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Original Article

Factors Influencing Malnutrition among Under 5 Year Children of District Gwadar: A Cross-Sectional Community Based Study

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ABSTRACT

Malnutrition is one of the major causes in low and middle-income families' children's deaths under the age of 5 years. Nine times as many children with severe acute malnutrition (SAM) will pass away than healthy youngsters. In Pakistan, 17.7% of children under five are wasted, and 4 out of 10 infants under five are stunted. With almost 1/3 children (28.9%) underweight, the double burden of malnutrition is increasing. **Objectives:** To assess and identify the factors influencing malnutrition among under five years children of district Gwadar. **Methods:** A community-based cross-sectional research was carried out in randomly chosen clusters in several union councils in the Pakistani district of Gwadar. Mothers and other caregivers of children under five were interviewed as part of the house-to-house survey, using a practical sample approach. **Results:** The children age mean was 11.56 ± 12.4 months and the mean age of mothers was 27.29 ± 6.31 years. Overall stunting prevalence of severe acute malnutrition (SAM) cases was 21.2% and moderate acute malnutrition (MAM) cases were 46.2%. **Conclusions:** According to the study's results, under the age of five the malnutrition was widespread. The three types of nutritional outcomes were all strongly correlated with household income. Particularly in Baluchistan's underdeveloped regions, more labor and studies are needed.

INTRODUCTION

Malnutrition, according to the WHO, is defined as deficiencies, excesses, or imbalances in a person's intake of energy and/or nutrients [1]. Malnutrition causes a variety of health problems. Malnourishment, also known as stunting (low height for age), wasting (low weight for height), and underweight (low weight for age), is one (a lack of important vitamins and minerals). The second is non-communicable diseases linked to nutrition, obesity, and overweight (including cancer, diabetes, heart disease, and stroke) [2]. Growth is a physiological characteristic of infancy, and the interplay of genes throughout development and adolescence. Even though the growth indicator only includes one measurement, it may provide a quick snapshot of the child's nutritional health. The child's development is eventually impacted by changes to this indicator. The underlying causes of undernutrition in children aged 6 to 59 months were described in this research. According to the author, all socioeconomic, demographic, and environmental factors are related to children's development [3]. There are 14.3 million highly lost adults, 47 million lost children under the age of five, and 38.3 million overweight or obese people in the world. Malnourishment is responsible for about 45% of deaths among children under five. Most of these take place in low- and middle-income nations. Teen obesity and overweight are becoming more common in these same nations [4].

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The majority of chronic illnesses, including diarrhea, are most common in children and account for two-thirds of all under-five fatalities in Pakistan each year. Pathogens that are present in food or water may induce diarrhea. Pakistan's inadequate food, water, and sanitation conditions lead to community-level behavioral changes, which need intervention to lower the risk of morbidity and mortality in children under the age of five [5]. According to Pakistan's National Nutrition Survey 2018 (NNS 2018), four out of every ten children under the age of five have stunted growth, and 17.7% are withering away. 28.9% of children (one in three) are underweight. Malnutrition is bearing a double load, which is becoming more and more obvious [6]. A potentially fatal loop of worse sickness and worsening undernutrition status may be caused by both undernutrition and infection. A child's development may be slowed due to poor nutrition in the first 1000 days of life, which is linked to cognitive impairment and worse performance in school and the workplace [7]. One-third of all child fatalities worldwide are caused by malnutrition. One of the main causes of mortality in infants aged between six and 59 months is improper feeding practices. Low food intake and food with poor nutritional content are the primary contributors to undernutrition in Pakistan. The frequency of child mortality has increased as a result of sociocultural influences, more males than girls nurse, gender hierarchy, and traditional techniques of treating undernutrition. Additionally, this study discussed the immediate determinants of stunting, such as fertility, low birth weight, dietary diversity, and diarrhea, which have serious effects on children's health. These immediate determinants include open defecation, sanitation, access to water sources, antennal visits, vaccination coverage, breastfeeding practices, complementary feeding practices, and food security [7]. A lack of calories, carbs, proteins, fats, essential vitamins, minerals, and other micronutrients (iron, vitamin-A, zinc, folic acid, iodine, and vitamin-D) that are crucial for a child's early growth may result in malnutrition [8]. Children of all ages may suffer from malnutrition, but young children are the most susceptible. The greatest serious hazard to global public health is malnutrition. Malnutrition is thought to be the primary factor in 3.1 million child deaths each year and to be the source of long-term harm for millions of other children. Children who are malnourished are more susceptible to serious illness. A child's physical and cognitive capacities may be permanently damaged by chronic malnutrition and stunting if they have not gotten appropriate nourishment, care, or are living in unclean conditions [9]. Young children continue to experience high levels of chronic malnutrition worldwide. Poverty and other relevant factors including mothers' mental health and their own health-seeking behaviors are intimately linked to this illness (such as physical exercise, sleep, and food) [10]. Maternal malnutrition may start the process of linear growth faltering in utero, which can result to intrauterine growth restriction and low birth weight. Inadequate feeding habits used during infancy along with a high frequency of infectious diseases are other factors that indicate poor child development. Linear growth restriction, a demonstrable physical indicator of persistent childhood malnutrition, is defined as a height-for-age z score (HAZ) 2 SDs underneath the average. According to reports, 17% of deaths in children under the age of five are related to stunting. Compared to children with HAZ > -1, children with HAZ between -2 and -3 had a 118% (HR:2.18) and 138% (HR:2.38) higher risk of dying from pneumonia or diarrhea, accordingly [11, 12].

METHODS

The study design was cross sectional community-based study. Pakistan's Baluchistan province's district Gwadar was where the research was done. According to NNS 2018, the prevalence of malnutrition in Baluchistan was 31% underweight, 18.9% wasted, and 46.6% stunted among children under the age of five relative to the provincial level. Regarding the variables impacting under-five malnutrition in district Gwadar, there were no substantial statistics available. According to the 2017 census, district Gwadar has a total area of 12637 square kilometers and a population of 263514, of whom 53.8% are men and 46.2% are women. 38.7% of people live in rural areas, compared to 61.3% who live in cities. Data were collected from children under five and their primary care givers or parents through specifically designed questionnaire. Study population was children under-five year of district Gwadar. Convenient sampling technique was used in this study, permission from municipal corporations of district and tehsil Gwadar were taken from district EPI coordinator of Gwadar. Household provided consent was included in sample of the study after following inclusion criteria. A training session was held where concerned female health workers from randomly selected union councils and municipal corporations of district and tehsil of Gwadar were trained about child's weight and anthropometric measurements and questionnaire after receiving written ethical permission and approval from district health officer and nutritional officer of district Gwadar. They received the stationery, blank questionnaires, and transportation to the location of the data collecting. Through the use of semi-structured questionnaires, data were gathered. Each and all child's anthropometric measurements were taken; they were weighed automatically by a weighing machine, measured for length by an infant meter for children under 2 years old and for the previous 24 hours' worth of food and

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meals by parents or the primary caregiver using a semi-structured questionnaire that was adapted from a WHO and UNICEF instrument for primary caregiver/pare questions. Data were analyzed by using SPSS 23 version.

RESULTS

Table 1 lists the sociodemographic characteristics of the sample's under-five-year-old children. The educational level of the parents was quite low, and 86% of the moms had no formal schooling. We gathered data from 480 kids, 51% of whom were boys and 49% of whom were girls. Of them, 52% were infants under the age of two, and 48% of the children were between the ages of 2 and 5. The study's prevalence of stunting was 21.2%, and it was shown that males were somewhat more likely than girls to be stunted.

N		Stunted		Mean Z Score (SD)
		<- 2 z score	<- 3 z score	
All children	480	46.2 (44.1-49.2)	21.2 (20.5-23.2)	-1.72 (1.53)
Sex				
Boys	245	50.2 (44.4-53.4)	25.4 (22.5-26.3)	-1.87 (1.54)
Girls	235	43.1 (44.2-46.8)	21.2 (21.4-23.2)	-1.76 (1.50)

Table 1: Prevalence of Stunting according to Gender

In this study, the prevalence of wasting was 16.5%. There was no discernible difference in loss between males and girls. Research found that loss rose with age, peaking at 20.8% in infants between the ages of 24 and 35 months. 38.5% of children under the age of five were overweight overall. The frequency of underweight was the same for both sexes. According to the study, prevalence rises with age, peaking at 45% among children between 24 and 35 months of age before falling to 35% among those between 48 and 59 months (Table 2).

	N	Stunted		Mean Z Score (SD)
		<- 2 z score	<- 3 z score	
Age group	480			
0-5 months	27	5.6 (4.4 -6.3)	4.4 (3.4 – 5.1)	-0.87 (1.53)
6-11 months	52	10.8 (31.0 – 35.8)	9.6 (8.2 -10.3)	-0.99 (1.55)
12-23 months	75	15.6 (52.3 -62.3)	14.6 (13.4-16.2)	-2.14 (1.3)
24-35 months	140	29.1(21.5 – 32.7)	21.4 (20.0 – 25.2)	-2.21 (1.33)
36-47 months	125	26.0 (25.4 – 34.1)	17.7 (15.0 -22.2)	-2.31 (1.32)
48-59 months	61	12.7 (11.3 – 14.2)	11.0 (10.8 – 16.1)	-1.77 (1.2)

Table 2: Stunting as per age bracket

The table 3 lists the underweight prevalence and gender of the sample's under-five-year-old children. The underweight level of the children was quite moderate 39.1%. In boys this is 37.2% and in girls 36.0%. The mean of all children is -1.62 and Z score is 1.33. The mean of boys is -1.87 and z score is 1.31 the mean of girls is -1.66 and z score is 1.30. The study's prevalence of stunting was 39.1%, and it was shown that males were somewhat more likely than girls to be stunted.

N		Underweight		Mean Z Score (SD)
		<- 2 z score	<- 3 z score	
All children	480	39.1 (38.1 – 42.2)	14.5 (13.0 – 16.4)	-1.62 (1.33)
Sex				
Boys	245	37.2 (35.6 – 40.3)	14.0 (13.2 – 16.0)	-1.87 (1.31)
Girls	235	36.0 (35.8- 41.1)	13.2 (12.0 – 15.7)	-1.66 (1.30)

Table 3: Underweight Prevalence and Gender of children under five

The research that was presented examined the rates of underweight, stunting, and wasting by economic position. According to a study, children from impoverished families were more likely to have stunting, underweight, and wasting than those from the richest homes. 40% more children in poorer homes had stunted growth than those in the richest ones. Children who live in low-income homes (20%) have a higher risk of being wasted. In this research region, 43% of the poorest families had underweight children, whereas 26.4% of the richest households had underweight children. Stunting, wasting, and underweight were factors that were provided in a table, however factors like educational level, parity, and family size were not linked to any of these conditions. On the other hand, malnutrition was substantially correlated with the gender of the kid, age, and socioeconomic position. Diarrhea in children has been linked to underweight. The P-value for stunting in boys was much larger than in girls and displays 0.0001, however the results for wasting and underweight are not statistically significant (Table 4).

Variables	Stunting		Wasting	
	OR (95% CI)	P-value	OR (95% CI)	P-value
Age				
6 – 11 months	1.91 (1.41 – 2.50)	<0.0001	1.22 (1.1 – 1.45)	0.031
12 -23m	4.88 (3.87 – 6.30)	<0.0001	+01.44 (1.03 – 01.84)	0.033
24 – 35m	05.44 (04.41 – 07.10)	<0.0001	+01.77 (1.43 – 02.50)	0.034
36 -47m	06.80 (05.12 – 09.10)	<0.0001	+01.31 (0.91-0 1.67)	0.000
48-59m	02.99 (02.20 – 04.10)	<0.0001	+01.21 (0.77- 01.87)	0.141
Variables	**Underweight**		**All three outcomes**	
	OR (95% CI)	**P-value**	**OR (95% CI)**	**P-value**
Age				
6 – 11 months	1.40 (1.09- 1.81)	0.261	3.29 (1.03 -3.55)	<0.0001
12 -23m	+02.66 (2.09 – 03.43)	<0.0001	+03.16 (1.66-05.45)	<0.0001
24 – 35m	+04.20 (3.33 – 05.44)	<0.0001	+04.34 (2.66-07.44)	<0.0001
36 -47m	+04.17 (3.13-0 5.44)	<0.0001	+03.41 (2.23-06.88)	<0.0001
48-59m	+02.52 (1.87-03.45)	<0.0001	+02.46 (1.09- 03.86)	+0.029

Table 4: Association of Age and Malnutrition

DISUCSSION

The goal of this research project was to better the nutritional condition of children under the age of five by offering practical solutions to this problem. The study's results showed that malnutrition was pervasive among children under five in the area of Gwadar and had not improved during the previous two decades. This research offers important details on variables impacting malnutrition, including as socioeconomic status, feeding

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habits, parenting styles, and parental education and knowledge [13]. According to World Health Organization standards, the prevalence of stunting in SAM cases was 21.2%, in MAM cases it was 46.2%, and it affects 50.2% of boys and 43.1% of girls. These findings may be compared to national findings published in PDHS 2012-2013 and to a meta-analysis for the study of Sub-Saharan Africa [14]. The sharp rise in children's stunting between the ages of 12-35 months in the study region calls for serious concern and the chance to learn more about the prevalence of stunting at this age range. According to this research, children in this age group have a greater risk of being stunted, wasted, and underweight, and their socioeconomic position has an impact as well. Children's malnutrition is greatly impacted by poor socioeconomic conditions, according to research from the African area [15]. It is crucial to keep in mind that there is no direct correlation between influencing variables and child development outcomes, according to the research of this study. Due to the absence of nutrition-specific variables and the lack of variance in the metrics characterizing the primary drivers of infant development, this research is expected to fall short [16]. The prevalence of diarrhea has been linked to childhood stunting; it may not directly impede a child's development, but it does point to inflammation and intestinal abnormalities. According to recent research, children who had enteric infections were more likely to develop enteric inflammation. This conclusion was supported by studies on the causes, risk factors, and consequences of enteric infection and malnutrition on children [17]. To combat undernutrition among children aged 6-59 months in Pakistan, particular focus must be paid to raising birth size and birth spacing. The majority of households in the Gwadar area are determined to be low socioeconomic level or in poverty. Additionally, due to the district's socioeconomic position, vaccination coverage and supplementing conditions are subpar. For example, in our society, women are often overlooked by poorer people and are the last to eat in the household, which compromises their nutritional health [18]. Given that the majority of women in our study area were illiterate, research studies had found that lack of maternal formal education was one of the causes of childhood malnutrition. We also found that maternal education had a limited impact on inter-household variations in nutrition, and these findings were compared to those of other studies [19]. In our research, food insecurity was also linked to wasting but not to stunting and underweight. Several other nations, including Bangladesh, Ethiopia, and Vietnam, have reported more cases of food insecurity [20].

CONCLUSIONS

The results of this research showed that malnutrition was widespread among children under the age of five. The three types of nutritional outcomes were all strongly correlated with household income. Particularly in Baluchistan's underdeveloped regions, more labor and study are needed. For the improvement of Baluchistan's nutritional condition, more research should be conducted.

Conflicts of Interest

The authors declare no conflict of interest.

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