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ASSOCIATION OF MATERNAL FEEDING PRACTICES WITH NUTRITIONAL STATUS OF CHILDREN SIX MONTHS TO TWO YEARS OF AGE IN RURAL AREAS OF LAHORE, PUNJAB, PAKISTAN

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Abstract

Background: Malnutrition is a significant issue in developing and underdeveloped countries, severely impacting children's growth and development. In Asia, particularly in Pakistan, food availability is not the main issue, but inadequate maternal feeding practices contribute significantly to malnutrition, including underweight, stunting, and wasting.

Objective: To assess the association between maternal feeding practices and the nutritional status of children aged 6 months to 2 years in rural areas.

Materials and Methods: The study employed a cross-sectional analytical design conducted at the University of Health Sciences Lahore (UHS) in collaboration with three Maternal and Child Health (MCH) centers in Shahdara town, Lahore. The study population included mothers with children aged 6 months to 2 years. Anthropometric measurements (height and weight) were taken using standard methods. Convenience sampling was used for data collection, facilitated by a self-structured questionnaire. Data were analyzed using SPSS version 25, employing descriptive statistics (frequency, percentage, mean ± SD). Nutritional status was assessed using WHO growth criteria, with Z scores applied for analysis and interpretation of results.

Results: The study results shows that the mean weight of the children as per weight for height z-score shows wasting is not a prevalent problem in rural areas that was only 4.7% collectively for mild, moderate and sever, but the finding of height for age as per z-score alarming that was 97.3% collectively for mild, moderate and sever. Sever stunting was 84.2%.

Conclusion: The prevalence of malnutrition, particularly stunting, is high among children in rural areas. Inadequate maternal feeding practices and lack of awareness about proper nutrition are major contributing factors. The study underscores the need for improved maternal education and community-level nutritional management programs to address malnutrition effectively. Further research and targeted interventions are recommended to enhance children's nutritional status and overall health in these communities.

Keywords: Feeding practices, Breastfeeding, Formula feeding, Complementary feeding, Nutritional status, Demographic environment.

INTRODUCTION

Over 3 million children die annually from malnutrition, making it the leading cause of death among children globally and a major contributor to stunted growth and cognitive development (Awasthi et al., 2019). Malnutrition, a physiological disorder from energy, protein, and nutrient imbalances, is influenced by poor diets, inadequate maternal and infant care, insufficient health services, and unhealthy environments (Derseh et al., 2018).

From birth to the first few years of life, an infant's feeding habits significantly impact their lifelong health due to rapid growth and brain development during this critical period. Malnutrition during this time can cause irreversible damage

to a child's physical, mental, and social development, leading to diminished intellectual potential in adulthood (Nassanga et al., 2018).

Adequate nourishment is essential for a child's healthy growth and development. Malnutrition, caused by deficiencies or excesses of essential nutrients, is often assessed using anthropometric measurements, which indicate underweight, wasting, and stunting. In Pakistan, micronutrient deficiencies and protein-energy malnutrition remain significant public health concerns (Aslam et al., 2020).

Child survival, growth, and development are adversely affected by inadequate breastfeeding, poor complementary feeding practices, and high infection rates. In developing countries, factors like poor hygiene, food insecurity, and poverty exacerbate child malnutrition (Awasthi et al., 2019). Asia, home to two-thirds of the world's stunted children, has alarming malnutrition rates, with 21% of Indian children overweight, 7.5% obese, and 38.4% stunted. In Pakistan, 24% of children are severely stunted (Khan et al., 2020).

The World Health Organization (WHO) emphasizes exclusive breastfeeding for the first six months, which can reduce severe malnutrition and prevent neonatal deaths. Breastfeeding provides essential nutrients and immune protection, but complementary feeding should begin at six months to meet nutritional needs and prevent infections. However, starting complementary foods too early or too late can lead to malnutrition and health risks (Epheson et al., 2018).

Formula feeding, influenced by social, commercial, and personal factors, has its pros and cons. While formula-fed infants may gain more weight, they also have a higher risk of developing conditions like ADHD due to exposure to substances like BPA in formula containers. Proper infant and young child feeding practices are crucial for child survival and development (Chaudhary et al., 2018).

Pakistan faces the highest rates of child malnutrition, with 33% of children underweight, 44% stunted, and 15% wasting. Complementary feeding practices are suboptimal, with only a fraction of children receiving adequate nutrition. Undernourishment, prevalent in developing countries, is the leading cause of child morbidity and mortality, contributing to about half of all child deaths globally (Shamshir, 2019).

Addressing malnutrition requires attention from healthcare professionals due to its severe impacts, including increased mortality, prolonged hospital stays, lower quality of life, and physical weakness (Maeda et al., 2020). The dual burden of malnutrition, involving both under- and over-nutrition, is exacerbated by low socioeconomic status and resource scarcity. Malnutrition is a risk factor for preventable diseases like respiratory infections, diarrhea, neonatal sepsis, and malaria, which cause significant child mortality (Khan et al., 2020).

Investigating maternal feeding practices and children's nutritional status is vital to understand and address the root causes of malnutrition in communities. This study highlights the need for further research on nutritional deficiencies and their impact on child health.

Research Objective

To assess the association between maternal feeding practices and the nutritional status of children 6 months to 2 years of age.

MATERIALS AND METHODS

A cross-sectional analytical study was conducted at the University of Health Sciences (UHS) Lahore and three maternal and child health centers in Shahdara town, Lahore. The study aimed to explore the association between feeding practices and the nutritional status of children aged six months to two years. It was completed within nine months following ethical approval. The target population included women with children aged six months to two years, with data collected using a convenient sampling technique. A sample size of 192 participants per group was calculated. Data were analyzed using SPSS version 25, with descriptive statistics and chi-square tests used to determine associations. Maternal feeding practices were categorized as adequate or inadequate, and children's nutritional status was assessed using WHO criteria and Z-scores. A p-value < 0.05 was considered significant.

RESULTS

Table 1. Socio-demographic Data of Mother and Child

Age of the mother	
N	190
Mean	27.64
SD	4.34
Minimum	18
Maximum	39
Age of Child	

N	190
Mean	15.36
SD	5.03
Minimum	6
Maximum	24
Monthly Family Income	
N	190
Mean	28315.78
SD	22213.61
Minimum	10,000
Maximum	30,0000

Characteristic	**Frequency**	**Percentage**
Educational Status of the Mother		
None	12	6.3%
Primary School	64	33.7%
High School	60	31.6%
College and Above	54	28.4%
Occupational Status of the Mother		
Professional/Specialist	24	12.6%
Housewife/ Unemployed	166	87.4%
Type of Family		
Nuclear family	49	25.8%
Joint Family	138	72.6%
Single parent	3	1.6%
Gender of Child		
Male	94	49.5%
Female	96	50.5%
Immunization status of Child		
Yes	190	100%
No	0	0%

Table 1 shows that the mean age of mothers was 27.64 ± 4.34 years (ranging from 18 to 39 years). Mean age of the child was 15.36 ± 5.03 months, ranges between 6-24 months. The monthly income of these families was 28315.78±22213. 61 PKR. Educational status of these mothers showed that 12 (6.3%) were illiterate, 64 (33.7%) had passed primary school, 60 (31.6%) had passed high school and 54 (28.4%) had college and above education. Occupational status showed that 24 (12.6%) mothers were professionals and 166 (87.4%) were housewives. Among these mothers 3 (1.6%) reported that they were single parent, 138 (72.6%) were living in a joint family and 49 (25.8%) reported that they were living in a nuclear family. Children were 100% immunized. In this study 94 (49.5%) children were male and 96 (50.5%) were female.

Table 2. Child's Nutrition and breast- Feeding Practices

	Frequency	**Percent**
Has your child ever been breastfed?		
Yes	165	86.8%
No	25	13.1%

How long after birth did you start breastfeeding?		
Less than one hour after birth	79	41.6%
Within 24 hours of birth	48	25.3%
After 24 hours of birth	42	22.1%
Don't know	2	1.1%
How many times do you breastfeed your child day and night?		
After 1 to 3 hours	107	56.3%
After 4 to 5 hours	18	9.5%
On-demand	45	23.7%
Don't know	1	0.5%
Did you give the baby the first liquid (colostrum)?		
Yes	128	67.4%
No	43	22.6%
Have you stopped breastfeeding the child?		
Yes	95	50%
No	76	40%
How old was your child when you stop breastfeeding?		
< 6 months	131	68.9%
6-12 months	21	11.1%
12-18 months	19	10.0%
How long do you exclusively breastfeed your baby (in months)?		
6 months	55	28.9%
<6 months	75	39.5%

Child nutrition and complementary feeding practices were asked from the mothers. There were 171 (90%) mothers who reported that they breastfed their children. Response of mothers regarding initiating of breast feeding showed that 79 (41.6%) started breast feeding in less than one hour after birth, 48 (25.3%) reported that they started breastfeeding within 24 hours of birth, 42 (22.1%) started after 24 hours of birth. There were 107 (56.3%) mothers who reported that they breast feed their child after 1-3 hours, 18 (9.5%) reported that they feed their child after 4-5 hours and 45 (23.7%) reported that they breast feed their child on demand. There were 128 (67.4%) mothers who had given colostrum to their babies and 95 (50%) told that they stopped breastfeeding their child. Among mothers 131(68.9%) stopped breast feeding their child when they were <6 months of age and 55 (28.9%) mothers reported that they exclusively breastfeed their child till 6months and 75 (39.5%) mothers breast feed their child <6 months.

Table 3. Formula Milk/ Other Milk

	Frequency	**Percent**
What type of milk do you give for feeding the child replacing breastfeeding?		
Formula Milk	60	31.6%
Cow's milk	110	57.9%
Any other	20	10.5%
How many times do you give formula milk/cow milk to your child?		
3-4 Times	121	63.7%
4-8 Times	9	4.7%
How do you give formula milk/cow milk for your baby?		
Use feeder/nipple bottle	74	38.9%
Use a cup and spoon	55	28.9%
Anything else (please specify)	1	0.5%

Among mothers 100 (57.9%) reported that they give formula milk to their child replacing breast feeding and 19 (10%) replaced breast feeding cow milk. Response regarding number of times formula milk/cow milk showed that 121 (63.7%) mothers reported that they give their child formula milk/cow milk 3-4 times and 9 (4.7%) reported that they

give their child formula mil/cow milk 4-8 times. Among mothers 74 (38.9%) reported that they use feeder/nipple bottle to give their child formula milk and 55 (28.9%) mothers reported that they used a cup and spoon.

Table 4. Complementary Feeding

	Frequency	Percent
Does your child eat any solid, semi-solid, or soft foods during the day or at night?		
Yes	169	88.94%
No	21	11.06%
How old was the child when you first gave him/her complementary solid food?		
Yes	174	91.6%
(Age: 7.43±2.98, Minimum:4 & Maximum:20)		
Not yet given	16	8.4%
What foods you give to your child from the following food groups?		
Grains	174	91.6%
Fruits and vegetables	141	74.2%
Proteins	95	50%
Dairy	19	10%
Any oil, fats, butter, coconut, almond	5	2.6%
Some sugary foods	168	88.4%
How many times does your child eat solid, semi-solid, or soft foods other than liquids during the day or at night?		
1-2 Times	96	6.8%
3-4 Times	81	50.5%
Do you prepare the child's food separately?		
Yes	144	75.8%
No	33	17.4%
Do you wash your hands with soap before preparing meals and feeding the child?		
Yes	172	90.5%
No	5	2.6%

There were 174 (91.6%) mothers who reported that either during the day or at night, their child consumes any solid, semi-solid, or soft foods.. Mean age of children at which they received their first complementary solid food was 7.4 3± 2.98 years. The most common food given to children by their mothers was grains followed by fruits and vegetables, some sugary foods, proteins, dairy and any oil, fats butter coconut and almond. Among mother 81 (50.5%) reported that their children eat solid, semisolid or soft foods other than liquid during the day and night 3-4 times. There were 144 (75.8%) mothers who reported that they prepare the child's food separately and 172 (90.5%) mothers reported that they wash their hands with soap before preparing meals and feeding the child.

Table 5. Health Status of Child

	Frequency	Percent
Did the child have diarrhea or any other sickness in the last month?		
Yes	0	0%
No	190	100%
Did your child get hospitalized in the last month?		
Yes	0	0%
No	190	100%
How many times did you bring your child to the doctor because of sickness in the last month?		
Nil		
Has your child received Vitamin/Mineral supplements/ hospital medicines in the last month?		

Yes	0	0%
No	189	99.5%
Don't Know	1	0.5%

None of the children have diarrhea or any other sickness in the last month nor hospitalized due to this. None of the children received vitamin/ mineral supplements/ hospital medicine in the last month.

Anthropometric Measurement of Child

Mean age of children was 15.34±5.03 months. The age of children ranges between 6-24 months. Mean weight of children was 8. 81±2. 01. Children weight ranges between 4.50-17.10 Kg and mean height of children was 65. 42±6. 45cm. The mean height of children ranges between 50-83 cm. As per Weight for Age Z-Score only 4 (2.1%) children were marginally malnourished, 3 (1.6%) were moderately malnourished and 1 (0.5%) child was severely malnourished. As per height for Age Z Score 8 (4.2%) children were marginally stunted, 17 (8.9%) were moderately stunted and 160 (84.2%) were severely stunted. As per weight for height Z Score 50 (26.3%) children were marginally wasted, 30 (15.8%) were moderately wasted and 24 (12.6%) children were severely wasted.

Table 6. Association between maternal and child demographic characteristics and nutritional status of children (WAZ Score)

	WAZ Score				
	Normal	**Marginal**	**Moderate**	**Sever**	**p-value**
	182	4	3	1	
Education of Mother					
None	12(6.6%)	0(0%)	0(0%)	0(0%)	0.449
Primary	61(33.5%)	1(25%)	1(33.3%)	1(100%)	
High School	58(31.9%)	0(0%)	2(66.7%)	0(0%)	
College & Above	51(28%)	3(75%)	0(0%)	0(0%)	
Occupation of Mother					
Professional	24(13.2%)	0(0%)	0(0%)	0(0%)	0.751
House Wife	158(86.8%)	4(100%)	3(100%)	1(100%)	
Income of Family					
10,000-30,000	145(79.7%)	2(50%)	3(100%)	1(100%)	0.752
31,000-50,000	35(19.2%)	2(50%)	0(0%)	0(0%)	
>50,000	2(1.1%)	0(0%)	0(0%)	0(0%)	
Gender of child					
Male	89(48.9%)	2(50%)	2(66.7%)	1(100%)	0.705
Female	93(51.1%)	2(50%)	1(33.3%)	0(0%)	

Table 6 shows the association between maternal and child demographic characteristics and the nutritional status of children, measured by the Weight-for-Age Z (WAZ) score. The nutritional status categories are normal, marginal, moderate, and severe. Among the children with normal WAZ scores (n=182), the distribution based on the mother's education level is as follows: 6.6% had no education, 33.5% had primary education, 31.9% had high school education, and 28% had a college education or above. For children with marginal WAZ scores (n=4), 25% of mothers had primary education, and 75% had college education or above. For children with moderate WAZ scores (n=3), 33.3% of mothers had primary education, and 66.7% had high school education. For the single child with a severe WAZ score, the mother had primary education.

Regarding the mother's occupation, 13.2% of mothers of children with normal WAZ scores were professionals, while 86.8% were housewives. All mothers of children with marginal, moderate, and severe WAZ scores were housewives. Family income levels for children with normal WAZ scores were 79.7% in the 10,000-30,000 range, 19.2% in the 31,000-50,000 range, and 1.1% above 50,000. For children with marginal WAZ scores, 50% of families earned 10,000-30,000, and 50% earned 31,000-50,000. All children with moderate and severe WAZ scores had family incomes of 10,000-30,000.

For the gender of the child, 48.9% of children with normal WAZ scores were male, and 51.1% were female. For marginal WAZ scores, 50% were male and 50% were female. For moderate WAZ scores, 66.7% were male, and 33.3% were female. The single child with a severe WAZ score was male. The p-values for these associations were not statistically significant, indicating no significant relationship between the demographic variables and the WAZ scores.

Table 7. Association between maternal and child demographic characteristics and nutritional status of children (HAZ Score)

	HAZ Score					
	p-value	Normal	Marginal	Moderate	Sever	p-value
		5	8	17	160	
Education of Mother						
None	0.449	0(0%)	0(0%)	0(0%)	12(7.5%)	0.219
Primary		1(20%)	0(0%)	5(29.4%)	58(36.3%)	
High School		2(40%)	4(50%)	9(52.9%)	45(28.1%)	
College & Above		2(40%)	4(50%)	3(17.6%)	45(28.1%)	
Occupation of Mother						
Professional	0.751	1(20%)	1(12.5%)	1(5.9%)	21(13.1%)	0.805
House Wife		4(80%)	7(87.5%)	16(94.1%)	139(86.9%)	
Income of Family						
10,000-30,000	0.752	3(60%)	6(75%)	14(82.4%)	128(80%)	0.006
31,000-50,000		1(20%)	2(25%)	3(17.6%)	31(19.4%)	
>50,000		1(20%)	0(0%)	0(0%)	1(0.6%)	
Gender						
Male	0.705	1(20%)	3(37.5%)	7(41.2%)	83(51.9%)	0.386
Female		4(80%)	5(62.5%)	10(58.8%)	77(48.1%)	

Table 7 presents the association between maternal and child demographic characteristics and the nutritional status of children, measured by the Height-for-Age Z (HAZ) score. The nutritional status categories are normal, marginal, moderate, and severe. Among the children with normal HAZ scores (n=5), the distribution based on the mother's education level shows 20% had primary education, 40% had high school education, and 40% had a college education or above. For children with marginal HAZ scores (n=8), 50% of mothers had high school education, and 50% had a college education or above. For children with moderate HAZ scores (n=17), 29.4% of mothers had primary education, 52.9% had high school education, and 17.6% had a college education or above. For children with severe HAZ scores (n=160), 7.5% of mothers had no education, 36.3% had primary education, 28.1% had high school education, and 28.1% had a college education or above.

Regarding the mother's occupation, 20% of mothers of children with normal HAZ scores were professionals, while 80% were housewives. For children with marginal HAZ scores, 12.5% of mothers were professionals, and 87.5% were housewives. For moderate HAZ scores, 5.9% of mothers were professionals, and 94.1% were housewives. For severe HAZ scores, 13.1% of mothers were professionals, and 86.9% were housewives.

Family income levels for children with normal HAZ scores were 60% in the 10,000-30,000 range, 20% in the 31,000-50,000 range, and 20% above 50,000. For children with marginal HAZ scores, 75% of families earned 10,000-30,000, and 25% earned 31,000-50,000. For moderate HAZ scores, 82.4% of families earned 10,000-30,000, and 17.6% earned 31,000-50,000. For severe HAZ scores, 80% of families earned 10,000-30,000, 19.4% earned 31,000-50,000, and 0.6% earned above 50,000.

For the gender of the child, 20% of children with normal HAZ scores were male, and 80% were female. For marginal HAZ scores, 37.5% were male, and 62.5% were female. For moderate HAZ scores, 41.2% were male, and 58.8% were female. For severe HAZ scores, 51.9% were male, and 48.1% were female. The only statistically significant association found was between family income and HAZ scores (p=0.006), indicating a significant relationship between family income and children's height-for-age.

Table 8. Association between maternal and child demographic characteristics and nutritional status of children (WHZ Score)

	WHZ Score				
	Normal	Marginal	Moderate	Sever	p-value
	86	50	30	24	
Education of Mother					

None	3(3.5%)	3(6%)	2(6.7%)	4(16.7%)	0.163
Primary	26(30.2%)	16(32%)	14(46.7%)	8(33.3%)	
High School	35(40.7%)	15(30%)	6(20%)	4(16.7%)	
College & Above	22(25.6%)	16(32%)	8(26.7%)	8(33.3%)	
Occupation of Mother					
Professional	13(15.1%)	5(10%)	5(16.7%)	1(4.2%)	0.424
House Wife	73(84.9%)	45(90%)	25(83.3%)	23(95.8%)	
Income of family					
10,000-30,000	66(76.7%)	41(82%)	23(76.7%)	21(87.5%)	0.835
31,000-50,000	19(22.1%)	8(16%)	7(23.3%)	3(12.5%)	
>50,000	1(1.2%)	1(2%)	0(0%)	0(0%)	
Gender					
Male	38(44.2%)	27(54%)	17(56.7%)	12(50%)	0.573
Female	48(55.8%)	23(46%)	13(43.3%)	12(50%)	

Table 8 presents the association between maternal and child demographic characteristics and the nutritional status of children, measured by the Weight-for-Height Z (WHZ) score. The categories for WHZ scores are normal, marginal, moderate, and severe. Among the children with normal WHZ scores (n=86), 3.5% of mothers had no education, 30.2% had primary education, 40.7% had high school education, and 25.6% had a college education or above. For children with marginal WHZ scores (n=50), 6% of mothers had no education, 32% had primary education, 30% had high school education, and 32% had a college education or above. For children with moderate WHZ scores (n=30), 6.7% of mothers had no education, 46.7% had primary education, 20% had high school education, and 26.7% had a college education or above. For children with severe WHZ scores (n=24), 16.7% of mothers had no education, 33.3% had primary education, 16.7% had high school education, and 33.3% had a college education or above.

Regarding the mother's occupation, for normal WHZ scores, 15.1% of mothers were professionals, while 84.9% were housewives. For marginal WHZ scores, 10% of mothers were professionals, and 90% were housewives. For moderate WHZ scores, 16.7% of mothers were professionals, and 83.3% were housewives. For severe WHZ scores, 4.2% of mothers were professionals, and 95.8% were housewives.

Family income levels for children with normal WHZ scores were 76.7% in the 10,000-30,000 range, 22.1% in the 31,000-50,000 range, and 1.2% above 50,000. For children with marginal WHZ scores, 82% of families earned 10,000-30,000, 16% earned 31,000-50,000, and 2% earned above 50,000. For moderate WHZ scores, 76.7% of families earned 10,000-30,000, and 23.3% earned 31,000-50,000. For severe WHZ scores, 87.5% of families earned 10,000-30,000, and 12.5% earned 31,000-50,000.

For the gender of the child, among those with normal WHZ scores, 44.2% were male, and 55.8% were female. For marginal WHZ scores, 54% were male, and 46% were female. For moderate WHZ scores, 56.7% were male, and 43.3% were female. For severe WHZ scores, 50% were male, and 50% were female. No statistically significant associations were found between the demographic characteristics and WHZ scores, with p-values above 0.05 across all categories.

DISCUSSION

Malnutrition remains a pressing issue in developing and underdeveloped countries, including the Asian region, significantly affecting child growth and development. Maternal feeding practices are a key factor in this issue. While countries like Ethiopia and Uganda face malnutrition due to food scarcity, in countries like Pakistan, malnutrition is often due to inadequate maternal feeding practices despite food availability (Saleem et al., 2021).

In Pakistan, rural areas suffer from high rates of underweight, stunting, and wasting due to limited access to modern healthcare and lack of awareness about proper feeding practices as recommended by WHO. This study aimed to assess the association between maternal feeding practices and the nutritional status of children aged six months to two years in rural areas.

This study’s findings indicate that malnutrition, particularly stunting, is prevalent. Height-for-age Z scores revealed 4.2% of children were marginally stunted, 8.9% moderately stunted, and 84.2% severely stunted. Weight-for-height Z scores showed 26.3% were marginally wasted, 15.8% moderately wasted, and 12.6% severely wasted. This aligns with other studies, such as one in Indonesia reporting higher stunting rates compared to wasting and underweight (Ahmad et al., 2018).

Several factors contribute to these outcomes. Maternal feeding practices significantly impact child nutrition, with many mothers lacking knowledge about proper feeding quantities and quality. The educational status of mothers also plays a crucial role; our study found that 6.3% of mothers had no education, and 33.7% had only primary education, correlating with higher stunting rates. This is consistent with literature indicating that lower maternal education levels are linked to poorer child nutritional status (Dessie et al., 2019).

The joint family system prevalent in rural Pakistan can affect child nutrition, with 72.6% of study participants living in joint families. Previous research suggests that joint families can have better feeding practices due to shared responsibilities (Epheson et al., 2018). Additionally, living in a joint family might provide more support and resources for child-rearing, which could positively impact nutritional outcomes. However, it also poses challenges such as the potential for conflicting advice and practices regarding child feeding.

Gender differences in malnutrition were not significant in our study, but literature suggests male children are generally more prone to wasting in South Asia (Khan et al., 2020). Most mothers in our study breastfed their children, with early initiation and colostrum feeding being positive indicators. However, exclusive breastfeeding was not widely practiced, with many mothers using formula or cow's milk, which can lead to malnutrition if not properly managed (Meyer, 2018). This highlights the need for more education on the benefits of exclusive breastfeeding and the proper preparation of formula and cow's milk.

Complementary feeding practices were suboptimal, with many mothers unaware of the appropriate timing and type of complementary foods, leading to stunting and wasting. Proper hygiene practices, such as handwashing before feeding, were reported by 95% of mothers, which is higher than in other studies, suggesting a positive impact on child nutrition (Bedada et al., 2021). Additionally, the preparation of separate meals for children was practiced by 75.8% of mothers, which indicates an awareness of the need for tailored nutrition, though this practice still needs to be more widespread.

Overall, our study highlights the severe stunting problem in rural areas, with 97.3% of children affected by mild to severe stunting. This underscores the urgent need for improved maternal education and feeding practices to address malnutrition and its long-term impacts on child health and development (Soliman et al., 2021). Enhanced community health programs focusing on maternal education, proper infant feeding practices, and nutritional supplementation are critical to mitigating the malnutrition crisis in these regions.

CONCLUSION

Adequate nutrition is critical for a child's healthy growth and development. Malnutrition, caused by a lack or excess of one or more important nutrients, is assessed through anthropometric indices like wasting, stunting, and underweight. This study concluded that malnutrition and poor growth are critical problems faced by almost all mothers in rural areas. Maternal feeding practices were found lacking, with many mothers starting complementary feeding without knowing the right age and quantity per WHO and IYCF guidelines. A common misconception identified is that mothers often stop breastfeeding when starting complementary feeds, although children still need breastfeeding. The study results indicate that stunting is more prevalent than underweight and wasting, with children's length not increasing as per their age. Mothers are trying their best to address these issues but need more guidance and support for their children's better growth and development.

Recommendations

- Further studies should focus on quality feeding practices and identifying additional reasons for malnutrition at the community level. Additionally, research should assess the effectiveness of training health care staff in nutrition and nutritional programs.
- Implementing nutritional assessment and screening training programs for staff at the community level is essential. These programs will help detect nutritional deficiencies in children at an early stage.
- Initiating nutritional management programs at the community level in rural areas is necessary for the future to address malnutrition and improve children's growth and development.

Limitations

- Maternal recall bias about feeding practices can affect the results. Study results could also be affected by confounding variable like cultural practices which is difficult to overcome.
- The current study is confined to only three MCH centers and its surrounding community in Lahore. A large scale study required to provide a broader image of the problem.

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