ORIGINAL ARTICLE

Prevalence of Malnutrition in Children Under 5 Years of Age in Batkhela Tehsil, KPK, Pakistan

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ABSTRACT

Objective: To find out the prevalence of malnutrition in children under five years of age in a local population.

Study Design: A descriptive cross-sectional study.

Place and Duration of Study: Department of Paediatrics, Tehsil Headquarter Hospital Dargai, Malakand District from 1st July 2022 to 31st Dec 2022.

Materials and Methods: A total of 156 children were included in the study. Demographic details like age, gender and weight were recorded. All children underwent malnutrition assessment as per operational definition using WHO Software. Data analysis was done using SPPS Version 24.

Results: A total of 156 children were included in this research survey. Mean age and weight were 4.1±0.69 years & 12.8±0.94 kg respectively. A total of 51.28% children were between 3months to 3 years of age and 48.71% belonged to 4-5 years age group. Amongst them, 71.15% were males and 28.84% were females. Approximately 72.3% of the children were from families with a lower socio-economic status, while 19.23% and 8.33% were associated to the middle class and well of categories, respectively. Literacy rate of fathers was 44.87%. Regarding mothers, 85.25% were housewives, and 14.75% were employed. As per frequencies and percentages for malnutrition, 57 (36.35%) patients were recorded with malnutrition.

Conclusion: Prevalence of child malnutrition is notably elevated among children below the age of five. This phenomenon is more commonly observed among children whose mothers are housewives, predominantly due to factors associated with limited educational attainment and constrained socioeconomic status.

Key Words: *Children, Malnutrition, Stunting, Underweight, Wasting.*

Introduction

Under five year malnutrition in paediatric population is global issue with dire consequences not only on survival of children but also has harmful effects on cognition & physical growth of children.[1,2] Globally 70% of undernourished paediatric population belongs to lower income regions like Asian subcontinent & African continent.[3] Malnutrition accounts for 45% of mortality in children younger than 5 years of age and contributes to more than 3 million deaths every year.[3,4,5]

According to United Nation report acute malnutrition affects 8% of children across the world. Almost one in twelve children are affected in the age group of one to five years.[1,6] More than 50% cases of childhood mortality results from acute malnutrition with resulting 3.5 million deaths annually in children below 5 year.[7] Wasting (moderate to severe) another predictor of under nutrition effects 52 million children below five years of age with an estimated 5% of children suffering from severe wasting.[8] Approximately two third & one third of all wasted children live in Asia & Africa respectively. South Asia having highest prevalence of wasting with weightage of 16%. Out of its India having highest number around 25 million children with moderate to severe wasting, which was approximately 16%.[9] Around one third of under five-year children's moralities are attributed to malnutrition. Cchildhood malnutrition is still prevalent in Asian & African continent with prevalence of stunting, wasting and underweight as 39%, 10 %, & 25 % respectively in children under 5 years of age.[10,11]

Malnutrition leads to greater risk of mortality & morbidity due to common paediatric infections like

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diarrhoeal illnesses, malaria, pneumonia, measles & human immunodeficiency virus. Malnutrition has both acute & long-term side effects. Its acute side effects include mortality and morbidity. In long term malnourished children don't achieve full developmental milestones and have poor cognition. Pakistan is among the developing countries having highest rates of child malnutrition. Improvement & progress in child health & nutrition remains slower in Pakistan than rest of South Asian countries due to economic instability, poor health policies & lack of state interest in such matters.[12]

There is limited data available about childhood malnutrition in our general population. Only two studies from Sindh & KPK province have been found so far and their results cannot be generalized on all Pakistani population due to difference of geographical location. [12,13] Rationale of study is not only to investigate the prevalence of malnutrition in children below five years of age but also to evaluate the risk factors associated with malnutrition in a rural setting. The result of this study will help in estimating the actual burden of malnutrition in our local paediatric population under 5 year of age. The study will serve as baseline indicator for finding magnitude & factors related to malnutrition & will help policy makers to make policies to address this issue in rural areas of KPK. It will help to make nutritional interventions for catch up growth for children under five years of age. So, a study was planned with an objective to find out the prevalence of malnutrition in children of the local population less than 5 years of age.

Materials and Methods

It was a descriptive cross-sectional study with non-probability consecutive sampling carried out at Department of pediatrics, Tehsil Headquarter Hospital Dargai from 01 July 2022 to 31st Dec 2022. A total of 156 children were included in the study. Sample size was calculated by the formula n = z2 pq/d^2 (p=35.5%. q= 1-p and d= 7.5% with confidence level of 95%**)** Approval was taken from ethical committee comprising of District Health officer Batkhela via letter No 3898-390 dated 06/2022. Children between three months to five years of age of both genders were included in the study. Children with tuberculosis on medical history, born either premature or small for gestational age on medical record, those having history of congenital anomalies of the kidney and urinary tract and anatomical abnormalities like hydronephrosis, vesicoureteric reflux or nephrolithiasis on medical record(History, Examination and Ultrasound findings) and parents' refusal for consent were excluded from study. Malnutrition was defined by WHO standard chart assessing both weight and height and plotting them on growth charts.[1] Stunting, Wasting and Underweight were defined as weight for age, height for age and weight for height with a Z score below two standard deviations respectively. Demographic data like age, gender and weight was noted. For children up to two-years of age tared weighing was done. All children underwent malnutrition assessment as per operational definition using WHO software.[1] Data was registered according to operational definitions & its analysis was done using SPSS version 24. Frequency and percentage were recorded for gender, father education level, economic status, mother occupation and malnutrition. Mean and standard deviation were noted for variables like age and weight. Effect modifiers like age, gender, father's education level, economic status, mother's occupation, and weight were controlled by stratification. Post stratification Chi square test was applied for data analysis. *p* value of equal or less 0.05 was considered statistically significant.

Results

A total of 156 children were included in the study. Mean age and weight were 4.1±0.69 years & 12.8±0.94 kg respectively.

Frequency and percentage of age, gender, father's educational status, family's economic status, mother occupation, malnutrition are shown in Table I. Study results revealed that 80 patients (51.28%) were within the 3 months to 3 years age group. Of the total 156, 111 patients (71.15%) were male, and 45 patients (28.84%) were female. Regarding parental education, 86 (55.12%) were not educated. In terms of economic status, 113 patients (72.43%) came from poor families. Moreover, 133 patients' mothers (85.25%) were housewives. Regarding malnutrition, the data revealed that 57 patients (36.35%) were diagnosed with malnutrition.

Post stratification chi square test was applied. Stratification of malnutrition with age, gender,

educational status, economic status, mother occupation, malnutrition is shown in Table II.

Table I: Frequency and Percentage of Age, Gender, Parents' Educational status and Economic Status, Mother Occupation, Malnutrition (N=156)

	Frequency	Percentage
Age Group		
3Year-3Months	80	51.28%
4-5 Years	76	48.71%
Gender		
Male	111	71.15%
Female	45	28.84%
Education Status		
Literate	70	44.87%
Illiterate	86	55.12%
Economic Status		
Poor	113	72.43%
Middle Class	30	19.23%
Rich	13	8.33%
Mother Occupation		
Housewife	133	85.25%
Employed	23	14.75%
Malnutrition		
Yes	57	36.35%
No	99	63.46%

Table II: Stratification of Malnutrition by Gender, Parents' Educational status and Economic Status, Mother Occupation, Malnutrition (N=156)

	Malnutrition	Frequency	Percentage	P Value
Gender Male	Yes	43	27.56%	0.370
	No	68	43.58%	
Female	Yes	14	8.97%	
	No	31	19.87%	
Father Education Status				
Literate	Yes	21	13.46%	0.156
	No	49	31.41%	
Illiterate	Yes	36	23.07%	
	No	50	32.05%	
Mother Occupation				
Housewife	Yes	49	31.41%	0.849
	No	84	53.84%	
Employed	Yes	08	5.12%	
	No	15	9.61%	
Economic Status				
Rich	Yes	01	0.64%	0.037
	No	13	8.33%	
Middle Class	Yes	14	8.97%	
	No	16	10.25%	
Poor	Yes	42	26.92%	
	No	70	44.87%	
Weight				
≤ 3 kg	Yes	34	21.79%	0.038
	No	42	29.92%	
> 3 kg	Yes	23	14.74%	
	No	57	36.53%	

Discussion

In our study, the mean age and weight of study participants were 4.1+0.69 years & 12.8+0.94 kg, respectively. 51.28% children were in the 3 months to 3 years age group while 48.71% were in 4-5 years age group. Male to female were 71.15% and 28.84% respectively. 44.87% of fathers were literate and 55.12% were illiterate. 72.43% belonged to low socioeconomic status. 19.23% of patients were from middle class families and 8.33% were from rich families. 85.25% mothers were housewives and 8.55% were employed. Frequencies and percentages for malnutrition showed that 36.35% children were recorded with malnutrition.

In their study, Khan GN et al in their study found that prevalence of stunting, underweight and wasting were 48.2%, 39.5% & 16.2% respectively with male predominance, (51 % being male, p=< 0.001).[12] It is consistent with our study findings. Namusoke M et al in their study found 52 % of children were below 1 year of age, 30% between 1 to 2 years of age & 12 % between 2 to 3 years of age and low socioeconomic status was considered the major factor contributing to malnutrition in below 5 years of age along with other factors like low parental education, chronic ailments, large family size, delayed introduction of weaning foods.[13] Pomati M et al, found out in their study that 48% of all children under 5 years of age experienced some form of malnutrition with prevalence of stunting, underweight & wasting 38%, 12% & 23% respectively in children below 5 years of age. All these finding is consistent with our study results. [13,14]

Modgadi p et al [11] stated that social & economic factors contributing to childhood malnutrition were

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maternal illiteracy, marriage at teen age with multiple pregnancies and no birth spacing. Mangahwar P et al [15] and Das JK et al [16] determined in their respective studies that poverty, illiteracy, overcrowding, and low income were major contributing factors in childhood malnutrition. Parental education, socioeconomic status and family size have a direct association with childhood malnutrition. All these are consistent with our study findings in terms of socioeconomic status, mother illiteracy and incidence of malnutrition.

Makanjana O et al & Asim M et al et al found in their studies that lack of education, breastfeeding practices, weaning practices and large family sizes were associated with child malnutrition.[17, 18] Lagahri ZA et al [19] pointed out that malnutrition association with family member with special needs & maternal literacy rate exists. Families with high illiteracy rate, low socioeconomic status, large family sizes are among the contributing factors in childhood malnutrition. All these study findings are consistent with our study results.

Kureishy S et al [20] found that lack of food, maternal education, large family, and insufficient knowledge of childcare practices lead to stunting in paediatric population. Ahsan S et al & Asim S et al [21, 22] in their studies concluded that lack of immunization, large family with lack of birth spacing & early marriages are major contributing factors leading to childhood malnutrition. According to a National survey, conducted in Pakistan [3] factors leading to stunting were poor socioeconomic status, lack of immunization practices, education and birth spacing with large families living in small rooms. All these observations were consistent with our study findings. Sheikh SA et al [22] identified lack of birth spacing with inter pregnancy interval of less than two years between two pregnancies was the contributing factor in stunting in children in District Dadu of Sindh province. All these observations are consistent with our study results. Study carried out by Kosaka s et al & Kalu RE et al showed similar incidence of malnutrition with same contributing factors as observed in our study in children under 5 years of age.[23,24]

Lack of both qualitative & mixed method studies on etiologies of Paediatric undernutrition exists in Pakistan. Frequency of all types of undernutrition in our country especially rural areas is higher than that of rest of neighboring regions. Children between six to twenty-four months of age are considered the most vulnerable but were entirely neglected in most of local studies.

Limitations of our study include limited time duration of study and smaller sample size. Children should have been followed up after nutritional management to assess the outcome. Locally devised assessment tools should be designed for development of assessment because tools used globally ain't suitable for our local population.

Conclusion

The prevalence of child malnutrition is notably elevated among children below the age of five. This phenomenon is more commonly observed among children whose mothers are housewives, predominantly due to factors associated with limited educational attainment and constrained socioeconomic status.

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CONFLICT OF INTEREST

Authors declared no conflicts of Interest.

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DATA SHARING STATMENT

The data that support the findings of this study are available from the corresponding author upon request.