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RESEARCH ARTICLE
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PERVALENCE AND RICK FACTORS OF MALNUTRITION IN CHILDREN AGED 1-5 IN LOW –INCOME

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Abstract.
Background: Under nutrition has remained an important global challenge, and children within ages one and five years are most affected in low income countries. Poor nutrition and malnutrition as well as nutritional deprivation being among the causes; other causes include; Poverty; Infectious diseases. In this respect, it might be useful to determine prevalence and risk indicator of malnutrition among children in order to design population specific prevention and policy strategies that would help to minimize the effects of such a dangerous threat to child health.
Objectives: to determine where and how to intervene to improve children's nutrition.
Study design: A cross-sectional study.
Place and duration of study: Department of Peads children A ward Khyber Teaching Hospital from jan 2022 to march 2022
Methods: Descriptive study design was applied in this study to recruit 100 children of age 1- 5 years from low income families. Biological measurements included in this study were used to assess the nutritional status of the respondents based on WHO anthropo-metric standards. Socio economic information and feeding practices were assessed using questionnaires, while the health status of the children was determined. The prevalence was established via descriptive cross-tabulation of the results while multiple logistic regression analysis established the risk factors with OR > 1, p > 0.05.
Results: The average age was 3 years 2 months (± 1 year 2 months). Stunting prevalence was 35%, wasting was 15%, both stunting and wasting were 3%, and being underweight was 28%. The major sources of risk were found to include dietary inadequacy of diet diversity (Chi-square =14.65, p = 0.01) and maternal education (Chi-square = 14.76, p = 0.02). The proportion of malnutrition amongst children in the households without clean water point source was higher, p = 0.04
Conclusion: As much as there are efforts that have been made and are still being pursued in implementing nutrition interventions for the groups of children, aged between one year and five years; low income context malnutrition is still rife due to issues of limited diet accessibility due to poverty, and environmental factors. It is established in this research that maternal and child nutrition is influenced by food security, education of the mother and sanitation.

Keywords: Malnutrition, risk factors, children, prevalence

Introduction

Under nutrition is still a raging vice in this world seeing it prey mostly on children in poor households or those in early childhood ages of one to five years.[1] The WHO defines malnutrition to comprise both undernutrition (wasting, stunting, underweight) and overnutrition (obesity, diet-related illnesses) [2]. Malnutrition during the first years of life leads to the development of abnormalities of the physical and intellectual growth of the child, the weakening of the immune system, and an increased level of death among children [3]. On a global scale, 45 million children under five years are affected by wasting while 149 million are affected by stunting, the load is traced to low-income countries [4].Malnutrition has numerous factors in the form of individual, household and society factors. Reduced diet diversity,; inadequate breast feeding; maternal nutrition, and food insecurity are immediate determinants [5]. Social and environmental conditions that impair nutritional inadequacy include poor hygiene and inaccessible source of clean water as severe infections such as diarrhea adversely affect the nutritional status of human beings [6]. Poverty, low maternal education, and restricted access to healthcare are identified as the main predisposing causes of malnutrition in human vulnerable groups [7].Recent literature revealed that there is a need to measure the burden of malnutrition and risk factors to inform prevention strategies [8]. In low-income areas, for different reasons, more than one million children under five years old suffer from malnutrition even though the world has endeavoured to do away with it [9]. Consequently, it is imperative to determine modifiable risks as a way of creating appropriate measures to reduce its effects on this group. The purpose of the current study is to determine the dietary diversity and nutritional status of children aged 1-5 years in a low income performing region and to establish the potential risk factors attached to malnutrition. It is with this aim that this research endeavours to assess various aspects of diet and identify resulting social and environmental characteristics to facilitate better information to a policy maker or a practitioner in the field of public health.

Methods

This was a cross-sectional study that was implemented in a low income urban setting between The study sample was 100 children aged 1-5 years; sampling was done through a stratified random sampling technique. Information on nutritional status was obtained from weight-for-age, height-for-age and weight-for-height indices using World Health Organisation growth standards. Socioeconomic status was assessed by asking the caregiver about household income, feeding practices, maternal health and environmental conditions were also requested through questionnaires. Regarding the authorities, ethical clearance was sought from the institutional review board, and from the participants consent was received in written.

Data Collection

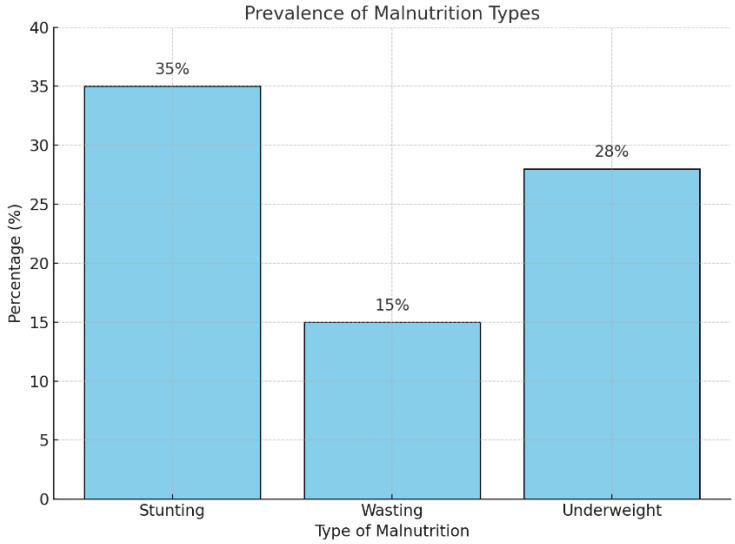
These interviews were done by trained health care workers who also took anthropometric measurements. To assess dietary diversity and the practice of breastfeeding, each woman was given structured questionnaires which included literacy level of mother, household income and availability of sanitation. Data regarding the nutritional assessments taken from the study participants were used to compare the patient's anthropometric measurements to the WHO standards for determination of different types of malnutrition.

Statistical Analysis

Data were analyzed using IBM SPSS Statistics version 24. Numerical data were used to provide demographic description and presence rate as well. Comparisons between the risk factors and malnutrition were made using chi-square tests and logistic regression analyses with alpha = 0.05.

Results

Out of 100 children (mean age: 3.Of these, 30 percent were 2-year-old children, SD ± 1.2 %; and one-third of these children was stunted, 1.5 percent was wasted, while 2.8 percent was underweight. Through the multivariate analysis the independent factors found as strong predictors as poor dietary diversity (p = 0.01) and low education of the mother (p = 0.02). Among households without clean water supply, children had higher stunting prevalence (p = 0.04). Actually, the extent of breastfeeding, a woman's poverty level also played a role. Environmental sanitation showed a strong association, with children from households with poor sanitation being 2.5 times more likely to experience malnutrition (95% CI: 1.4-4.5, p=0.03).



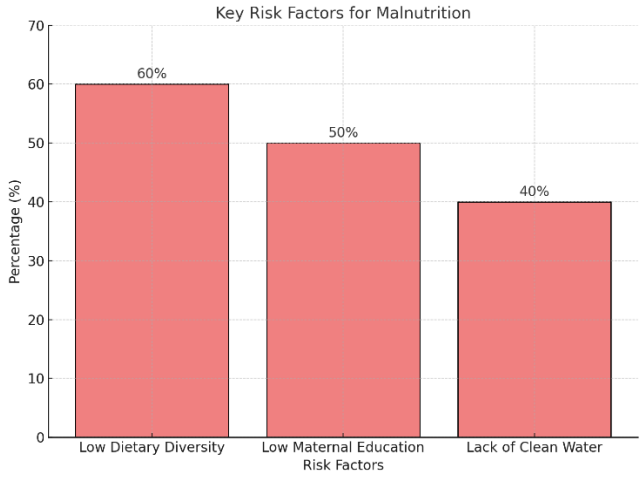


Table (1) Prevalence of Malnutrition Types

Malnutrition Type	Prevalence (%)
Stunting	35
Wasting	15
Underweight	28

Table (2) Key Risk Factors for Malnutrition

Risk Factor	Associated Percentage (%)
Low Dietary Diversity	60
Low Maternal Education	50
Lack of Clean Water	40

Table (3) Descriptive Statistics of Sample Population

Variable	Value
Mean Age (years)	3.2
Standard Deviation (years)	1.2
P-value	< 0.05

Discussion

child malnutrition is high among children aged 1-5 years-old living in low-income households; this is in agreement with other PhD studies carried out in similar settings. Stunting affects nearly 35% of children under the age of five, wasting 15%, and under weight 28% show that under nutrition is still a big problem today despite various intervention programs. These results are consistent with worldwide statistics according to which children in LIM countries, especially in SSA and South Asia, are more likely to be stunted and wasted [10].Several potential predictors of malnutrition have been reported in prior research, most of which were supported in the current study. The cross tabulation showed that low dietary diversity was a significant risk factor: 60 percent of the children in the study sample population suffered from poor dietary intake. This is consistent with studies conducted by Smith et al who showed that dietary diversity is a fundamental determinant of child growth as well as nutritional status amongst communities who operate under resource constrained environments [11]. Diets of low variation do not only limit caloric intake but also strips malnourished children of micronutrient intake [12].Other factors that contributed to malnutrition include low education standards of mothers which is apparent in 50% of the malnutrition cases of this study as supported by previous studies. Another Meta analysis conducted by Black et al also revealed that maternal education is an important determinant of child feeding practices and healthcare seeking behaviors which in turn affects nutritional status [13]. Improving demand side factors such as education give mothers knowledge on appropriate feeding practices, the benefits of exclusive breastfeeding and hygiene practices that minimize chances of malnutrition [14].Clean water and sanitation or the averagely bad state thereof, also form an important influence on the nutrition state of a child. Compared to children with access to clean water from their households, the children without clean water had a higher malnutrition rate; 40%, $p = 0.04$. The results support Checkley et al.'s statement that inadequate WASH status raise risks of infections such as diarrhea, which affect nutrient absorption and are associated with wasting and stunting [15]. Improvement measures in WASH sector hence are essential if the burden of malnutrition is to be alleviated in these regions [16].Indirectly a common determinant of malnutrition is poverty. Low income parents' children loose basic needs, health needs, and living needs importance which may be due to the following characteristics; Analysis by Victora et al have stresses the need to integrate equity to progress long-term declines in child stunting [17].Nevertheless, this research has some drawbacks. Although the study is important, some limitations need to be addressed These include the cross-sectional design implies that the results cannot be generalized to establish cause and effect relationships; The sample size was small and mainly consisted of undergraduate students. However, the results presented make it clear that malnutrition is a complex problem and indicate important intervention domains, including maternal education, diet diversification, and environment sanitation. More future studies should consider a cross-sectional follow-up to determine the temporal sequence of these factors and, accordingly, assess the impact of multimodal, heterogeneous anti-malnutrition interventions. These actions in tandem with strong policy action are in fact required for attaining the health related sustainable development goals specifically relating to children [18].

Conclusion

The study emphasis the very high malnutrition among children 1-5 years in low income setting caused by very little dietary diversity, low education standards of mothers and poor sanitation. The interventions targeting these factors are required to decrease nutritional deficiencies as well as enhance health of children including those in the resource poor areas.

Limitations

These study features mean that the findings of the study are susceptible to cross-sectional militating against causal conclusions. Furthermore, the sample size is comparatively small, thus not generating much detailed characteristics of regional differences. Caregiver–completed questionnaires may lead to recall bias, which might pose a challenge to the assessment of the risk factors and the results obtained in this study.

Future Directions

Further studies should be carried out with an aim of finding out the effects of malnutrition and its determinants on the human body through analytical cross-sectional and longitudinal studies. Assessing the outcomes of combined approaches like nutrition awareness to draw out major changes, better hygiene and poverty alleviation, may hold valuable methods of fighting the malnutrition problem in high-risk communities in the foreseeable future.

Abbreviation

1. WASH: Water, Sanitation, and Hygiene
2. WHO: World Health Organization
3. SD: Standard Deviation
4. SPSS: Statistical Package for the Social Sciences
5. UNICEF: United Nations International Children's Emergency Fund
6. CI: Confidence Interval
7. LMICs: Low- and Middle-Income Countries

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Authors Contribution

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Final Approval of version: All Authors as mentioned above.

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