Determinants of Malnutrition Among Children: A Study of Government Schools in District Multan, Pakistan

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Abstract

This study aims to investigate and describe socio-economic correlates of malnutrition among the children enrolled in the government schools of District Multan and to determine the extent of the association of school facility and or access to health care services. The research followed a quantitative research design with the subjects consisting of 252 students aged 12 to 15 years obtained from five randomly selected government schools. Data was collected through structured questionnaires while the determinants of malnutrition were analyzed using SPSS package. From the study it was noted that poverty, parental education and awareness have a higher relationship with malnutrition. A large number of learners had poor knowledge on the balanced diet and there was variation in gender with regard to malnutrition related prejudices. Results of the statistical analysis showed that various demographic and socioeconomic factors affected the nutritional status of the population, and poor people with low education standards had a poorer status. It also emphasizes intervention that focus on socio-economic factors, education and nutrition and gender aspects when addressing the issue of malnutrition among schoolchildren.

Key words: Malnutrition, Poor Diet, Dietary Behavior, Balanced Diet, Health and Nutrition

1. Introduction

Malnutrition is one of the biggest problems face by many countries up to date Rodríguez, Cervantes & Ortiz (2011) especially in the developing countries. Not only does it slow down physical development but also the cognitive development Müller and Krawinkel (2005) which gives long-term negative impacts to human capital. Malnutrition is a huge challenge in Pakistan, particularly in rural regions where poverty and poor diet, hunger, and inadequate health access amplify worrying (Asim and Nawaz, 2018). Hunger remains rife among the school-going children in spite of governments' efforts aimed at addressing the problem. The impact of malnutrition in children is on a broad scale as it is influenced by several factors such as socio-economic status, their dietary habits and health facilities Amoadu et. al, (2024). According to the current literature, poverty has been cited to have huge effects on child nutrition where most of parents in low-income households are unable to afford enough healthy foods resulting to deficiencies in nutrient rich foods (Alderman, 2005).

Research done on children living in South Asian countries have reveal that children from less privileged families are more prone to stunting, wasting and underweight status as compared to their counterparts from better off families (Harding, Aguayo, and Webb, 2018). sFurthermore, education level of parents especially educational level of the mother has been established to significantly influence under age child nutrition (Sarwar, et. al., 2024). Most educated mothers are usually well informed when it comes to the nutritional requirements of a child and the overall health and wellbeing of the child thus the low incidents of malnutrition among children. There are so many factors that have been attributed to malnutrition according to the literature; these include access to healthcare services (Katoch, 2022).

In many developing countries including Pakistan, there is a poor health system and perennial poor health facilities and health service delivery mostly in the rural areas compound the challenge of malnutrition. Another study has confirmed that frequent health screening and early treatment help decrease the rates of malnutrition (Hawkes et. al., 2020). This is because many times children in their early stages suffer from conditions like vitamin deficiencies, parasitic infections among others. Also, there is a need to have clean water supply and hygiene to avoid water borne diseases prevalent in some areas, and these reduce the chances of one getting malnutrition. However, many rural areas have no access to proper sanitation and clean drinking water especially in District Multan, there by highly influencing the high maternal and children malnutrition rate (Hameed and Karim, 2016). Although, there are numerous studies available on identifying the factors associated with malnutrition, globally, little literature exists, which is dedicated to the problem of malnutrition in government schools of Pakistan, especially District Multan. Most of the research studies focus on extending their observations across the different areas and the density of living standard rather than considering the issues that children schooling in government schools face in the above said district. This research aims at coping with this challenge by undertaking a localized study of the factors that lead to nutritional status in this regard by assessing multidimensional Socio-economic Environmental and Institutional factors that prevail in Government operated schools within Multan.

It is also important to note that this work is important for the following reasons. First, it effectively responds to a major sectoral need in a part of the world where childhood malnutrition rates remain high and continue to rise. In so doing, the research is valuable in that it helps to identify specific determinates of malnutrition in the government

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schools in District Multan to aid policy makers in their modification of the schools' environments and the framing of policy reforms. Secondly, the given work fills the gap in the existing body of knowledge on malnutrition in Pakistan with the analysis provided taking into consideration the context of the discussed country. Consequently, the findings can provide underpinning for subsequent research on child health in like regions within Pakistan and other context developing countries with similar issues.

1.1. Objectives

- To identify the socio-economic factors contributing to malnutrition among children in government schools in District Multan.
- To assess the relation of healthcare services with the nutritional status of children.
- To provide recommendations for policy interventions aimed at reducing malnutrition.

2. Methodology

The quantitative research design was utilized. This research was intended to find out the factors that contributed to malnutrition among children aged between 12 years to 15 years going to the Public school of district Multan, Pakistan as well as the impacts of malnutrition on the health wellbeing of children. It revolved around such variables as sickness in relation to malnutrition, age, and sex of the child, nutritional status of stunted, overweight and thin, illiteracy of parents of the child, biological, maternal, socio cultural, environmental and politico economic factors affecting malnutrition. The groups of interest to the present study comprised all male and female students in these schools who were between 12 to 15 years of age which yielded a population of 2,527 children. The entire population was taken to be 2520 and a sample of 252 with 10% was deemed appropriate for the study. Five government schools were randomly chosen for the study: Govt. G/H/S Shareef Pura, Multan, Govt. H/S/S Samijabad Multan, Govt. G/E/S Samijabad Multan, Govt. Islamia H/S Aam Khas Bagh Multan, & Govt. Higher Secondary School/Bhaini Multan.

Proportionate allocation sampling technique' has been adopted. The male and female population from each of age group has been randomly selected from each school. In each selected school there was the use of simple random sampling technique in order to select respondents. Data was collected through structured interview schedule. In an effort to validate and confirm the factors and constructs captured through the designed questionnaire, a pre-testing phase was conducted in which 50 copies of the questionnaire were administered and from the feedback that was received appropriate changes were made where necessary. The statistical analysis was performed using Statistical Package for the Social Sciences (SPSS-21). Frequency and percentages were used for descriptive analysis. For bivariate analysis an independent sample t test was utilized. To identify factors affecting malnutrition, multiple linear regression was used.

3. Results

Table 1: Demographic Information of the Participants

Sr. No.	Variables	Categories	Frequency	Percentage
01	Gender	Male	141	56.0
		Female	111	44.0
02	Age	13 Years	87	34.5
		14 Years	111	44.0
		15 Years	54	21.4
03	Family system	Nuclear family	141	56.0
		Joint family	111	44.0
04	Socio-Economic status	Upper class	58	23.0
		Middle class	107	42.5
		Lower class	87	34.5
05	Family income per month	20000 Rs	87	34.5
		21000 to 40000 Rs	112	44.4
		41000 to 60000 Rs	53	21.0

Table No 01 represents the demographic overview of the respondents. Gender distribution of the participants indicated that 56% of the participants were male (141), whereas 44% were female (111). In terms of age distribution, 34. 5 % of the subjects were recorded to be 13 years (87) and 44 % were recorded to be 14 years old (111) respondents and 21. 4% were recorded 15 years old (54). In terms of family type, majority 56% (141) of the participants were from nuclear families while 44% (111) from joint families. Participants' socio-economic status was determined showing that majority 23% of the students came from upper class (58 respondents), 42.5% from middle class (107 respondents) while 34. 5% from low class (87 respondents). Participants' family income per month ranged from 15,000 Rs to over one lakh Rs per month the largest number of participants (34. 5%, 87) reported their monthly family income to be between 20,000 Rs Th survey respondents 44. 4%, (112) earned between 21,000 Rs to 40,000 Rs and 21% (53) respondents earned between 41,000 Rs to 60,000.

Table 02 presents opinion of participants on dietary behavior, knowledge and impact of malnutrition dynamics table reveals participant's views regarding dietary behavior, awareness and impacts of malnutrition. In the subscale of section, A, which deals with dietary behavior and awareness a majority of students including 11.1% (SDA) and 38. 9% (DA) disagreed on awareness of balanced diet while 28.6% agreed (A) and 2. 4% strongly agreed (SA). Regarding whether a lack of awareness causes malnutrition, responses were varied: 27. 4% in the strongly disagree, 18.7% in the disagree, 29.4 % in the neutral (N), 7.5 % in the agree and 17. 1% in the strongly agree. This assertion that participants' diet behavior could be influenced by advertisements was strongly disagreed indicating 45% strong disagreement and 26. 1% disagreement. When told the question: 'are your parents aware of your diet patterns?' 8.7% strongly disagreed, 52% disagreed, 11.9% were neutral, 23.8% agreed and 3. 6 % strongly agreed. On whether their parents know when they skip food, 15 % strongly disagreed, 30% disagreed, 39% neutral, 12% agreed and 4% strongly agreed.

Section B is illustrating the effects of malnutrition. Regarding the question if they have health problems due to malnutrition, 14.3% strongly disagreed, 34.9% disagreed, 45.2% were in the neutral category, 3.2% agreed and thus 2.4% strongly agreed. In seeking spiritual healer for malnutrition, 11.2% clients strongly disagreed, 2. 3% disagreed, 47. 7% were neutral, 2. 8% agreed and, 36% strongly agreed. Regarding the question whether due to malnutrition they are less confident, Strong disagreed, 8. 7%, Disagreed, 52%, Neutral, 11. 9%, Agreed, 23. 8% and Strongly agreed, 6%. For the opinion on the statement that sickness arising from lack of good nutrition is the major cause of truancy from school 11. 9% strongly disagreed, 19% disagreed, 38. 1% were neutral or had no opinion about it, 27.6% agreed and 3.4% strongly agreed. To the response 'Statement: Friends tease participants because they are too skinny' The values expressed were: strongly disagree 10%, disagree 33. 7%, neutral 11. 9%, agree 19.3%, and strongly agree 25.1%.

Table 2: Malnutrition related dynamics

Sr. No.	Statement	SDA %	DA %	N %	A %	SA %
	Section A: Dietary Behaviour and Awareness					
01	Do you have awareness about balanced diet?	11.1	38.9	19	28.6	2.4
02	Do you think lack of awareness causes malnutrition?	27.4	18.7	29.4	7.5	17.1
03	Does your diet behaviour get effected by advertisement?	12.2	17.4	18.5	26.1	45
04	Do you think your parents are aware about your diet pattern?	8.7	52	11.9	23.8	3.6
05	Do your parents know when you skip food?	15.9	29.8	38.5	11.9	3.9
	Section B: Effects of Malnutrition					
06	Do you suffer from health issues due to malnutrition?	14.3	34.9	45.2	3.2	2.4
07	Have you ever consulted spiritual healer for malnutrition?	11.2	2.3	47.7	2.8	36
08	Does malnutrition make you less confident?	8.7	52	11.9	23.8	3.6
09	Do you think that illness due to malnutrition is biggest reason behind your absenteeism from school?	11.9	19	38.1	27.6	3.4
10	Your friends make fun of you due to your malnourished condition?	10	33.7	11.9	19.3	25.1

Strongly Agree=SA, Agree=A, Neutral=N, Disagree=DA, Strongly Disagree=SDA

Table 3: Independent Samples t-test contrasting Malnutrition related stigmas in two genders

Variable	Gender	N	Mean	S.D	T	P	Finding
Malnutrition related stigmas	Males	141	42.12	7.632	13.386	0.000	Significant Difference
	Females	111	35.96	5.172			

*(*p<0.01)*

Table No. 03 shows the independent samples t-test results wherein the hypothesis that there is a significant difference in malnutrition related stigmas between males and females is tested. Regarding the stigmatization of the male students (N=141), the mean score obtained was 42.12 with S. D of 7.632 while the female students (N=111) scored 35.96 with S. D of 5.172. The t-test results are as follows, with a t-value of approximately 13. 386 and a p-value of 0. 000. It is evident that the difference is statistically significant at *p<0. 01. This implies that there are differences in how male students are treated concerning the stigmas of malnutrition as compared to female students; this is because the latter group rated lower in stigmatization.
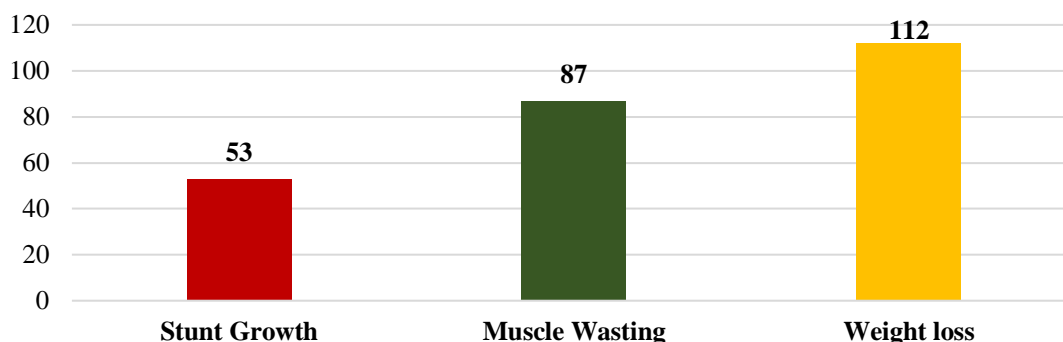
Table 4: Multiple Linear Regression on Effects of Socio Economic factors at Malnutrition

D.V	I.V/ Predictor	B	Std. Error	β	T	P	R²	Finding
Malnutrition	(Constant)	0.629	3.569		0.198	0.841	0.564	Significant Impact
	Poverty	1.287	0.321	0.238	5.517	0.000		
	Education level	0.708	0.294	0.471	3.019	0.006		
	Awareness	1.372	0.273	0.223	5.867	0.000		

*D.V: Dependent Variable, I.V: Independent variable, (*p<0.05)*

Bar graph 01: Common Health Effects of Malnutrition

Table 04 shows the Multiple Linear Regression on Effects of Socio Economic factors at Malnutrition, dependent variable is malnutrition while the independent variable or predictor variables are poverty, education level, awareness. Regression Model comes out with very high significance with an R² of 0.564 which implies a 56.4% variation in malnutrition caused by socio-economic factors. The constant has B value of 0.629 with the standard error of 3.569 and non-significance of the p-value equals 0.841. The poverty predictor which is the focus of this study has a B value of 1.287, SE of 0.321, β value of 0. 238 and T value of 5. 517 with a significance level of 0.000. Likewise, the education level has obtained a B value of 0. 708 and SE of 0.294 while its β value is 0.471 and T statistic is evaluated to be equal to 3.019 which is also significant at 0.006. Awareness exhibits a coefficient (B) of 1.372, standard error of 0.273, Beta value of 0.223, consequently the result exhibit significant values of the T statistic equals 5.867, p= 0.000. These discoveries indicate that poverty, educations and awareness plays a crucial role in malnutrition whereby poverty and awareness play the most crucial role in nursing malnutrition.

Bar graph No. 01 illustrates the frequency of respondents having three malnutrition related conditions: Growth Promotion, Muscle atrophy and Weight Reduction. Each is presented by a bar, the height of which is directly proportional to that of the condition's corresponding value. This three conditions reveal that the Stunt Growth has a value of 53, which suggests that it has the lowest frequency or magnitude among the other two. Muscle Wasting has a value of 87; this indicates that, as compared to Stunt Growth, the comic has higher value of it, but as compared to Weight Loss, the comic has lower value of it. Weight Loss also convert to the highest value of 112 which is higher than the other two conditions. The disparity in the bar heights can be regarded as a clear illustration of the relative variations in the values placed in Weight Loss, in comparison with the minimal values placed in Stunt Growth and Muscle Wasting.

4. Discussion

The findings of this study present directions about causes of malnutrition among children in government school in District Multan, Pakistan, whereby this study identified several socio-economic, demographic, and psychosocial factors that were related to the prevalence and experience of malnutrition in the children in question. From the descriptive part, it is evident that a large number of children, regardless of gender are unaware of what balanced diet is, and advertisements have an influence on necessary dietary behaviour. These results co-relate with the studies conducted before, that highlight socio economic status, Family awareness, cultural practices are important in determining the diet patterns and malnutrition (Kristo, Sikalidis & Uzun 2021; Dubey 2022; Harris & Nisbett 2021). The high percentage of students that said their parents had no clue that they do not consume a balanced diet also supports findings from previous papers that stated that parental education and involvement are central to reducing malnutrition among children (Charles Shapu, et. Al.,2020). This research contributes to the knowledge of responding for the family system and socio-economic determinations including income and education level to children's nutritional status (Sirasa et. al., 2019) thus supporting the claim for the socio determinant of health framework.

In the analysis of the independent samples t-test, it can be seen that the mean malnutrition stigma perception difference between the two genders students is seen to be higher among the male students. This finding is novel and contrary to some of the previous researches that give an indication that girls feel higher rates of stigmatization on issues to do with body image and malnutrition (da Silva and Rodrigues, 2023). However, it might be so because of cultural and contextual sensitivity interesting in the study area where boys could be more expressive on

stigmatized experiences or due to social expectations may bear different burden on boys regarding health and malnutrition. This requires research to determine gender specific stigma and how it plays in cultural norms and educational arena. According to gender theories, there is a possibility that experience of stigma associated with malnutrition may not be similar for boys and girls and may need contextualised approaches.

Looking at the findings of the multiple linear regression analysis, it is clear that the level of poverty, education level and awareness influence malnutrition amongst children. Poverty turned out to be statistically significant indicating that previous theory which put out poverty as major root cause of malnutrition for such reasons as restricted access to health information food and health care was correct (Shahid et. al. ,2022; Siddiqui et. al., 2020). It is also very evident that education levels and awareness impact on malnutrition, proving that educational campaigns and awareness drive should be applied. These findings are in line with theory of Human Capital and theory of Health Behaviour change which suggests that knowledge and awareness are keys to health self - management (Grossman, 2000). The findings of this study that pointed to the fact that awareness played a greatest role in malnutrition means that increasing nutritional education and awareness at school and community level could be an effective method of dealing with malnutrition.

The theoretical contributions of this study are also connected with the connection of Social Cognitive Theory (Bandura, 1989) and Health Belief Model (Champion and Skinner, 2008). The results highlight the cognitive component of awareness and perceived self-efficacy as potential antecedents of dietary behaviour and perceived stigmatization of malnutrition. Efforts that use these theoretical models, which include promotion of self-efficacy, nutrition literacy to promote balanced diet, and De-stigmatization, might be useful in reducing cases of malnutrition and improving health of populaces. Furthermore, the results suggest that the complexity of factors influencing malnutrition requires the use of socio-ecological models which comprise multiple focal levels, from the individual level through household, community and social settings to the macro environment level.

5. Conclusion

The current study determines the factors that were considered for the malnutrition among children in Public schools in District Multan, Pakistan. The research concluded that, child malnutrition is highly dependent on poverty, education and awareness. Students had a poor knowledge of the balanced diets and other factors including advertisement influenced them as well. There was a statistically significant difference of malnutrition related stigmas between male and female students to reveal gender differences. The analysis concluded that the three important factors that cause malnutrition include poverty, education level and awareness. Such findings have resonance with current discourse and conceptual frameworks like the Social Determinants of Health and Health Behavior Models suggesting the necessity of a multi-sectoral intervention to solve the problem of malnutrition. Study suggests specific approaches that stress socio-economic betterment, awareness and education and specifically anti-stigmatization aimed at boys and gender sensitive strategies to reduce instances of malnutrition amongst school going children and wards.

5.1. Suggestions

The study gives following suggestions:

- There is need to establish comprehensive nutrition education programs in schools.
- Policies and programs advocating for poverty reduction are needed.
- Design programs that target different stigmas and issues affecting boys & girls concerning conditions of malnutrition.
- Increase the level of parental engagement when it comes to children food choice.
- Use media and social activities to respond to the given misleading adverts and encourage healthy diets among people.
- Systematic assessment of the programs dealing with malnutrition issues is needed.

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