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Original Article

Assessing Feeding Practices and Bottle-Feeding Trends: A Holistic Analysis of Infant and Child Nutrition in Pediatric Department of CMCH Larkana

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ABSTRACT

Background: Breastfeeding is recognized as the optimal method for infant nutrition, yet bottle feeding remains prevalent due to various socio-economic and cultural factors. In Pakistan, understanding the dynamics between maternal demographics, infant feeding practices, and healthcare accessibility is essential for improving child health outcomes.

Objective: This study aims to evaluate infant feeding practices, particularly the prevalence of bottle feeding, among mothers in a pediatric department in Pakistan, identifying the socio-demographic factors influencing these practices.

Methods: A cross-sectional study was conducted from March 2023 to March 2024 at the Department of Pediatrics, SMBB Medical University, Children's Hospital, Larkana. We utilized non-probability purposive sampling to enroll 650 mothers. Data were collected through structured proformas focusing on demographics, feeding practices, and healthcare utilization. Statistical analysis was performed using SPSS version 25 to assess correlations between feeding methods and maternal characteristics.

Results: Among the mothers surveyed, 86% reported using bottle feeding. The age distribution of infants showed 43% (0–5 months), 28% (6–11 months), and 29% (12–23 months). Educational status of mothers varied, with 38% having no formal education. Antenatal care was received by 44% of participants, while postnatal care was slightly higher at 45%. Breastfeeding counseling was received by only 41% of mothers, with 31% informed about the disadvantages of bottle feeding.

Conclusion: The high rate of bottle feeding and the substantial gaps in antenatal and postnatal care highlight the need for targeted healthcare interventions to promote breastfeeding and enhance maternal and child health services. Improved counseling on feeding practices and better healthcare access are critical for addressing the health needs of this population.

Keywords: Infant Feeding Practices, Bottle Feeding, Breastfeeding, Maternal Health, Pediatric Nutrition, Healthcare Accessibility, Pakistan.

INTRODUCTION

In the domain of infant nutrition, breastfeeding is universally recognized as a critical component of health and survival during the pivotal first six months of life. Grounded in both ancient wisdom and contemporary scientific evidence, breastfeeding is heralded as the optimal method for nourishing newborns (1). Despite this, the landscape of parenting practices is continually evolving, leading many new parents to question whether bottle feeding might offer a comparable alternative to the traditional breastfeeding paradigm (2). This discourse has prompted a reevaluation of the role of exclusive breastfeeding, which is consistently supported by research to confer numerous health advantages including healthier early weight gain and enhanced immune defense against common infections and sudden infant death syndrome (SIDS) (3-6). The importance of breastfeeding is underscored by global initiatives aimed

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at increasing its prevalence, with statistics indicating that enhanced breastfeeding rates could potentially prevent over 820, 000 child deaths annually, 87% of which are infants under six months (1-7).

In Pakistan, breastfeeding practices are shaped by a complex interplay of cultural norms and healthcare accessibility. Notably, approximately half of all Pakistani newborns are breastfed within the first hour of life, yet the practice declines with the child's age. By one year, 68.4% of infants are breastfed, decreasing to 56.5% by two years. The introduction of supplementary foods also falls short of recommended standards, with only one-third of children receiving these nutrients within the ideal six to eight-month window, and disparities exist between genders, with fewer boys receiving timely supplementary feeding compared to girls (8, 9). Concurrently, bottle feeding is on the rise, with 41% of infants now fed through bottles, reflecting a significant shift away from exclusive breastfeeding. This trend highlights the necessity for targeted interventions to promote breastfeeding initiation and sustainability, especially since the knowledge of breastfeeding's benefits and the drawbacks of bottle-feeding is widespread among Pakistani mothers, yet a disconnect remains between this awareness and actual practice (10).

The implications of suboptimal breastfeeding are profound, affecting both infant and maternal health. Infants not breastfed are at increased risk for a host of adverse health outcomes, including infectious morbidity, childhood obesity, diabetes, leukemia, pneumonia, and SIDS. Mothers who do not breastfeed similarly face heightened risks, including pre-menopausal breast cancer, ovarian cancer, retained gestational weight, diabetes, coronary artery disease, and metabolic syndrome (11, 12).

Given these extensive repercussions, our study aims to conduct a thorough analysis of breastfeeding dynamics and bottle-feeding trends within the Pediatric Department of CMCH Larkana, Pakistan. By examining the multifaceted influences of maternal perceptions, societal norms, and healthcare practices, this research intends to craft evidence-based interventions that can significantly enhance infant nutrition and safeguard the health of both infants and mothers for future generations.

MATERIAL AND METHODS

This cross-sectional study was conducted from March 2023 to March 2024 at the Department of Pediatrics, SMBB Medical University, Children's Hospital in Larkana, using a non-probability purposive sampling technique. Participant recruitment was based on the WHO sampling formula to ensure adequate sample size for statistical analysis. A well-structured proforma was employed to collect comprehensive data from mothers on their feeding practices, which predominantly comprised closed-ended questions. Eligibility for participation was strictly defined; mothers with conditions such as high blood pressure, cardiovascular diseases, diabetes mellitus, tumors, tuberculosis, thyroid disorders, or breast-related issues including abscesses, mastitis, or history of breast surgery with bilateral breast excision were excluded. Furthermore, newborns presenting with congenital anomalies like cleft lip and palate, congenital heart disease, or those born prematurely (gestational age less than 37 weeks) were also omitted from the study due to the potential complexities in feeding practices.

Upon receiving approval from the ethical committee, aligned with the Declaration of Helsinki, informed consent was obtained from each participant. Mothers were stratified into two groups according to their method of infant feeding—breastfeeding or bottle feeding. Detailed information was gathered including the infant's complete medical history, mode of delivery, mother's age, educational level, number of previous births (parity), socioeconomic status, religious affiliation, the age of the baby, and whether the mother was employed or a homemaker.

The survey also delved into the specifics of the feeding regime, asking mothers whether they exclusively breastfed, the challenges encountered in maintaining exclusivity, and the reasons behind the introduction of supplementary nutrition or alternative feeding methods. Questions covered the type of supplemental nutrition provided, its quantity, quality, dilution, timing, its impact on the infant's health, and the reasons for choosing non-exclusive breastfeeding or bottle-feeding methods.

Data was meticulously collected and later analyzed using SPSS version 25 to identify statistical correlations between exclusive breastfeeding or bottle feeding and various maternal factors such as age, educational attainment, employment status, economic background, and other demographic variables. This analysis aimed to elucidate the multifactorial determinants influencing the choice and effectiveness of infant feeding practices within the studied population.

RESULTS

In the cross-sectional study conducted at the Department of Pediatrics, SMBB Medical University, Children's Hospital in Larkana, a diverse population of 650 mothers participated, offering insights into demographic and infant feeding practices. The age distribution of mothers varied widely, with 26% aged between 15 and 24 years, 40% between 25 and 34 years, and 34% over 35 years (Table-1). The study also categorized infants into three age groups: 43% were between 0 to 5 months, 28% between 6 to 11 months, and 29% between 12 to 23 months (Table-1).

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Table-1: Study Population Baseline Demographics

Category	Sub-category	Frequency (N=650) / Percentage
Mother Age	15-24 years	171 (26%)
	25-34 years	262 (40%)
	>35 years	217 (34%)
Age of Babies	0–5 months	281 (43%)
	6–11 months	179 (28%)
	12–23 months	190 (29%)
Marital Status	Married	550 (85%)
	Widowed	78 (12%)
	Divorced	22 (3%)
Mothers' Educational Status	No formal education	246 (38%)
	Primary	294 (45%)
	Secondary	84 (13%)
	Above secondary	26 (4%)
Occupational Status of Mothers	Housewife	543 (84%)
	Merchant/private Job	72 (11%)
	Self Employed	35 (5%)
Educational Status of Father	No formal education	22 (4%)
	Primary	187 (34%)
	Secondary	200 (36%)
	Above secondary	141 (26%)
Number of Kids Under 5 Years	One	103 (16%)
	Two	282 (43%)
	Three	164 (25%)
	> Four	101 (16%)
Household Income	6000 thousand/month	120 (19%)
	10000 thousand/month	288 (44%)
	15000 thousand/month	190 (29%)
	20000 thousand/month	52 (8%)

Table-2: Care During Pregnancy and After Delivery

Characteristics	Frequency	Percentage
Antenatal Care (ANC)		
Yes	285	44%
No	365	56%
Place of Birth		
Health centers	286	44%
Home	364	56%
Postnatal Care (PNC)		
Yes	289	45%
No	361	55%
Had Received Advice/Counseling on Breastfeeding		
Yes	266	41%
No	384	59%
Informed About Bottle Feeding Not Being Recommended During Counseling		
Yes	203	31%
No	447	69%

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Table-3: Feeding Practices

Characteristics	Frequency	Percentage
Prevalence of Bottle Feeding (0-23 months)		
Yes	559	86%
No	91	14%
Foods Used for Bottle Feeding		
Cow Milk	342	61%
Formula Milk	217	39%
Cow Milk Use For		
> 1-year babies	177	52%
< 1-year infants	165	48%
Reasons for Practicing Bottle Feeding		
Convenient/easy	225	41%
Good to promote growth	236	42%
Busy for work	76	14%
Insufficient breast milk	22	3%

Marital status showed that a vast majority of the mothers were married (85%), with smaller percentages being widowed (12%) or divorced (3%) (Table-1). The educational background of the mothers revealed that 38% had no formal education, 45% had primary education, 13% secondary, and a small fraction (4%) had education beyond secondary level (Table-1). The occupational status highlighted that most mothers were housewives (84%), while 11% were engaged in a merchant/private job, and 5% were self-employed (Table-1).

The paternal educational status seemed somewhat higher, with only 4% having no formal education, 34% with primary education, 36% secondary, and 26% above secondary (Table-1). The number of children under five per household showed that 16% of the families had one child, 43% had two, 25% had three, and 16% had more than four (Table-1). Regarding household income, 44% earned 10, 000 thousand per month, followed by 29% earning 15, 000 thousand, 19% earning 6, 000 thousand, and 8% earning 20, 000 thousand per month (Table-1).

Turning to care during pregnancy and after delivery, 44% of the mothers received antenatal care while 56% did not; similarly, 44% gave birth in health centers, with the rest (56%) giving birth at home (Table-2). Postnatal care was also lacking, with only 45% receiving it (Table-2). Only 41% of the mothers had received advice or counseling on breastfeeding, and a mere 31% were informed that bottle feeding was not recommended during such counseling sessions (Table-2).

Regarding infant feeding practices, an overwhelming 86% of infants aged 0-23 months were bottle-fed, with cow milk being the most common form of nutrition provided through bottles (61%), followed by formula milk (39%) (Table-3). Analysis of the specific usage of cow milk revealed that 52% of it was used for babies over one year, while 48% was for infants under one year (Table-3).

The reasons for opting for bottle feeding included convenience and ease (41%), belief in promoting growth (42%), being busy with work (14%), and insufficient breast milk (3%) (Table-3). These findings highlight significant patterns in infant nutrition and maternal behavior concerning feeding practices, which are critical for developing targeted interventions to promote better health outcomes among infants.

DISCUSSION

The findings from this study, set within the Department of Pediatrics at SMBB Medical University, reveal a complex landscape of maternal demographics and infant feeding practices that resonate with broader patterns observed across Pakistan and other regions. Similar studies, such as those by Galhotra et al. (11-13) and Ram M et al. (14), depict a predominance of young mothers in economically disadvantaged settings, a demographic known to face significant barriers in accessing healthcare and educational resources. These shared demographic characteristics highlight the persistent systemic challenges that influence maternal and child health outcomes not only within regional confines but also on a more global scale (11-14).

Our analysis underscored a high prevalence of non-exclusive breastfeeding and a reliance on bottle feeding, a trend reinforced by cultural norms and socioeconomic constraints. This pattern aligns with findings from Ali et al. (15), which noted the persistence of pre-lacteal feeds and low rates of exclusive breastfeeding, issues that are not isolated to Pakistan but are also prevalent in countries like Nigeria and Ghana (16). The challenge is further compounded by inadequate complementary feeding practices, a significant barrier to optimal infant nutrition as documented by Chaudhry R et al. and Anju A et al. (17, 18). These studies, together with our

findings, illustrate a critical gap in maternal knowledge and the application of recommended feeding practices, which is mirrored in regions with similar socioeconomic profiles, including India and Sri Lanka.

The intersecting issues of healthcare access and utilization were also apparent in our study, where low coverage of complete immunization and postnatal care points to broader systemic deficiencies. These concerns are echoed by Afzal M et al. (19) and Agampodi S B et al. (20), who identified significant knowledge gaps and accessibility issues within healthcare systems that hinder effective maternal and child health interventions.

The strengths of our study lie in its comprehensive approach to analyzing the intricacies of infant feeding practices within a specific cultural and socioeconomic context. However, the limitations are noteworthy, including the study's reliance on self-reported data, which may be subject to recall bias, and its cross-sectional design, which limits the ability to draw causal inferences. Additionally, the non-probability sampling method may not fully represent the diverse populations of Pakistan.

In light of these findings, it is imperative to formulate targeted interventions that address the identified gaps in maternal and infant health practices. Recommendations include enhancing antenatal and postnatal care utilization, improving the quality and reach of breastfeeding counseling, and addressing socioeconomic barriers to adopting optimal feeding practices. By focusing on these areas, healthcare providers and policymakers can better support the health and well-being of mothers and infants.

Moreover, concerted efforts should be made to educate parents about the risks associated with bottle feeding and to promote healthier alternatives. These initiatives must be underpinned by strong regional collaborations and evidence-based interventions that are sensitive to the cultural and economic realities of the populations they aim to serve. Through these integrated approaches, the goal of improving maternal and child health outcomes can become a tangible reality, reflecting a commitment to a healthier, more equitable future for mothers and children in Pakistan and beyond.

CONCLUSION

This study highlights a significant reliance on bottle feeding among mothers in Pakistan, driven by convenience and perceived benefits for growth, despite limited antenatal and postnatal care and insufficient breastfeeding counseling. These findings underscore the urgent need for comprehensive healthcare interventions aimed at promoting exclusive breastfeeding and improving maternal health services. By enhancing antenatal and postnatal care access and providing robust breastfeeding support, healthcare providers can address both the immediate and long-term health challenges faced by mothers and infants. Such interventions are crucial not only for improving health outcomes but also for fostering a more equitable healthcare system that supports the well-being of all mothers and children.

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