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ORIGINAL ARTICLE

Nutritional Status and Related Factors of Children Attending Pediatric Outpatient Department at A Tertiary Care Hospital in Sindh, Pakistan

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ABSTRACT

Background: Malnutrition is a serious, common and potentially life-threatening complication being the most important cause in contributing to mortality and morbidity of children under five years of age. Although the term malnutrition is considered to include both undernutrition and over-nutrition, but the greater risk for mortality and morbidity rates are in undernourished patients.

Objective: To determine frequency of underweight, overwight, and related factors among children under 5 years of age.

Duration and Place of the study: This cross-sectional research was conducted at Pediatric OPD, Peoples University of Medical and Health Sciences for Women (PUMHSFW) Hospital, Nawab Shah between 5.10.2019 to 04-04-2020

Material and Methods: The study enrolled 377 children under five years of age. Data were collected through interviews with mothers/caregivers, anthropometric measurements, and WHO growth charts for Z-scores of weight-for-age (W/A), weight-for-height (W/H), and height-for-age (H/A).

Result: Out of 377 study subjects, 42.44% mothers were educated, 53% breasted exclusively and 47.57% children were immunized. Out of 377 children 92.31% were underweight, 95.76% stunted and 85.41% wasted. 81.96% had all three conditions of underweight, stunted and wasted. Among underweight, 43.10%, stunted 44.32% and wasting 32.61% mothers were educated. Age of the mother in underweight was 14.37% less than 20 years of age, 63.22% between 20 to 35 years and 22.41% were 35 years and above. In stunted, 14.96% were less than 20 years of age, 62.05% between 20 to 35 years and 22.99% were 35 years and above. Among wasted, 13.98% were less than 20 years of age, 62.11% between 20 to 35 years and 23.91% were 35 years and above.

Conclusion: The study findings reveal the high prevalence of underweight 92.31%, Stunting 95.76% and wasting 85.41% (322) which are almost double of the national as well as Sindh figures documented in community-based surveys like NNS 2018, PDHS 2018 and MICS 2019.

Keywords: Malnutrition, Underweight, Stunting, Wasting, Overweight, Breastfeeding, Pakistan.

INTRODUCTION

Nutrition is a science of food and its relationship to health. In children risk of infections and nutritional deficiencies are common below five-year age as it is growing period as different environmental factors are also involved.[1] In children under five years age malnutrition causes marked mortality and morbidity. Malnutrition impairs physical as well as mental growth of children and also causes impaired immunity development which increases risk of diseases and thus contributing to increased death in that age groups. Malnourished children include both overnutrition and undermentioned but it is undernutrition which causes almost 50 percent death in this age group.[2] Several factors affect child nutritional status of which some include improper breast feeding, inadequate or improperly formulated formula feeding. Other common factors include number of children, and multiple episodes of infectious diseases, improper hygiene and availability of vaccine. These all contribute to malnourishment and making children vulnerable to different diseases and deficiencies of minerals and vitamins thus increasing mortality and morbidity.[3] According to World Health Organization about 45 percent deaths in less than 5-year age group children are due to undernutrition and total undernourished children in the world are approximately 165 million.[4]

Through several decades malnutrition has been recognized as major contributor in under 5 years mortality in Pakistan and still country is suffering from high rates of childhood malnutrition.[5] Paediatrics patients's assessment includes nutritional staus of children and includes evaluation by anthropometric measures, clinical, biochemical and dietary methods.[4] Anthropometric measurements include length, height, head circumference and weight. There are different indices used to asses Height, Weight and Wasting of the pediatric population and those can be used to asses status of children's.

In Pakistan a Survey called National Nutrition Survey (NNS) 2018 showed 40.2% of children below 5-year age have limited growth, 28.9% are underweight, 17.7% are wasted and 9.5% are overweight. Prevalence in rural under children's of less than 5 yr age for limited growth is 43.2%, Low weight 31.6%, wasting 18.6% and overweight 9.4%. Among urban children's of less than 5 years, 34.8% have limited growth, 24% are underweight, 16.2% are wasted and 9.6% are overweight, respectively.[6]

According to data in Pakistan Demographic and Health Survey (PDHS) 2012-13[7], 45% were stunted and 24% were severely stunted, 30% were underweight and 10% are severely underweight and 11% were wasted. According to MICS 2014,[7] the prevalence of underweight among children under 5 years of age in Sindh was 42%, wasting was 15.4% and stunting was 48%. According to data in PDHS 2017-18 in Pakistan Stunting is 38% (which is 33% at birth and 69% at the age of 58 moths), Underweight is 23% (which is 11% at birth and 55% at the age of 58 moths) and Wasting is 7% (which is 7% at birth and 13% at the age of 58 moths). However, in Sindh Stunting is 49.9%, Wasting 11.7% and underweight 40.2%[8].

Identifying the nutritional status in time will help manage children as per national Integrated Management of Neonatal and Childhood Illness (IMNCI) guidelines and provide the individuals with proper nutritional counselling and management.

METHODOLOGY

This cross-sectional study will be conducted at the Pediatric Outpatient Department (OPD) of Peoples University of Medical and Health Sciences for Women (PUMHSFW) Hospital, Nawab Shah, over a period of six months following the approval of the synopsis. A total of 377 children under five years of age attending the OPD will be included using a convenience sampling technique. The sample size has been determined using the RaoSoft sample size

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calculator with a 5% margin of error, a 95% confidence level, and a 50% response rate.

Children up to five years of age attending the OPD will be included, while those whose parents or caregivers do not provide consent will be excluded. Verbal and informed consent will be obtained from the mother or caregiver before data collection.

Distribution of Underweight, stunting and Wasting N= 377		
Category	Number	%
Underweight	348	92.31
Stunting	361	95.76
Wasting	322	85.41
Mix (U+S+W)	309	81.96

Anthropometric measurements will be recorded, including height (measured in centimeters with 0.10 cm precision) and weight (measured in kilograms with 0.1 kg precision). These measurements will be plotted on WHO Child Growth Standards charts using length/height-for-age, weight-for-age, and weight-for-height indicators. To control confounding bias, restrictions will be applied during data collection.

Data Analysis: Data will be analyzed using SPSS version 20. Quantitative variables will be assessed to determine the frequency of underweight, stunting, wasting, overweight, and associated factors. Descriptive statistics will be used to present findings in terms of percentages. Stratification will be employed to control for confounding variables. The T-test and Chi-Square test will be used to determine statistical significance, with a p-value of <0.05 considered significant. A 95% confidence interval will be applied to ensure the reliability of results.

RESULTS

Study was conducted on about 377 children who met the inclusion criteria. Overall, out of 377 cases, 160 (42.44%) mothers were educated, 217 (57.56%) uneducated, 200 (53.09%) children were exclusively breastfed, 177 (46.95%) were bottle feeding, children of 180 (47.57%) mothers were immunized and 197 (52.25%) were unimmunized. Out of 377 cases, 348 (92.31%) were underweight, 361 (95.76%) were stunted and 322 (85.41%) were wasted. Among 377 children, 309 (81.96%) had all three conditions of underweight, stunted and wasted as shown below in table 1.Educational status of mothers are given under table 2. Age of the mother in underweight was 50 (14.37%) less than 20 years of age, 220 (63.22%) between 20 to 35 years and 78 (22.41%) were 35 years and above. In stunted, 54 (14.96%) were less than 20 years of age, 224 (62.05%) between 20 to 35 years and 83 (22.99%) were 35 years and above. Among wasted, 45 (13.98%) were less than 20 years of age, 200 (62.11%) between 20 to 35 years and 77 (23.91%) were 35 years.

Table 1: Frequency of Underweight, Stunting and Wasting

Immunization Status				
Category	Immunized	%	Unimmunized	%
Underweight	180	51.72	168	48.28
Stunting	180	49.86	181	50.14
Wasting	125	38.82	197	61.18

Table 2: Educational Status of Mothers

Education of Mother				
Category	Educated	%	Uneducated	%
Underweight	150	43.10	198	56.90
Stunting	160	44.32	201	55.68
Wasting	105	32.61	217	67.39

Among underweight, space between two births less than 2 years was in 118 (33.91%) and 2 years and above in 230 (66.09%). In stunted, 150 (41.55%) had space less than 2 years and 211 (58.45%) had space of 2 years and above. In wasted, 95 (29.50%) had space less than 2 years and 227 (70.50%) had space of 2 years and above as shown in figure 1. Among underweight, 90 (25.86%) mothers had number of children less than 3, 108 (31.03%) had 3 to 5 and 150 (43.10%) had 5 or more children. In stunted, 89 (24.65%) mothers had number of children less than 3, 126 (34.90%) had 3 to 5 and 146 (40.44%) had 5 or more children. Among wasted, 50 (15.53%) mothers had number of children less than 3, 72 (22.36%) had 3 to 5 and 200 (62.11%) had 5 or more children. Among underweight, 200 (57.47%) children were exclusively breastfed and 148 (42.53%) were bottle-fed. Among stunted, 184 (50.97%) children were exclusively breastfed and 177 (49.03%) were bottle fed. Among wasted, 150 (46.58%) children were exclusively breastfed and 172 (53.42%) were bottle-fed as shown in figure 2. Among underweight, 180 (51.72%) children were immunized properly according to their age and 168 (48.28%) were unimmunized. Among stunted, 180 (49.86%) children were immunized properly according to their age and 181 (50.14%) were unimmunized. Among underweight, 125 (38.82%) children were immunized peoperly according to their age and 197 (61.18%) were unimmunized.

Figure 1: SPACE BETWEEN TWO BIRTHS

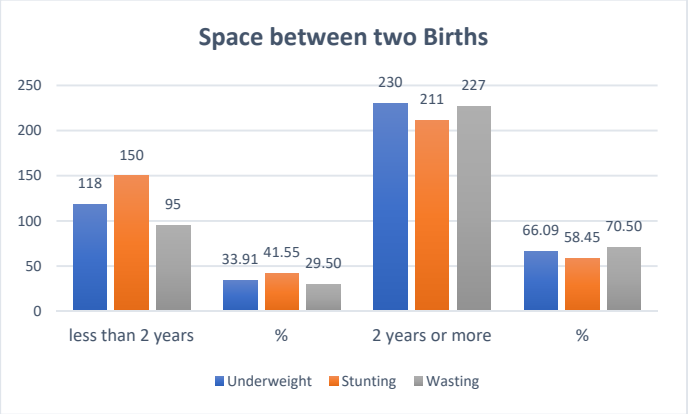

Figure 2: EXCLUSIVE BREASTFEEDING

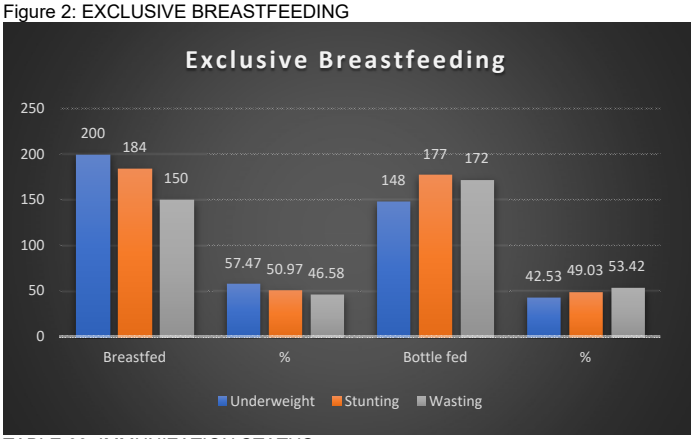

TABLE 03: IMMUNIZATION STATUS

DISCUSSION

The current research was completed in 6 months at Pediatric OPD, Peoples University of Medical and Health Sciences for Women (PUMHSFW) Hospital, Nawab Shah. The aim of the research is to document nutritional status and related factors among children under 5 years of age attending OPD in a tertiary care hospital of Sindh, Pakistan and compare the prevalence with Sindh as well as national prevalence of different states of malnutrition in Pakistan.

Malnutrition contributes to various health issues in this age group, timely recognition of nutritional status helps rational management as per national Integrated Management of Neonatal and Childhood Illness (IMNCI) protocols and provide the

individuals with proper management and nutritional counselling. A written and informed consent from caretaker/mother of all children meeting the inclusion criteria was solicited. The study sample was 377 out of which 92.31% (348) were found underweight, 95.76% (361) were suffering from Stunting and 85.41% (322) were suffering from wasting. According to National Nutritional Survey (NNS) 2018, Pakistan the prevalence of Underweight 28.9%, Stunting 40.2%, Wasting 17.7% and Overweight 9.5% was recorded among children under 5 years of age. Where as in Sindh, the prevalence was 41.3% Underweight, 45.5% stunting, 23.3% wasting and 5.2% overweight respectively.[9] While Pakistan Demographic and Health Survey (PDHS) 2017-2018 revealed underweight 23%, stunting is 38%, and wasting is 7%. However in Sindh underweight 40.2%, Stunting is 49.9% and Wasting was found 11.7%.[10] According to Multiple indicator cluster surveys (MICS) Sindh 2018-2019, underweight 41%, stunting is 50%, wasting 15% and overweight 4% (the indicators are also reflected in SDG 2.2.1 and 2.2.2)[11], findings in our study reveals a higher frequency of the underweight, stunting as well as wasting. However overweight was 0% among study population which reflects the burden of nutritional conditions among populations in general and sick children in particular. Exclusive breast feeding protects the children from infection as it contains multiple factors that has the anti-infective properties so protects the baby against infection of respiratory system and gastrointestinal problems and boost the child's immune system. Our study revealed that out of 377 children, 200 (53.09%) were exclusively breastfed whereas 177 (46.95%) were on bottle feeding. According to National Nutritional Survey (NNS) 2018, 48.4% children in Pakistan receive exclusive breastfeeding with Sindh having ratio of 52.3%.[12] According to Pakistan Demographic and Health Survey (PDHS) 2017-2018, only 48% of the infants were exclusively breastfed.[13] The study finding show comparative advantage of breastfeeding among nutritionally compromised study population. Our study shows that 180 (47.57%) children were immunized and 197 (52.25%) were unimmunized leading to increased ratio of stunted and wasted children. A study done by Salcedo et al shows that 96.3% of the children got vaccination as per guidelines mentioned age, only 4.6% of the children are poorly vaccinated and having the higher risk of getting underweight, while 12.1% are malnourished.[14]

The risk of being underweight, stunting and wasting is related to number of siblings, as majority of children are those who have ≥5 siblings. Among underweight, 26% mothers had number of children less than three, 31% mothers had number of children between 3 & 5 and 43% mothers had 5 or more children. In stunted, 24.65% mothers had number of children less than three, 34.90% mothers had number of children between 3 & 5 and 40.44% mothers had 5 or more children. Among wasted, 15.53% of mothers had number of children less than three, 22.36% mothers had number of children between 3 & 5 and 62.11% mothers had 5 or more children. This could be because families with more children gets less attention and care as needed. Similar findings were reported by Sengupta et al in her study who reported risk of getting underweight, stunting and wasting is proportionate to the number of children.[15] It is necessary to educate the mothers about how to well-nourish the child, as the literature found that educated mother always have a good knowledge about the child's nutrition. In our study 160 (42.44%) mothers were educated, 217 (57.56%) uneducated. Nandini et al conducted a study which favors this by showing highest proportion of underweight, stunting as well as wasting was documented in uneducated mothers.[16]

CONCLUSION

The study findings reveal the high prevalence of underweight 92.31%, Stunting 95.76% and wasting 85.41% (322) which are almost double of the national as well as Sindh figures documented in community based surveys like NNS 2018, PDHS 2018 and MICS 2019. The study findings of immunization, exclusive breastfeeding, number of siblings and mothers education are in line with the contemporary literature as well as national level population based survey findings.

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