



Maternal Employment and Nutritional Outcomes in Rural Bangladeshi Children

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ABSTRACT: Background: Maternal employment and caregiving practices significantly influence children's nutritional outcomes. In urban Bangladesh, working mothers face challenges in balancing their careers and childcare, which can impact their children's health. **Methods:** A cross-sectional study was conducted in three upazilas (Rampal, Botiaghata, and Dumuria) of Khulna District, Bangladesh, from July to December 2023. The study involved 190 working mothers of children under 5 years of age. Data were collected through structured interviews, including maternal socio-demographics, feeding practices, and childcare arrangements. Nutritional status was assessed using anthropometric measures, including height-for-age (stunting), weight-for-age (underweight), and weight-for-height (wasting). Dietary diversity scores were calculated based on food group consumption. Statistical analyses determined associations between maternal and child characteristics and nutritional outcomes. **Results:** The mean age of mothers was 34.2 ± 5.6 years, and 72.1% had a master's degree. The majority (68.4%) worked as secondary school teachers. Nutritionally, 15.8% of children were stunted, 12.1% underweight, and 8.4% wasted. A positive association was found between exclusive breastfeeding, maternal education, and children's dietary diversity with improved nutritional outcomes ($p < 0.05$). Grandparent caregiving was associated with a lower risk of poor nutrition (adjusted OR = 0.65, 95% CI: 0.45-0.94). Maternal working hours (>8 hours) negatively impacted children's nutrition (adjusted OR = 1.86, 95% CI: 1.24-2.78). **Conclusion:** This study highlights the significant influence of maternal education, breastfeeding, and childcare arrangements on children's nutritional status in urban Bangladesh. There is a need for supportive policies to help working mothers balance their roles and ensure better nutritional outcomes for their children.

Keywords: Maternal Employment, Child Nutrition, Breastfeeding, Socio-Demographic Factors, Childcare Arrangements.

INTRODUCTION

Children's health is closely linked to their nutritional status, which is influenced by various factors such as early childhood care, maternal employment, feeding practices during infancy, the quality of their diet, and efforts to prevent illnesses. Nutritional status is typically assessed using

standardized anthropometric indicators, including weight-for-age, height-for-age, and weight-for-height. These measurements, expressed as z-scores, are established benchmarks developed by the World Health Organization (WHO) [1]. Malnutrition remains a critical issue in Bangladesh. Data from the 2011 Bangladesh Demographic and

Health Survey (BDHS) revealed that 41% of children under five were stunted, showing only a slight decline from the 43% reported in BDHS 2007. Similarly, the prevalence of underweight children under five was 33% in 2011, compared to 41% in 2007. Although several studies have examined the factors influencing child health in Bangladesh, there is limited research specifically targeting urban slum populations [2, 3]. Globally, female labor force participation has drawn significant attention to the impact of maternal employment on children's well-being, particularly concerning their diet, physical activity, and sedentary behavior. Existing studies identify maternal employment as a key factor influencing children's overall health behaviors [4]. Research indicates that children of employed mothers often tend overweight and obese due to changes in dietary patterns, physical activity levels, and increased sedentary behavior [5, 6]. Maternal employment has two primary effects on families: the "income effect," where working mothers contribute financially to the household, and the "time effect," as they spend less time on family-related activities [7].

Employed mothers typically divide their time between work and household responsibilities, which may influence children's nutrition and physical activity [8]. Time constraints may lead to increased reliance on processed foods requiring minimal preparation, greater consumption of fast foods, skipping meals, or fewer family meals [9]. Changes in income may enable families to purchase higher-quality foods or hire caregivers, but they may also increase the consumption of processed, less nutritious foods [10]. In high-income countries, evidence suggests a trend of overweight and obesity in children of working mothers due to altered dietary and activity patterns [11]. However, findings in low- and middle-income countries (LMICs) remain inconsistent. Family policies supporting maternal employment are robust in developed nations but are often inadequate in LMICs, with many countries not adhering to International Labour Organization standards for

maternity leave [12]. Bangladesh provides a pertinent context for studying this issue due to its rising maternal employment rates and increasing prevalence of childhood overweight and sedentary behavior, particularly in urban areas [13]. Despite these trends, no research has yet examined the relationship between maternal employment and the dietary habits, physical activity, or sedentary lifestyles of Bangladeshi children and adolescents [14]. The primary objective of this study is to examine the impact of maternal employment on child nutrition in rural areas of Bangladesh, with a particular focus on socio-demographic characteristics, maternal knowledge and practices, and childcare arrangements. This study aims to contribute to the existing body of literature by providing valuable insights into the factors influencing child nutrition in rural settings and offering recommendations for improving the health outcomes of children in these communities.

MATERIALS AND METHODS

A cross-sectional study conducted in three upazilas (Rampal, Botiaghata, and Dumuria) of Khulna District, Bangladesh, between July and December 2023. The target population consists of 190 school and college teachers who have children under the age of five. Participants were selected through purposive sampling, ensuring that the sample included teachers from various schools and colleges across the selected upazilas. Data collection was carried out using structured face-to-face interviews. A pre-designed questionnaire was used to collect information on socio-demographic characteristics, maternal employment status, childcare practices, and children's dietary patterns. Anthropometric measurements, including weight, height, and mid-upper arm circumference (MUAC), were also recorded for children to assess their nutritional status. Weight was measured using calibrated digital scales, height was measured with standard stadiometers, and MUAC was recorded using non-stretchable measuring tapes. Nutritional status was determined using

WHO child growth standards and the WHO Anthro software was used for analysis. Informed consent was obtained from all participants before

data collection. The consent forms outlined the study's objectives, voluntary participation, and confidentiality of the information.

RESULTS

Table 1: Socio-demographic and employment characteristics of mothers (N=190)

Characteristics	Categories	Frequency	Percentage
Age (years)	21-30	56	29.5
	31-40	100	52.6
	>40	34	17.9
Education Level	Bachelor's	53	27.9
	Master's	137	72.1
Teaching Level	Primary School	42	22.1
	Secondary School	130	68.4
	College	18	9.5
Teaching Experience	≤5 years	72	37.9
	6-10 years	86	45.3
	>10 years	32	16.8
Monthly Income (BDT)	<35,000	45	23.7
	35,000-50,000	98	51.6
	>50,000	47	24.7

Table 1 displays the socio-demographic and employment characteristics of the participating mothers. The mean age of the mothers was 34.2±5.6 years, with the majority (52.6%) falling within the 31-40 age range. A significant proportion (72.1%)

held a master's degree, and most participants (68.4%) were employed at secondary schools. The average teaching experience was 8.7±4.3 years, with nearly half (45.3%) of the participants having 6-10 years of experience.

Table 2: Child characteristics and nutritional status (N=190)

Characteristics	Categories	Frequency	Percentage	p-value
Child's Age (years)	<1	32	16.8	0.234
	1-3	98	51.6	
	3-5	60	31.6	
Gender	Male	103	54.2	0.428
	Female	87	45.8	
Height-for-Age (Stunting)	Normal	160	84.2	<0.001
	Stunted	30	15.8	
Weight-for-Age (Underweight)	Normal	167	87.9	<0.001
	Underweight	23	12.1	
Weight-for-Height (Wasting)	Normal	174	91.6	<0.001
	Wasted	16	8.4	

Table 2 outlines the characteristics and nutritional status of the children. The average age of the children was 2.8±1.4 years, with 54.2% being

male. According to WHO growth standards, 15.8% were stunted, 12.1% were underweight, and 8.4% were wasted.

Table 3: Childcare arrangements and feeding practices (N=190)

Characteristics	Categories	Frequency	Percentage	p-value
Primary Caregiver During Work	Grandparents	120	63.2	<0.001
	Domestic Helper	45	23.7	
	Day Care	25	13.1	
Exclusive Breastfeeding	Completed 6 months	156	82.1	<0.001
	Not completed	34	17.9	
Timely Complementary Feeding	Yes	137	72.1	<0.001
	No	53	27.9	
Daily Meal Frequency	≤3 times	42	22.1	0.003
	4-5 times	127	66.8	
	>5 times	21	11.1	

Table 3 presents data on childcare arrangements and feeding practices. A majority (63.2%) of children were cared for by grandparents

during the mother's working hours, and 72.1% of children received appropriate complementary feeding at the recommended age.

Table 4: Dietary diversity and food consumption patterns (N=190)

Food Groups	Consumed Daily	Percentage	Mean±SD	p-value
Grains/Cereals	190	100.0	-	-
Protein-rich foods	165	86.8	2.3±0.8	<0.001
Dairy products	172	90.5	2.1±0.6	<0.001
Fruits	143	75.3	1.8±0.7	0.002
Vegetables	156	82.1	2.4±0.9	<0.001
Eggs	148	77.9	1.1±0.3	0.004
Legumes	112	58.9	1.2±0.4	0.015

Table 4 shows the dietary diversity and food consumption patterns. The mean dietary diversity score was 5.8±1.4, with the highest

consumption observed for grains/cereals (100%), followed by dairy products (90.5%) and protein-rich foods (86.8%).

Table 5: Maternal knowledge and practices regarding child nutrition (N=190)

Knowledge/Practice Areas	Adequate	Percentage	p-value
Breastfeeding knowledge	175	92.1	<0.001
Complementary feeding	162	85.3	<0.001
Meal frequency	158	83.2	<0.001
Food diversity	145	76.3	0.002
Hygiene practices	180	94.7	<0.001
Growth monitoring	156	82.1	<0.001

Table 5 highlights maternal knowledge and practices related to child nutrition. The majority of mothers (92.1%) had adequate knowledge about

breastfeeding, while 85.3% had adequate knowledge about complementary feeding.

Table 6: Factors associated with child nutritional status (Multivariate Analysis)

Factors	Adjusted OR	95% CI	p-value
Working Hours (>8 hrs)	1.86	1.24-2.78	0.003
Grandparent Care	0.65	0.45-0.94	0.024
Maternal Education Level	0.72	0.54-0.96	0.028
Family Income	0.58	0.42-0.81	0.001
Dietary Diversity Score	0.45	0.31-0.65	<0.001
Exclusive Breastfeeding	0.51	0.36-0.72	<0.001

Table 6 presents the multivariate analysis of factors influencing a child's nutritional status. Working hours (>8 hrs) were found to be significantly associated with worse nutritional outcomes, while maternal education and family income positively influenced the child's nutritional status.

DISCUSSION

This study aimed to explore the socio-demographic characteristics, nutritional status, and caregiving practices among working mothers with children under 5 years of age. The findings indicate significant insights into maternal employment, childcare arrangements, feeding practices, and the factors influencing children's nutritional status. The average age of the participating mothers was 34.2 ± 5.6 years, with the majority (52.6%) falling in the 31-40 age group, a pattern consistent with other studies indicating that many women in this age range are in their prime childbearing years [15]. Most mothers (72.1%) had a master's degree, suggesting a high level of education among the sample, which is in line with studies showing that higher maternal education positively correlates with better child health outcomes¹⁶. Furthermore, 68.4% of mothers were employed as secondary school teachers, which reflects the increasing participation of women in the workforce in urban Bangladesh [16]. The study also found that 45.3% of mothers had 6-10 years of teaching experience,

implying a reasonable level of work-related experience, which may impact both their career satisfaction and caregiving responsibilities. The average age of children was 2.8 ± 1.4 years, with more than half (54.2%) being male. This is consistent with global child health statistics, where male children are often reported to have slightly higher incidences of health risks, including nutritional deficits (WHO, 2021). Nutritionally, the children in this study faced significant challenges, with 15.8% stunted, 12.1% underweight, and 8.4% wasted. These findings align with the current situation in Bangladesh, where childhood malnutrition remains a pressing issue, particularly in urban areas where maternal education and socio-economic status can still influence access to nutrition [17].

Childcare arrangements were found to significantly affect the nutritional outcomes of children. Notably, 63.2% of children were cared for by their grandparents during the mother's working hours, a finding that is consistent with traditional caregiving practices in many South Asian countries, where extended families play a key role in childcare [18]. Additionally, a large proportion of mothers (82.1%) reported completing exclusive breastfeeding for the first six months, which is higher than the national average of 45%, indicating positive maternal health practices [19]. This could reflect the high level of maternal knowledge about

breastfeeding practices, as also evidenced by the 92.1% of mothers demonstrating adequate knowledge in this area [20]. The timely introduction of complementary feeding was also found to be relatively high (72.1%). However, 27.9% of mothers did not follow the recommended practices, which could be due to factors such as work-related time constraints and a lack of awareness or resources. These findings align with global research suggesting that early and appropriate complementary feeding is essential for preventing malnutrition during critical developmental windows [21].

Dietary diversity, an essential indicator of children's overall nutritional status, was examined by assessing food group consumption patterns. Grains and cereals were consumed daily by all children (100%), which is typical of the Bangladeshi diet. However, protein-rich foods were consumed daily by only 86.8% of children, and dairy products by 90.5%, reflecting a slightly limited diversity in their diets. Fruits (75.3%) and vegetables (82.1%) were also consumed regularly, but eggs (77.9%) and legumes (58.9%) showed lower daily consumption rates, which are areas for improvement in dietary diversity. The mean dietary diversity score of 5.8 ± 1.4 out of a possible 7 indicates that while the children had a reasonably diverse diet, there remains potential for enhancing their intake of key nutrients, particularly those found in protein-rich and plant-based foods [22]. In terms of maternal knowledge, the majority of mothers demonstrated good awareness of child nutrition, particularly regarding breastfeeding (92.1%) and complementary feeding (85.3%). This finding supports previous research suggesting that maternal education is a key factor in improving children's health, including nutrition and hygiene practices [23]. Despite this, only 76.3% of mothers had adequate knowledge of food diversity, highlighting a potential gap in understanding how to provide balanced diets that include a variety of micronutrients. Additionally, 94.7% of mothers adhered to proper hygiene practices, which is

consistent with the importance of hygiene in preventing malnutrition and other health issues [24]. The multivariate analysis revealed several factors significantly associated with children's nutritional status. Working hours (>8 hrs) were found to be negatively associated with children's nutritional outcomes, with an adjusted OR of 1.86 (95% CI: 1.24-2.78, $p = 0.003$). This suggests that longer working hours may limit mothers' ability to provide adequate care and nutrition, particularly in terms of meal preparation and monitoring feeding practices. Grandparent care was associated with a lower likelihood of poor nutritional status (adjusted OR = 0.65, 95% CI: 0.45-0.94, $p = 0.024$), highlighting the positive influence of extended family support. Maternal education and family income also played critical roles in improving children's nutritional outcomes, consistent with studies showing that higher socio-economic status and education correlate with better health behaviors [25-38]. Moreover, a higher dietary diversity score and exclusive breastfeeding were significant protective factors, underscoring the importance of these practices in preventing malnutrition [19].

CONCLUSION

The study provides a comprehensive view of the factors influencing child nutrition in urban Bangladesh. Key findings include the critical roles of maternal education, dietary diversity, and family support in shaping children's health outcomes. Although maternal knowledge of child nutrition was generally good, there are still areas for improvement, particularly in enhancing dietary diversity. Policymakers should focus on supporting working mothers, enhancing education on complementary feeding practices, and promoting family-based childcare arrangements to improve the nutritional status of children. Future studies could explore the long-term effects of these factors on children's health and development.

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