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FACTORS ASSOCIATED WITH MALNUTRITION UNDER FIVE YEARS CHILDREN AT LIAQUAT UNIVERSITY HOSPITAL, HYDERABAD

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Abstract

Objective: *To identify the factors contributing to malnutrition and determine its prevalence among children under five years at the pediatric ward and outpatient department (OPD) of Liaquat University Hospital, Hyderabad.*

Methods: *A descriptive cross-sectional study was conducted at the Pediatric Ward and Outpatient Department of Liaquat University Hospital, Hyderabad, between March and August 2025. Using convenience sampling, 384 children under the age of five were recruited. A structured questionnaire was used to collect data on socio-demographics, dietary practices, maternal education, breastfeeding, complementary feeding, and illness history. Anthropometric measurements were assessed according to the WHO growth standards. The collected data were analyzed using SPSS version 26. Data were summarized using frequencies and percentages, and the Chi-square test determined associations, with a significance threshold of $p \leq 0.05$.*

Results: *Among 384 children, 266 (69%) were malnourished. Malnutrition was higher among children aged 6–12 months, children from low-income families, and those whose mothers were illiterate. Maternal education, monthly income, exclusive breastfeeding, and frequency of complementary feeding were significantly associated with malnutrition.*

Conclusion: *Malnutrition among children under five is highly prevalent and is associated with socio-demographic, dietary, and healthcare-related factors. Interventions addressing maternal education, appropriate feeding practices, household food security, improving access to healthcare facilities, and maintaining proper sanitation are key strategies to reduce malnutrition among children.*

INTRODUCTION

Malnutrition remains a significant public health issue worldwide, especially affecting children below five years.[1] According to the World Health Organization (WHO), it refers to the inadequate, excessive, or imbalanced consumption of energy and essential nutrients. Malnutrition in pediatric populations includes under nutrition stunting, wasting, and underweight. [2] Stunting reflects chronic under nutrition resulting from prolonged inadequate nutrient intake, recurrent infections, or poor maternal health during pregnancy, and is associated with delayed growth and impaired

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cognitive development [3, 4] Wasting indicates acute malnutrition arising from sudden food shortages or illness, while underweight reflects both acute and chronic deficiencies. Over nutrition, though less prevalent in low-income settings, is increasingly observed in urban populations due to sedentary lifestyles and consumption of energy-dense, nutrient-poor foods. [5] Malnutrition compromises immune function, physical growth, cognitive abilities, and overall well-being, making early detection and timely interventions essential. [6] About 149 million children under five are stunted, 45 million are wasting, and 38 million are overweight or obese worldwide, demonstrating a high burden of malnutrition. [7] Low and middle-income countries carry the highest burden due to structural inequalities, poverty, and limited access to healthcare. The UN Sustainable Development Goals strive for sustainable food systems, better nutrition, and the eradication of hunger by 2030, emphasizing the urgent need to reduce child malnutrition globally. [8] In Pakistan, child malnutrition persists as a major health challenge, with the 2018 National Nutrition Survey reporting 40.2% are stunted, 17.7% are wasting, and 28.9% are underweight under five. [9] In Sindh province, prevalence is particularly high; stunting was 81.1%, wasting 18.2%, and underweight 57.3% among children under five. [10] Key contributing factors include maternal illiteracy, poverty, inadequate healthcare access, poor sanitation, suboptimal feeding practices, and recurrent infections. These factors underscore the urgent need to identify determinants of malnutrition in local settings to guide effective interventions.

Given the high prevalence and serious health consequences of malnutrition, this study aims to identify the factors contributing to malnutrition among children under five years at the pediatric ward and OPD of Liaquat University Hospital, Hyderabad. The findings will provide evidence to inform targeted interventions and public health measures to lessen undernourishment in this susceptible group.

Methodology

This descriptive cross-sectional study was conducted from March to August 2025 at the Pediatric Ward and OPD of Liaquat University Hospital, Hyderabad. Children aged 6–59 months and their parents were included. Exclusion criteria: children <6 months or >59 months, critically ill, congenital anomalies affecting growth, or parents refusing participation. A sample size of 384 was calculated using OpenEpi, assuming 50% malnutrition prevalence, 95% confidence, and 5% margin of error. Participants were selected using convenience sampling. Data were collected via a structured questionnaire adapted from the Pakistan National Nutrition Survey (2018), covering socio-demographics, maternal health, dietary practices, child health, and household environment. Anthropometry (weight, height, and MUAC) was recorded according to WHO standards, and nutritional status was assessed using the WHO Child Growth Standards. Data was analysed using SPSS v26. Descriptive statistics summarized frequencies, percentages. Chi-square tests assessed associations between categorical variables and malnutrition ($p<0.05$). Ethical approval was obtained (Ref: LUMHS/REC/652). Written informed consent was obtained from literate caregivers; verbal consent from those with limited literacy. Participation was voluntary and confidentiality was maintained.

Results

Prevalence of malnutrition

Among 384 children, 266 (69%) were malnourished, and 118 (31%) were non-malnourished (Figure 1).

Frequency of common illnesses among children in the past month (n = 384).

Diarrhea (40.1%) and weight loss (26.8%) were the most reported, followed by vomiting (14.3%) and fever (9.4%). Swelling and absence of symptoms were rare (0.5% and 2.6%) (Figure 2).

Socio-demographic Characteristics

Children aged 6–12 months comprised 42.7%, females 58.9%. Mothers were predominantly 15–19 years old (52.6%), with low education (no education 42.9%, primary 46.9%). Exclusive breastfeeding for six months occurred in 81.8%; complementary feeding typically began at six months (50.8%). Daily meal frequency was low (1–2 meals/day, 54.4%), and junk food consumption was high (67.9%) (Table 1).

Household, Maternal Health, and Healthcare Access

Most mothers did not receive prenatal care (75.3%) or adequate nutrition during pregnancy (66.9%).

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Chronic maternal health conditions were reported in 68%; regular health check-ups uncommon (12%). Approximately half of the children (50.3%) had access to safe drinking water and sanitation (49.6%). Low household income (<30,000 PKR) was reported in 69%; frequent food insecurity occurred in 52.3%. Larger households (>5 members) and long distances to health facilities (>10 km) were common (Table 2).

Associations of Key Factors with Malnutrition

Significant associations were observed for several child, maternal, and household factors (Table 3). Malnutrition was highest among children 6–12 months (χ^2=15.43, p=0.004) Children born to young mothers (15–19 years) (χ^2=18.23, p=0.001). Low maternal education strongly associated with malnutrition (χ^2=48.54, p=0.001). Low household income (<30,000 PKR, χ^2=72.25, p<0.001), frequent food challenges (χ^2=57.14, p<0.001), and junk food consumption (χ^2=48.30, p<0.001) were also significant. Child gender was not significantly associated (χ^2=0.63, p=0.425).

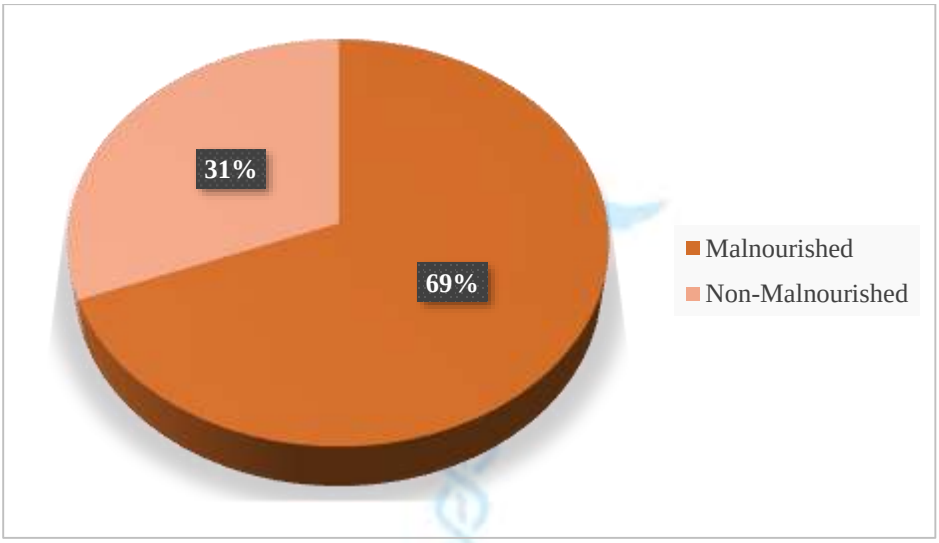


Figure 1: Prevalence of Malnutrition among Children

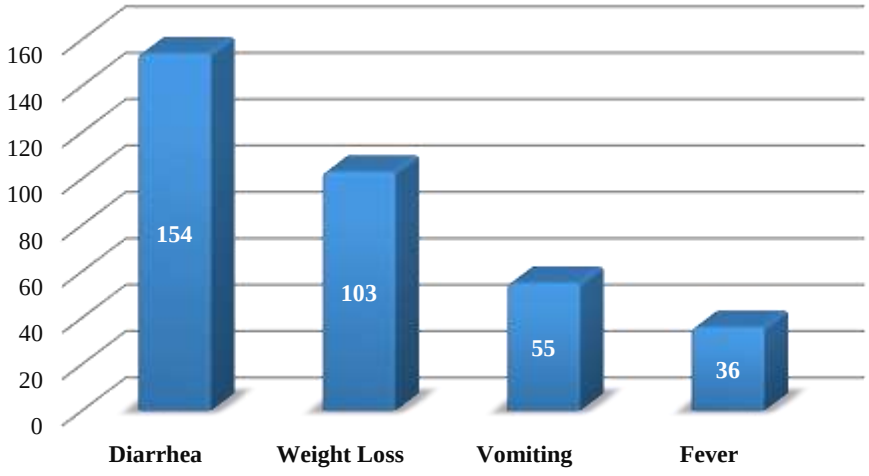


Figure 2: Frequency of common illnesses among Children in the Past Month

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Table 1: Demographic Characteristics of Children and Mothers (n = 384)
Characteristics (n = 384)

Variable	Category	Frequency (n)	Percentage (%)
Child Age (months)	6–12	164	42.7
	13–24	74	19.3
	25–36	48	12.5
	37–48	31	8.0
	49–59	67	17.5
Child Gender	Male	158	41.1
	Female	226	58.9
Mother Age (years)	15–19	202	52.6
	20–24	102	26.6
	25–29	45	11.7
	30–34	22	5.7
	≥35	13	3.4
Mother Education	No education	165	42.9
	Primary	180	46.9
	Secondary	11	2.9
	Higher Secondary	18	4.7
	Graduation	10	2.6
Exclusive Breastfeeding (first 6 months)	Yes	314	81.8
	No	70	18.2
Complementary Feeding Start Age	6 months	195	50.8
	7–8 months	110	28.6
	9–12 months	45	11.7
	>12 months	34	8.9
Meals Per Day	1–2	209	54.4
	3–4	166	43.2
	≥5	9	2.4
Junk Food Consumption	Yes	264	67.9
	No	120	30.8

Table 2: Household, Maternal Health, and Healthcare Access

Variable	Category	Frequency (n)	Percentage (%)
Prenatal Care Received	Yes	95	24.7
	No	289	75.3
Adequate Nutrition During Pregnancy	Yes	127	33.1
	No	257	66.9
Chronic Health Conditions (Mother)	Yes	261	68
	No	123	32
Health Check-Up Attendance	Regularly	46	12
	Occasionally	50	13
	Rarely	116	30
	Never	172	45
Sanitation Facilities	Yes	193	49.6
	No	191	50.3
Access to Clean Drinking Water	Yes	193	50.3
	No	191	49.7
Distance to Health Facility	<5 km	97	25.2

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	5–10 km	72	18.8
	>10 km	215	56
Household Income (PKR)	<30,000	265	69
	30,000–60,000	42	10.9
	61,000–90,000	25	6.5
	91,000–120,000	33	8.6
	>120,000	19	5
Challenges Affording Food	Often	201	52.3
	Sometimes	140	36.5
	No	43	11.2
Household Size	1–3	51	13.3
	4–5	144	37.5
	>5	189	49.2

Table 3: Associations of Key Factors with Malnutrition (n = 384)

Variable	Category	Malnourished n (%)	Non-Malnourished n (%)	χ^2	p-value
Child Age (months)	6–12	100 (37.6)	64 (54.2)	15.43	0.004
	13–24	50 (18.8)	17 (14.4)		
	25–36	61 (22.9)	13 (11.0)		
	37–48	37 (13.9)	11 (9.3)		
	49–59	18 (6.8)	13 (11.0)		
Child Gender	Male	113 (42.5)	45 (38.1)	0.63	0.425
	Female	153 (57.5)	73 (61.9)		
Mother Age (years)	15–19	158 (59.4)	44 (37.3)	18.23	0.001
	20–24	60 (22.6)	42 (35.6)		
	25–29	25 (9.4)	20 (16.9)		
	30–34	13 (4.9)	9 (7.6)		
	≥35	10 (3.8)	3 (2.5)		
Mother Education	No formal education	137 (51.5)	28 (23.7)	48.54	0.001
	Primary	118 (44.4)	62 (52.5)		
	Secondary	2 (0.8)	9 (7.6)		
	Higher secondary	7 (2.6)	11 (9.3)		
	Graduation	2 (0.8)	8 (6.8)		
Household Income	<30,000	216 (81.2)	49 (41.5)	72.25	0.001
	30,000–60,000	26 (9.8)	16 (13.6)		
	61,000–90,000	8 (3.0)	17 (14.4)		
	91,000–120,000	10 (3.8)	23 (19.5)		
	>120,000	6 (2.3)	13 (11.0)		
Challenges Affording Food	Often	169 (63.5)	32 (27.1)	57.14	0.001
	Sometimes	84 (31.6)	56 (47.5)		
	No	13 (4.9)	30 (25.4)		
Junk Food Consumption	Yes	212 (79.7)	52 (44.1)	48.30	0.001
	No	54 (20.3)	66 (55.9)		

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Discussion

This study revealed a high prevalence of malnutrition (69%) among children under five years. The highest vulnerability was observed in children aged 6–12 months (42.7%), consistent with the Pakistan National Nutrition Survey (2018), which reported that in Pakistan, 28.9% of children under five are underweight, 17.7% are wasted, and 40% are stunted. [9, 11] Children of adolescent mothers (15–19 years) exhibited higher malnutrition rates (59.4%, χ^2 = 18.23, p = 0.001), corroborating findings from Bangladesh, where adolescent childbirth adversely affects children's health and undernutrition.[12] However, some studies from Nepal reported no significant association between maternal age and child nutritional status, suggesting that socioeconomic and caregiving factors may mediate this relationship[13]. Maternal education was another determinant; Malnutrition prevalence was higher in children of mothers with no formal education (51.5%, p < 0.001), supporting evidence from Pakistan linking maternal illiteracy with poor feeding practices and undernutrition.[14] Larger families (4–5 children) had higher rates of malnutrition (46.2%, p < 0.001), consistent with resource dilution theory. Low household income (<30,000 PKR) was significantly linked to malnutrition (81.2%, p < 0.001), and frequent difficulty affording food was associated with higher malnutrition rates (63.5%, p < 0.001), reflecting findings from regional studies in Pakistan and Southeast Asia. [15, 16] In contrast, certain urban studies demonstrated weaker associations between household income and malnutrition, possibly due to enhanced access to fortified foods and healthcare services.[15] Early introduction of complementary foods at six months was significantly associated with malnutrition (p = 0.004), consistent with evidence from Nepal and Pakistan. [17, 18] Low meal frequency (1–2 meals/day, p = 0.013) and high consumption of junk food (67.9%, p < 0.001) were also associated with malnutrition, reflecting suboptimal dietary diversity and reliance on nutrient-poor foods, as reported in Pakistan, Mauritania, and other low- and middle-income countries.[19, 20]Health-related factors, including inadequate prenatal care, maternal chronic conditions, suboptimal child immunization (51.8%), and restricted access to sanitary facilities and clean water (50%), were linked to malnutrition, consistent with prior findings from Sindh and Quetta, Pakistan.[21, 22] Children living more than 10 km from health facilities were more likely to be malnourished (56%, p < 0.001), supporting evidence from rural Punjab, Pakistan.[23] Large sample, structured data collection, anthropometry, multiple contributing factors identified. This study was conducted at a single hospital, relied on caregiver self-reports (introducing potential recall bias), lacked biochemical assessments, and may have unmeasured confounding factors. Its cross-sectional design prevents causal inferences. Future research should employ multi-center, longitudinal approaches, incorporate biochemical evaluations, and examine seasonal, cultural, and behavioral determinants of malnutrition.

Conclusion

Malnutrition was found to be highly prevalent in children under five and was significantly associated with adolescent maternal age, low maternal education, large households, low income, early complementary feeding, low meal frequency, junk food consumption, inadequate prenatal care, maternal chronic conditions, suboptimal immunization, and limited water/sanitation access. Interventions should target these socio-demographic, dietary, and health-service factors.

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Disclaimer: The present study was undertaken for academic thesis purposes. This abstract is original and has not been published or presented elsewhere.

Conflict of interest: None

Funding disclosure: None

Authors' Contributions

MAT: Conception and design, data collection, drafted the manuscript.

HBC: Supervision, data interpretation, and critical revision of the manuscript.

ZJ: Statistical analysis, interpretation of results.

IAC: Literature review, data interpretation.

MUH: Data collection, tables, and figures.

SNS: Discussion.

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