769	
Below Higher Secondary	75 (69.4)	33 (30.6)	53 (32.9)			
Working status of mothers						
Not working	93 (76.2)	29 (23.8)	122 (75.8)	8.79	0.003	
Working	20 (51.3)	19 (48.7)	39 (24.2)			

Variables	Poor IYCF practices	OR (CI), p-value	AOR (CI), p-value
	N (%)		
Gender			
Male	53 (61.6)	Ref	Ref
Female	60 (80.0)	2.491 (1.220-5.083), 0.012	2.626 (1.199-5.751), 0.016
Mode of delivery			
Normal vaginal	7 (61.5)	Ref	Ref
LUCS	46 (88.5)	4.806 (1.888-12.231), 0.001	5.077 (1.908-13.512), 0.001
Working status of the mothers			
Not working	93 (76.2)	Ref	Ref
Working	20 (51.3)	3.047 (1.434-6.473), 0.004	1.554 (0.582-4.145), 0.379

Table 4: Binary Logistic Regression	Showing Factor	rs Associated W	Vith Infant And	Young Child I	Feeding
Practices (N=161)					

Omnibus test = 0.001, Negelkerke R Square = 0.446, Hosmer and Lemeshow test = 0.674

Table 5: Distribution	Of The Mothers	As Per Their Re	esponse On Differen	t Domains Of	Autonomy (N=161))
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Autonomy domains			Scale	
A.	How do you make decision on-	Independent (2)	Joint (1)	Dependent (0)
	(Total score = 0 to 16)	n (%)	n (%)	n (%)
	Daily household expenditure?	89 (55.3)	35 (21.7)	37 (23)
	Children's clothes and food?	31 (19.3)	123 (76.4)	7 (4.3)
	Children's health care?	34 (21.1)	99 (61.5)	28 (17.4)
	Inviting and hosting guests?	17 (10.6)	88 (54.6)	56 (34.8)
	Use of contraceptives?	13 (8)	131 (81.4)	17 (10.6)
	Having baby/another baby?	31 (19.3)	125 (77.6)	5 (3.1)
	Purchasing major goods in household such as land,	9 (5.6)	96 (59.6)	56 (34.8)
	house, computer, TV?			
	Being a member of public institutions/organizations?	2 31 (19.2)	117 (72.7)	13 (8.1)
B.	Do you need permission to-	Never (2)	Sometimes (1)	Always (0)
	(Total score = 0 to 12)	n (%)	n (%)	n (%)
	Going outside the house/compound?	26 (16.1)	56 (34.8)	79 (49.1)
	Going for marketing/shopping?	35 (21.7)	60 (37.3)	66 (41)
	Going to hospital/health care facility?	37 (23)	79 (49.1)	45 (27.9)
	Visiting to natal family/relative/s' house?	38 (23.6)	44 (27.3)	79 (49.1)
	Visiting friend/s' house?	17 (10.6)	25 (15.5)	119 (73.9)
	Going to public places/programs such as temple etc.	? 23 (14.3)	95 (59)	43 (26.7)
C.	Do you need permission to-	Never (2)	Sometimes (1)	Always (0)
	(Total score = 0 to 8)	n (%)	n (%)	n (%)
	Spend money for household affairs	36 (22.4)	112 (69.6)	13 (8)
	Lend/spend money as per personal need and interest	65 (40.4)	81 (50.3)	15 (9.3)
	Saving money for your future use	89 (55.3)	58 (36)	14 (8.7)
	Give money or goods to natal family	112 (69.6)	39 (24.2)	10 (6.2)
	Maximum possible score = 36, Minim	um possible score =	= 0, Median score =	14





Overall IYCF practice of the study participants:

Among the study participants, only 48 children (29.8%) exhibited overall good Infant and Young Child Feeding practices.

Factors associated with IYCF practices:

Table 3 shows factors associated with IYCF practices. The result from the regression analysis showed that IYCF practice was poor for female gender of the child (AOR 2.626, 95% CI 1.199-5.751) and for those who delivered via LUCS (AOR 5.077, 95% CI 1.908-13.512).

Autonomy of the mothers:

The distribution of mothers of the study participants according to their level of autonomy revealed that more than half (88, 54.7%) of the mothers had an overall lower level of autonomy (Table-5).

Association between IYCF practices and women's autonomy:

Figure 4 illustrates a moderately positive correlation (Pearson's r = 0.330) between mothers' autonomy and Infant and Young Child Feeding (IYCF) practices among their children.

Discussion:

Present study found that most of the children (96.3%) were breastfed, majority (62.7%) were initiated

breastfeeding early within one hour of delivery. Agarwal N et al. came up with similar results where 93.40% of babies were breastfed as their first diet.^[20] According to IYCF Guidelines, the Indian Government recommends that breastfeeding should be started immediately after delivery, preferably within an hour of birth.^[21] This study revealed that delayed breastfeeding (>1 hr) is still practised in rural West Bengal (37.3%). Low rate of early onset of breastfeeding was also documented by Chakraborty et al.^[16] showing 47.9% of the study participants-initiated breast feeding early within one hour; colostrum was given to 63.3% of the participants, which is 92.5% in this study. The increased rate of colostrum feeding may be due to increased awareness among the mothers, their family members and healthcare workers in this area. Regarding pre lacteal feeds number (18%) was much lower than the corresponding study done by Vyas et al.^[22] in the rural areas of Uttarakhand (61.8%).

Exclusive breast feeding (EBF) was practiced by 75.8% mothers in the present study which is higher than the study conducted by Aggarwal A et al.^[24] (63.50%) in Delhi, whereas Saxena V et al.^[25] at Uttarakhand reported higher percentage (77.4%) of EBF than of ours. The difference could be attributed to the differences in the study population, study area, and sample size.

In this study, continued breastfeeding was found to be 93.2% in 12 to 23 month-old children. This was comparable to a study done in Karnataka, showing that 81% of children continued breastfeeding for 12 to 23 months.^[26]

In study 73.9% of the children had adequate meal frequency whereas 54% and 60.2% had inadequate dietary diversity and acceptable diet respectively. Saxena et al.^[27] came up with similar type of results where 33.47% mothers gave their children a diet having minimum food diversity, 52.72% received the recommended minimum meal frequency and minimum acceptable diet was found to be adequate only in 34% of the 6 to 23 months old children. Another study done by Adhikari et al.^[28] in Syangja district, Western hilly region of Nepal which showed minimum dietary diversity, minimum meal frequency and minimum acceptable diet were 61.5%, 67.3%, and 49.4% respectively. A crosssectional study done by Shroff MR et al.^[29] in 60 villages of rural Andhra Pradesh showed mothers with higher financial autonomy were more likely to breastfeed 3-5 months old infants and mothers with higher participation in decision-making in households had infants that were less underweight and less wasted. In the present study IYCF practice was found to be significantly poor among the female children and among those who were delivered via LUCS; and a moderately positive correlation was found between the mothers' autonomy and IYCF practices among their children.

Limitations of the Study:

This study is limited by its small sample size, which may not be representative of the larger population. Additionally, the study's findings may be susceptible to information bias, which could impact the accuracy and reliability of the results.

Conclusion:

The study showed important findings on infant and young child feeding practices and their association with their maternal autonomy and different sociodemographic characteristics in Budge-Budge II block, West Bengal.

A significant proportion of the study participants had poor practice regarding pre-lacteal feeding (18%),

early initiation of breastfeeding (37.3%), exclusive breastfeeding (24.2%), introduction to solid/semisolid/soft food in age group 6 to 8 months (18.2%) and a major chunk of them had inadequate dietary diversity (54%) and acceptable diet (60%); whereas most of them had good practice regarding colostrum feeding (92.%), continued breastfeeding beyond one year of age (93.2%), introduction to solid, semi-solid or soft food in age group 9 to 23 months (96.9%) and majority had adequate meal frequency (74%). However, an overall IYCF practice was found to be poor among majority (70.2%) of the study participants.

More than half, i.e. 54% and 60% of the study participants failed to meet the Minimum Dietary Diversity and Minimum Acceptable Diet standards, respectively.

More than half of the mothers (54.7%) had overall lower level of autonomy related to decision-making, freedom for movement and financial independence. IYCF practice was found to be poorer among the female children and among those delivered via LUCS.

Moderately positive correlation was found between mothers' autonomy and IYCF practices among their children.

Recommendations:

To improve infant and young child feeding (IYCF) practices in Budge-Budge II block, West Bengal, targeted interventions should focus on reducing poor feeding practices such as pre-lacteal feeding, delayed initiation of breastfeeding, and inadequate exclusive breastfeeding. Awareness campaigns and communitybased programs should be strengthened to educate mothers and caregivers about the importance of early breastfeeding initiation, exclusive breastfeeding for the first six months, and timely introduction of complementary feeding with adequate dietary diversity.

Given the high percentage of children not meeting the Minimum Dietary Diversity and Minimum Acceptable Diet standards, efforts should be made to promote diversified and nutrient-rich food intake through counselling sessions, nutrition education, and support programs for families. Health workers should play an active role in ensuring mothers receive guidance on appropriate food choices and feeding frequency. Policies supporting affordable and accessible nutritional supplements for infants from lower socioeconomic backgrounds should be considered.

Since maternal autonomy showed a positive correlation with better IYCF practices, empowering mothers through education, skill development, and financial inclusion programs can significantly improve child nutrition. Encouraging women's participation in decision-making, enhancing their mobility, and fostering economic independence can lead to better feeding practices. Special attention should be given to mothers of female children and those who had a cesarean delivery (LUCS), as these groups showed poorer IYCF practices

It is recommended to educate women and their families about correct IYCF practices and not only in terms of meal frequency but also in terms of dietary diversity.

Overall, a multi-sectoral approach involving healthcare providers, policymakers, community leaders, and family members is essential to improve maternal autonomy and IYCF practices. Strengthening maternal health services, increasing awareness through mass media, and integrating IYCF education into routine antenatal and postnatal care will ensure sustainable improvements in child nutrition and health outcomes.

Declaration:

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Conflicts of interest: Nil

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