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Formula Feeding Trends among Bangladeshi Parents of Infants Aged 0–6 Months: Reasons and Consequences

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Abstract: ***Background:*** Formula feeding among Bangladeshi parents of infants aged 0–6 months is increasing despite the World Health Organization's recommendation for exclusive breastfeeding. Factors like perceived insufficient breast milk, socio-cultural influences, and aggressive formula marketing contribute to this trend. ***Objectives:*** To assess formula feeding trends, explore underlying reasons, and evaluate associated health consequences among Bangladeshi infants aged 0–6 months. ***Methods and Materials:*** This cross-sectional study was conducted from May 2023 to April 2024 at the Department of Pediatrics, 250 Bedded District Sadar Hospital, Sherpur, involving 812 parents of infants aged 0–6 months. Data were collected through structured questionnaires and analyzed using SPSS version 23.0. Descriptive statistics summarized demographic and feeding practices, while chi-square tests assessed associations. Ethical approval and informed consent were obtained before data collection. ***Result:*** The study found that 54.2% of mothers cited lack of confidence in breastfeeding as the main reason for formula feeding, followed by convenience (28.1%) and medical conditions (17.7%). 69% used powdered formula, while 43.1% reported digestive issues in infants. Formula feeding frequency was highest at 3–4 times/day (42.8%). Aggressive marketing influenced 249 parents, and 37% had a positive attitude toward formula feeding, while 26.7% preferred breastfeeding. ***Conclusion:*** Formula feeding among Bangladeshi parents is driven by perceived milk insufficiency and convenience, often leading to infant health issues.

Keywords: Formula feeding, Exclusive breastfeeding (EBF), Infant nutrition, Parental feeding practices, Health consequences.

Original Researcher Article

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Article at a glance:

Study Purpose: *The study aims to assess formula feeding trends, identify contributing factors, and evaluate health consequences in Bangladeshi infants aged 0-6 months.*

Key findings: *54.2% of mothers cited lack of breastfeeding confidence, with 69% using powdered formula. Aggressive marketing influenced 249 parents, and 37% had a positive attitude toward formula feeding.*

Newer findings: *The study reveals the significant impact of formula marketing and socio-cultural influences on feeding decisions, stressing the need for interventions to promote breastfeeding.*

Abbreviations: *EBF - Exclusive Breastfeeding, WHO - World Health Organization, CMF - Commercial Milk Formula, BDHS - Bangladesh Demographic and Health Survey, HIV - Human Immunodeficiency Virus.*

INTRODUCTION

Optimal infant nutrition is pivotal for growth, development, and long-term health outcomes. The World Health Organization (WHO) advocates exclusive breastfeeding (EBF) for the first six months of life, attributing it to reduced risks of infections, enhanced cognitive development, and decreased infant mortality.[1] Despite these recommendations, global adherence to EBF remains suboptimal, with only 37% of infants under six months exclusively breastfed in low- and middle-income countries.[2] In Bangladesh,

breastfeeding is traditionally prevalent; however, recent trends indicate a shift towards formula feeding. The Bangladesh Demographic and Health Survey (BDHS) reported that 22% of infants aged 0–5 months received mixed milk feeding, combining breast milk with commercial milk formula (CMF) or other animal milks.[3] Notably, this practice is more common among wealthier households, with 24% in the highest wealth quintile engaging in mixed feeding, compared to 13% in the lowest.[3] Several factors contribute to the increasing reliance on formula feeding in Bangladesh. Perceived insufficient breast milk production is a significant determinant, leading mothers to supplement with formula.[4] Additionally, aggressive marketing strategies by formula milk companies influence feeding decisions, often undermining breastfeeding practices.[5] Socio-cultural norms and misconceptions about breastfeeding further exacerbate the shift towards formula feeding.[6] The consequences of formula feeding are multifaceted. Infants who are not exclusively breastfed are at a higher risk of diarrheal diseases, acute respiratory infections, and fever.[7] Moreover, formula feeding has been associated with malnutrition and other health complications.[8] In Bangladesh, the rise in bottle feeding, now at 41%, reflects a significant move away from exclusive breastfeeding, necessitating targeted interventions to promote optimal feeding practices.[9] Understanding the reasons behind formula feeding is crucial for developing effective interventions. Factors such as maternal education, socio-economic status, and exposure to formula milk marketing play pivotal roles in feeding decisions.[10]

OBJECTIVES

General Objective

To assess the trends, reasons, and consequences of formula feeding among Bangladeshi parents of infants aged 0–6 months.

Specific Objectives

To determine the socio-demographic characteristics (age, gender, occupation, education) of parents who formula-feed their infants.

To identify the prevalence of formula feeding among infants aged 0–6 months.

To explore the reasons behind formula feeding practices, including socio-cultural, economic, and medical factors.

METHOD AND MATERIALS

Study Design

This study was a cross-sectional observational study conducted in the Department of Pediatrics at the 250 Bedded District Sadar Hospital, Sherpur. The study population consisted of 812 parents of infants aged 0–6 months. The study period spanned one year, from May 2023 to April 2024.

Data Collection

Data were collected using a structured questionnaire designed to capture demographic details, reasons for formula feeding, types of formula used, feeding frequency, and perceived health consequences for infants. Parents of infants aged 0–6 months attending the pediatric outpatient department were approached, and those willing to participate provided informed consent. Interviews were conducted face-to-face to ensure accurate data collection and minimize recall bias.

Inclusion Criteria

Parents of infants aged 0–6 months.

Willingness to provide informed consent.

Parents who used formula feeding for their infants.

Exclusion Criteria

Parents of infants older than 6 months.

Parents unwilling to participate or provide consent.

Infants with congenital anomalies affecting feeding practices.

Statistical Analysis

Collected data were entered and analyzed using SPSS (Statistical Package for the Social Sciences) version 23.0. Descriptive statistics were used to summarize the demographic characteristics, feeding practices, and health outcomes. Frequency and percentage distributions were calculated for categorical variables, while means and standard deviations were reported for continuous variables. Chi-square tests were used to determine associations between variables, with a p-value of <0.05 considered statistically significant.

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Ethical Consideration

Ethical approval for the study was obtained from the ethical review committee of the 250 Bedded District Sadar Hospital, Sherpur. Informed written consent was obtained from all

participants, ensuring confidentiality and the right to withdraw at any time without any consequence. All data collected were used strictly for research purposes.

RESULT

Table 1: Age Distribution, Gender, Occupation, Mean and SD of Participants

Variable	Category	Frequency (n)	Percentage (%)
Age	0–2 months	276	34.0%
	3–4 months	264	32.5%
	5–6 months	272	33.5%
Mean ± SD	3.02 ± 1.14		
Gender	Male	418	51.5%
	Female	394	48.5%
Occupation	Unemployed	412	50.7%
	Employed	400	49.3%

The first table provides a demographic breakdown of the study population, categorized by age, gender, and occupation. The mean age of participants is 3.02 months with a standard deviation of 1.14, indicating that the majority of the sample falls between 0 to 6 months. The gender distribution shows a slightly higher proportion of male infants (51.5%), while the occupation of parents is fairly evenly split, with a majority being unemployed (50.7%).

Table 2: Reasons for Formula Feeding Among Parents

Reason	Frequency (n)	Percentage (%)
Lack of confidence in mother & Breast Milk Supply	440	54.2%
Family member encourages starting formula	98	12.1%
Easy availability of formula	76	9.4%
Convenience & Time Constraints	228	28.1%
Medical Conditions of the Mother	144	17.7%

This table presents the reasons for formula feeding among mothers, along with their respective frequencies and percentages. The most common reason is "Lack of confidence of mother & Breast Milk Supply" (54.2%), followed by "Convenience & Time Constraints" (28.1%). Other factors, such as family influence (12.1%), easy availability of formula (9.4%), and medical conditions (17.7%), also contribute to the decision.

Table 3: Types of Formula Milk Used

Type of Formula Milk	Frequency (n)	Percentage (%)
Powdered Formula	560	69.0%
Liquid Formula	182	22.4%
Mixed Formula (Powdered + Liquid)	70	8.6%

This table summarizes the types of formula milk used by parents in the study. The majority of parents (69%) use powdered formula, while 22.4% prefer liquid formula, and 8.6% opt for a mixed type of formula (powdered and liquid).

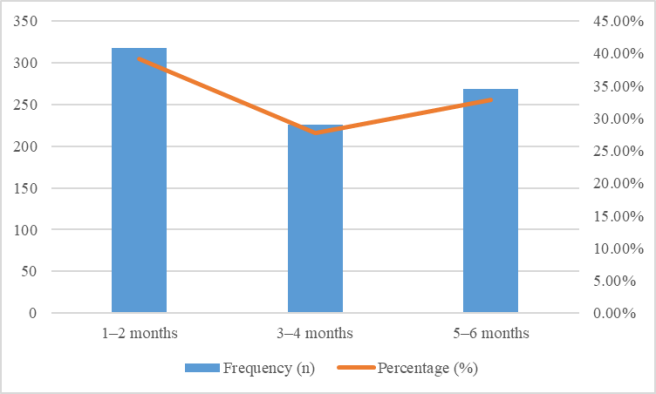

Figure 1: Duration of Formula Feeding

The duration of formula feeding among parents shows that a significant proportion (39.1%) feed their infants formula for 1–2 months, while 27.8% continue for 3–4 months and 32.9% for 5–6 months.

Table 4: Consequences of Formula Feeding on Infant Health

Health Consequence	Frequency (n)	Percentage (%)
Digestive Issues (Constipation, Diarrhea)	350	43.1%
Poor Weight Gain	180	22.2%
Respiratory Infections	141	17.3%
Allergy	89	11.0%
No Issues Reported	52	6.4%

This table highlights the consequences of formula feeding on infant health. Digestive issues, including constipation and diarrhea, were reported by the majority (43.1%). Other issues like Poor Weight Gain (22.2%) and respiratory infections (17.3%) also had notable occurrences. Only 6.4% of parents reported no health issues.

Table 5: Frequency of Formula Feeding Per Day

Feeding Frequency	Frequency (n)	Percentage (%)
1–2 times	72	8.9%
3–4 times	348	42.8%
5–6 times	224	27.6%
More than 6 times	168	20.7%

This table illustrates how often infants are fed formula per day. A significant proportion of parents (42.8%) reported feeding their infants 3–4 times a day, followed by 5–6 times (27.6%) and more than 6 times (20.7%).

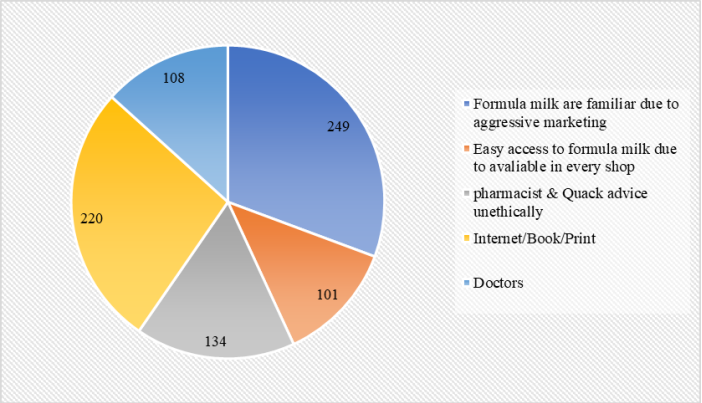

Figure 2: Sources of Information on Formula Feeding

Figure 2 shows the various factors contributing to the familiarity and usage of formula milk among consumers. The most significant factor is aggressive marketing by formula milk companies (n=249), highlighting the strong promotional strategies influencing consumer choices. The influence of the Internet, books, and print media (n=220) also plays a crucial role in spreading awareness and shaping perceptions. Unethical advice from pharmacists and quacks (n=134) further contributes to its use, while easy accessibility in shops (n=101) ensures its widespread availability.

Table 6: Parental Attitudes Towards Formula Feeding

Attitude	Frequency (n)	Percentage (%)
Positive (view formula feeding as beneficial)	300	37.0%
Neutral (no strong opinion)	295	36.3%
Negative (prefer breast feeding)	217	26.7%

This table provides insight into parents' attitudes toward formula feeding. About 37% of parents have a positive view of formula feeding, while 26.7% are negative and prefer breastfeeding. The remaining 36.3% have a neutral stance, not expressing a strong opinion either way.

DISCUSSION

Our study highlights significant trends in formula feeding among Bangladeshi parents of infants aged 0–6 months. The mean age of participants was 3.02 months, with a standard deviation of 1.14, indicating that the majority of infants in the study were in the early months of life. Gender distribution showed a slightly higher proportion of male infants (51.5%), and most parents were unemployed (50.7%). Similar demographic distributions have been observed in studies from South Asia, where parental employment status and socio-economic conditions strongly influence infant feeding choices.[11] The most common reason is "Lack of confidence of mother & Breast Milk Supply" (54.2%), followed by "Convenience & Time Constraints" (28.1%). Similar findings were reported in a study conducted in Indonesia, where 39.5% of mothers cited insufficient breast milk as the primary reason for switching to formula.[12] Additionally, maternal medical conditions (17.7%) and the perceived health benefits of formula (13.1%) contributed to formula feeding. Research from China has also indicated that mothers with underlying health conditions are more likely to supplement or replace breastfeeding with formula.[13] Regarding formula types, 69% of parents used powdered formula, while 22.4% preferred liquid formula, and 8.6% used a combination of both. This trend aligns with findings from a study in India, where powdered formula was the predominant choice among formula-feeding mothers due to affordability and accessibility.[14] The duration of formula feeding in our study showed that 39.1% of parents fed their infants formula for 1–2 months, while 27.8% continued for 3–4 months and 32.9% for 5–6 months. A similar study in the Philippines revealed that most infants introduced to formula were fed for at least 3 months before transitioning to solid foods.[15] The consequences of formula feeding in our

study revealed that digestive issues, including constipation and diarrhea, were the most commonly reported problems (43.1%), Poor Weight Gain (22.2%) and respiratory infections (17.3%). A study in Brazil also found that infants fed with formula had a higher risk of gastrointestinal and respiratory illnesses compared to breastfed infants.[16] This suggests that formula feeding may predispose infants to various health complications. Our findings on formula feeding frequency showed that 42.8% of infants were fed 3–4 times per day, while 27.6% received 5–6 feedings daily. A study from Malaysia indicated similar patterns, where most formula-fed infants received 3–5 feeds per day, depending on parental availability and infant appetite.[17] The most significant factor is aggressive marketing by formula milk companies (n=249), highlighting the strong promotional strategies influencing consumer choices. The influence of the Internet, books, and print media (n=220) also plays a crucial role in spreading awareness and shaping perceptions. A similar trend was observed in a study in Turkey, where healthcare professionals were the most trusted source of information on infant feeding practices.[18] Lastly, parental attitudes toward formula feeding in our study showed that 37% viewed formula feeding positively, 26.7% negatively preferred breastfeeding, and 36.3% remained neutral. A study in the United Kingdom similarly reported that parental perception of formula feeding was influenced by education level, media exposure, and social support.[19] Given these findings, it is evident that formula feeding is influenced by multiple factors, including perceived milk insufficiency, medical conditions, socio-economic factors, and healthcare professional recommendations. To improve exclusive breastfeeding rates in Bangladesh, targeted interventions should focus on maternal education, policy regulations on formula marketing, and better support systems for breastfeeding mothers.[20-29]

CONCLUSION

This study provides valuable insights into formula feeding trends among Bangladeshi parents of infants aged 0–6 months, highlighting the reasons behind formula use and its associated consequences. The most common reason for formula feeding was the perceived lack of breast milk supply, while health conditions of the mother and convenience also played significant roles. Our findings show that formula-fed infants are more likely to experience health issues such as digestive problems, obesity, and respiratory infections. Despite its strengths, this study has several limitations. First, it was conducted in a single hospital setting, which may not fully represent the diverse population of Bangladesh. Second, the study relied on parental self-reporting, which could introduce recall bias and subjectivity in responses. Third, we did not explore other socio-cultural factors or the influence of marketing on formula feeding choices.

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