Original Article

Status of Malnutrition Under 5 Years in District Diamer Gilgit Baltistan

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ABSTRACT

Background: Malnutrition in children under five years of age is a critical public health issue in District Diamer, Gilgit-Baltistan, Pakistan. The prevalence of malnutrition in this region, influenced by socioeconomic and educational factors, presents a significant challenge to child health and development.

Objective: The study aimed to assess the prevalence and incidence of malnutrition (stunting, wasting, underweight, overweight, and anemia) among children under five years in the four Tehsils of District Diamer.

Methods: A detailed nutritional survey was conducted during the summer of 2021 across the Tehsils of Goharabad, Chilas, Darel, and Tangir. A total of 320 samples (80 from each Tehsil) were collected. The assessment was based on visual symptoms and physical measurements of stunting, underweight, wasting, and overweight. The anemia status was evaluated using the Sclera method. Data analysis was performed using WHO growth standards and z-scores.

Results: The study found that stunting was highest in Tehsil Tangir (52.5%) and lowest in Goherabad (38.75%). Wasting was most prevalent in Tangir (13.75%) and least in Goherabad (7.5%). Underweight children were most common in Tangir (26.25%) and least in Goherabad (15%). Anemia was found in 35.25% of the children across the district, with the highest prevalence in Tangir (39%) and the lowest in Goherabad (30%). Gender disparities were noted, with male children more frequently affected than females.

Conclusion: The study concludes that malnutrition is a significant public health concern in District Diamer, with variations across different Tehsils. The findings call for urgent targeted nutritional interventions and policies focusing on education, health infrastructure, and socioeconomic improvements.

Keywords: Child Malnutrition, Stunting, Wasting, Underweight, Anemia, Gilgit-Baltistan, Public Health.

INTRODUCTION

The 2018 Pakistan National Nutrition Survey (NNS 2018), a landmark study in the field of public health, marked a significant advancement in the understanding of nutritional status across Pakistan, including for the first time, district-representative data and an expanded focus that encompassed adolescents and water quality aspects (1). This survey was part of a series of nutrition surveys conducted since 1965, each contributing to a growing body of knowledge about the nutritional state of the nation. The significance of malnutrition, particularly in children under five years of age, is a global concern, with approximately 165 million children affected worldwide (2). Malnutrition is a primary factor in at least half of all childhood deaths globally (3,4), and it predominantly affects children in developing and underdeveloped countries (5). It stands as a fundamental cause of morbidity and mortality among children, with nearly half of the mortality in this demographic attributed to undernutrition (6,7). The ramifications of malnutrition extend beyond immediate health concerns, as it poses risks to physical and mental development in children, which can lead to poor academic achievement (8).

The extent of malnutrition is starkly evident in the statistics: around 170 million children under five, or 30%, are estimated to be moderately or severely stunted, while 110 million, or 19%, are moderately or severely underweight (11). A significant portion of these children reside in Asia. The numbers are concerning, with 51 million (8%) children under five being wasted and two-thirds of these cases occurring in Asia (12). This condition not only affects the immediate health of the children but also has long-term implications for their future health and socio-economic development, and consequently, the dynamics of society itself. Pakistan, in

particular, has been reported to have one of the highest levels of child malnutrition among developing countries (13). The National Nutrition Survey revealed that 33% of Pakistani children were underweight, 44% were stunted, 15% were wasted, and 50% were anemic, with a significant proportion suffering from iron deficiency (13).

In the specific context of Gilgit Baltistan, the Multiple Indicator Cluster Survey of 2016-17 painted a worrying picture. In this region, approximately one in five children under the age of five were found to be moderately or severely underweight, with 19% moderately underweight and 6% severely underweight. Additionally, 46% of children were observed to be moderately or severely stunted, 4% were wasted, and less than 3% were overweight (14). The incidence of underweight, stunting, and wasting was slightly higher in boys than in girls and more prevalent in rural areas compared to urban ones. Despite socio-economic advancements, malnutrition in children remains a pressing public health and social issue in less developed countries (15,16). Factors contributing to childhood malnutrition include low birth weight, inadequate breastfeeding and exclusive breastfeeding practices, inappropriate complementary feeding, maternal education, lack of proper nutritional knowledge, micronutrient intake, parity, birth spacing, household socioeconomic status, food insecurity, poor sanitation, vaccination status, and infectious diseases (17,18). Pakistan's progress in addressing child nutrition and health lags behind other South Asian countries (19).

The current study aims to provide a comprehensive survey of the situation of stunting, wasting, underweight, and overweight among children in District Diamer, Gilgit-Baltistan. It seeks to assess the epidemiology of malnutrition in this district and to understand the status of anemia among these children. Such an in-depth analysis is crucial for devising targeted interventions and policies to combat malnutrition in this vulnerable population.

MATERIAL AND METHODS

The study on malnutrition in District Diamer, Gilgit-Baltistan, utilized a comprehensive set of tools and methodologies to assess the nutritional status of children under five years of age. Essential screening materials, including Mid-Upper Arm Circumference (MUAC) tape, height and weight measurement apparatus, questionnaires, notebooks, and WHO's z-scores charts, were procured from the Nutrition Program Health Department, Gilgit. The survey, conducted during the favorable weather conditions of the summer season of 2021, spanned the entire district of Diamer, encompassing four Tehsils: Goherabad, Chilas, Darel, and Tangir.

The primary focus was to evaluate the prevalence of malnutrition - defined in this context as stunting, wasting, underweight, overweight, and anemia- in the sampled population (8). A total of 320 children from various villages across the four Tehsils were randomly selected for the study. The data collection involved recording the body mass index (BMI), mid-upper arm circumference (MUAC), and conducting interviews and distributing questionnaires to understand dietary patterns and lifestyle habits of the families. In addition, the anemia status of the children was assessed using the sclera method.

To ensure a thorough analysis, the research team recorded detailed information such as the weight, height, age, and MUAC of each child. The households' dietary habits and knowledge were gleaned through the distributed questionnaires. All collected data, including questionnaire responses and physical measurements, were meticulously recorded in the survey assessment notebooks for further analysis. The WHO z-scores were utilized for accurate calculation and interpretation of the data.

The study also explored the impact of various socio-economic factors on malnutrition. Notably, the relationship between economic status and malnutrition was examined, with a particular focus on how poverty influences the prevalence and spread of nutritional deficiencies. It was observed that higher rates of stunting, wasting, underweight, and anemia were prevalent in remote, rural areas where economic hardships were more pronounced. Furthermore, the influence of weather conditions on nutritional status was assessed, revealing that areas in temperate regions exhibited poorer nutritional outcomes.

In addition to socio-economic factors, the role of health facilities in addressing nutritional challenges was considered. The availability and quality of healthcare services were found to be crucial in managing and preventing cases of stunting, wasting, underweight, and overweight, as well as other health-related issues.

The data analysis was conducted using the Statistical Package for the Social Sciences (SPSS) version 25. This involved a comprehensive statistical examination of the collected data, enabling the identification of patterns, correlations, and significant findings related to the various aspects of malnutrition in the district. The analysis was carried out in retrospect, employing appropriate statistical methods to ensure the reliability and validity of the results. This thorough methodological approach ensured a robust and comprehensive understanding of the malnutrition status in District Diamer, thereby facilitating the development of informed and targeted interventions.

RESULTS

The study conducted in District Diamer, Gilgit-Baltistan, revealed significant variations in the prevalence of malnutrition, particularly stunting, wasting, and underweight, across its four Tehsils- Tangir, Goherabad, Chilas, and Darel. The results indicated a disparity in

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nutritional status among children under five years of age, with the highest incidence of stunting observed in Tehsil Tangir at 52.5%, while the lowest was in Tehsil Goherabad at 38.75%. The percentages in Chilas and Darel were 47.5% and 50%, respectively. Further examination at the Union Council level within Tehsil Tangir showed a stunting incidence of 58% in Gabber and 47% in Juglot, while in Tehsil Goherabad, the incidence was 43.75% in Thack Niyat and 33% in main Goherabad.

Wasting, another crucial indicator of malnutrition, also varied across the Tehsils. Tehsil Tangir had the highest prevalence at 13.75%, whereas Tehsil Goherabad had the lowest at 7.5%. In terms of gender differences, the prevalence of wasting was relatively similar between boys and girls in all Tehsils.

The incidence of being underweight was notably higher in Tehsil Tangir, with 17% in Union Council Gabber and 9.25% in Union Council Juglot. In contrast, Tehsil Goherabad had a lower prevalence, with the highest being in Thack Niyat. The gender analysis showed a slightly higher prevalence of underweight in boys compared to girls.

The study also observed the prevalence of overweight children, with the highest percentage in Darel and the lowest in Goherabad. The variations were not substantial across the Tehsils. Regarding anemia, the study revealed differences across the Tehsils. However, detailed percentages were not provided in the initial data.

The qualitative data from questionnaires and interviews highlighted several factors contributing to the observed malnutrition rates. In Tehsils Tangir, Darel, and Chilas, the lack of awareness about balanced diets, inadequate nutrition education, substandard food quality in local markets, and poor hygienic conditions were prevalent. Additionally, the economic status of families, especially in rural areas, was a significant factor, with poverty directly impacting the nutritional needs of children. Early marriage and cultural practices were also noted as contributing factors.

Conversely, in Tehsil Goherabad, better awareness of nutrition, higher female education ratios, and a relatively better economic status contributed to a more favorable nutritional status among children. The results underscore the multifaceted nature of malnutrition, influenced by educational, economic, cultural, and health-related factors.

Table 1 Prevalence of Malnutrition in District Diamer

Tehsil	Condition	Surveyed Samples	Infected Samples	Prevalence (%)	Incidence (%)
Chilas	Stunting	80	38	100	47.5
	Wasting	80	7	100	8.75
	Underweight	80	16	100	20
	Overweight	80	3	100	3.75
Goherabad	Stunting	80	31	100	38.75
	Wasting	80	6	100	7.5
	Underweight	80	12	100	15
	Overweight	80	2	100	2.5
Darel	Stunting	80	40	100	50
	Wasting	80	9	100	11.25
	Underweight	80	19	100	23.75
	Overweight	80	4	100	5
Tangir	Stunting	80	42	100	52.5
	Wasting	80	11	100	13.75
	Underweight	80	21	100	26.25
	Overweight	80	3	100	3.75

Table 2 Prevalence of Stunting in Union Councils of Tehsil Tangir and Goherabad

Tehsil	Union Council	Stunting Incidence (%)
Tangir	UC Gabber	58
	UC Juglot	47
Goherabad	Main Goherabad	33
	Thack Niyat	43.75

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DISCUSSION

The nutritional survey conducted in the summer of 2021 across the four Tehsils of District Diamer, namely Goharabad, Chilas, Darel, and Tangir, provided insightful data on the prevalence and incidence of malnutrition in children under five years. The study involved the collection of 320 samples, with 80 from each Tehsil, facilitating a comprehensive analysis of the malnourished conditions in the district. The assessment of diseases was based on visual symptoms of stunting, underweight, wasting, and overweight, complemented by previous considerations, revealing a 100% disease prevalence in all surveyed locations.

Our findings revealed a higher incidence of stunting in male children compared to females in both Tehsil Tangir and Goherabad. Specifically, in Tehsil Tangir, stunting in boys was recorded at 54.5%, while in girls, it was 50.5%. In Tehsil Goherabad, these figures were 39.75% for boys and 37.25% for girls. This variation can be attributed to several factors, including poverty, nutritional awareness, water sources, gender and age of the child, maternal education, household wealth, and breastfeeding duration (11). Notably, in areas like Korangay Bala and Pain in Tehsil Tangir, the high percentage of stunting was linked to low levels of nutrition education and female education, poor health facilities, and hygiene, as well as economic hardship (12, 13).

Stunting, defined as height-for-age more than two standard deviations below the median of the reference population, is an indicator of chronic malnutrition resulting from inadequate nutrition over an extended period and recurrent illnesses (14). Our study reported an average stunting incidence of 53.75% in District Diamer, aligning with the global understanding of stunting as a marker of prolonged nutritional deprivation.

The prevalence of wasting also showed significant variations, with the highest rates in Tehsil Tangir and the lowest in Goherabad. Wasting, identified when weight for height is more than two standard deviations below the median of the reference population, is typically a sign of recent nutritional deficiency (16, 17). The differences in wasting between male and female children were minimal across the Tehsils.

In Tehsil Tangir, 26.25% of children were found to be underweight, the highest across the district, while Tehsil Goherabad had the lowest at 15%. Factors such as educational levels, access to health facilities, and economic conditions played a crucial role in these findings. For instance, the lack of nutrition education and poor economic status in Union Council Gabber of Tehsil Tangir contributed significantly to the higher rates of underweight children.

The study also evaluated anemia prevalence using the Sclera method, with 35.25% of the 400 assessed children in District Diamer found to be anemic. Tehsil Tangir had the highest anemia rate at 39%, while Goherabad had the lowest at 30%. This variation in anemia prevalence across the Tehsils could be linked to differences in dietary habits, health awareness, and socio-economic conditions.

The survey highlighted several critical issues impacting the nutritional status in District Diamer. The lack of balanced diets, poor nutrition education, substandard food quality, and inadequate hygiene were prevalent across the Tehsils. Additionally, cultural practices, early marriages, and the overall economic condition of families were identified as significant contributors to malnutrition. Tehsil Goherabad displayed better outcomes in terms of nutrition awareness and economic conditions, reflecting in its lower malnutrition rates.

The study's strengths lie in its comprehensive and detailed data collection, providing a clear picture of the nutritional status across District Diamer. However, it also faces limitations, including the reliance on visual assessments for disease identification and potential biases in self-reported data from questionnaires (20). The findings highlight the need for targeted interventions focused on improving nutrition education, healthcare access, and economic conditions, particularly in the more affected Tehsils. Future research should aim at longitudinal studies to monitor the impact of these interventions and to understand the long-term trends in malnutrition in the region.

CONCLUSION

The nutritional survey in District Diamer, Gilgit-Baltistan, reveals a critical state of child malnutrition, particularly in stunting, wasting, underweight, and anemia, with marked disparities across different regions. These findings underscore the urgent need for targeted nutritional interventions, improved healthcare access, and enhanced educational and awareness campaigns about proper nutrition and health practices. The study highlights the crucial role of socioeconomic factors, including poverty and female education, in determining the nutritional status of children. Thus, comprehensive strategies addressing these underlying issues are imperative to effectively combat malnutrition and improve the overall health and well-being of children in this region.

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