Effects of Malnutrition on Students' Attendance and Annual Exam Score at Primary School Level in District Tharparkar, Sindh

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Abstract

This study seeks to assess the extent of malnutrition and its effects on the students' annual exam score and attendance at Government Primary Schools in selected UCs of district Tharparkar. Proper nutrition plays significant role in the healthy growth of the children. The data was gathered through the close ended questionnaire and Interview schedule which was based on the anthropometric measurement data and the students' records of attendance and exam score. Data was analyzed in SPSS presented in cross tables and bar graphs. The result showed a high occurrence of malnutrition of 71% among the primary schools' students in selected UCs of District Tharparkar, using BMI as index. Occurrence of malnutrition was significantly higher in girls than boys. In order to improve the performance in annual exams and academic performance of the students, Nutrition programs should be launched in schools, so that students in primary schools are delivered with basic nutrition during the school time. Awareness programs on importance of health and nutrition should be initiated among the communities and schools.

Key Words: Malnutrition, Proper Nutrition, Attendance, Annual Exam Score

Introduction

Malnutrition is a general term that shows of some or all nutritional food elements that are important for the human health. Inadequate and faulty food supply is called malnutrition. Malnutrition takes place whenever the body needs cannot be fulfilling according to the requirement imbalance and lack of food supply caused the malnutrition. Malnutrition has two condition, under nutrition and over nutrition in under nutrition needs cannot be meet according to the requirements of nutritional status, and in over nutrition condition when the food is oversupplied. But malnutrition and under nutrition are the similar word and generally consider synonymously. The majority of the people is affected by malnutrition and they are considered as under nutrition in our country than the over nutrition. Malnutrition is a severe health issue in this modern age, and always recognized as the result of poverty because of most of the children that are malnourished are living in the developing countries such as Asia, Africa, and South America. Children that belong from low income families have more chances of being malnourished and underweight as compared to the children that belong from upper and middle class (UNICEF, 2015).

The level of poverty and income can be measured by the amount of hunger which is also known food insecurity. The major factor of malnutrition is the low quality of the food and bad health condition which often results by low income and lack of availability of food, ever increasing family size, and practices through which one can feed. There are certain segments of the population that are more open towards the risk of being malnutrition. The other factors which affect the physical growth and social development of the children are environmental. The un-hygienic feeding practices and non-availability of sanitation also affect the physical and mental growth of the children. Another important factor that plays its part in this situation is

the education level of mothers. Higher maternal education always affects positively towards reducing the malnutrition (UNICEF, 2017).

The most important part of the society is the child population, children progress and growth physically is the solid sign of the upcoming days of the country and their needs are very careful nurturance. In development efforts, the initial points should be the youngsters and kids for many biological, societal, national and even financial causes. A sensible deal in youngsters' and kids' well-being, diet and schooling is a significant base for all state development and its progress. Ignoring the youngsters' and kids' needs will be resulting poverty and deprivation (Raju & D'Souza, 2017). A healthier young children ahead will result in a productive hale and hearty and strong young inhabitants in the country (Sisay, 2015). Nutritional status of the child plays an important part in the bodily, intellectual and social emotive growth and development of a kid. It is observed in many research studies that the babies and preschoolers teen-agers are the maximum affected segment of the society by malnutrition mainly under nutrition (UNICEF, 2017).

Standard development in the main couple of years is the basic founding of wellbeing all through a lifetime. After that a nation pays the heavy cost as far as malnourished, undesirable, uneducated and poor future human asset with undiscovered physical and mental potential with which they were born, that could have bloomed had they gotten appropriate and auspicious consideration before birth and in early youth (Gulati, 2010). EFA Global Monitoring Report indicates that the half of the children in Pakistan under fifteen years of age are the victim of the malnutrition and they are reported underweight due to the shortage of food and improper diet. Due to these condition children are unable to focus at on their education and school (EFA, 2007). Malnutrition is normally well-defined as a long lasting disorder, the consequences of malnutrition are dangerous that disturb children when their bodies do not get sufficient food to function properly (Frye, 2013) .

The effect of malnutrition on the child's school performance, health and survival are burning issue in developing countries and it is related the overall progress of the countries. Students at primary school level are the future and security of any country. For the long time school going children malnutrition issue has been remained the subject of comprehensive research. Many research studies confirmed that malnutrition disturbs children bodily growth, mental development, and bodily work capability (Khan, 2017). Malnutrition is a main reason in many diseases in children as well as in adults, and it affects disability, morbidity and death mortality in the end. In recent years floods and heavy moon soon in Sindh make the situation very worst where it affects 17.5 % children especially school going children in rural areas (Government of Pakistan & UNICEF Pakistan, 2011).

The population of the children is one of the most significant part of the any country, being a week segment of the society children required careful attention (Arif, Nazir, Satti, & Farooq, 2012). Children's good health is a future of any country. In the developing countries like Pakistan the children's health and growth must be on top priority in order to achieve the development goals (Raju & D'Souza, 2017). The cornerstone of any national development depends on the children's health, diet and education. Ignoring the needs of children, on the contrary, will put them and

the society in a vicious cycle of poverty and deprivation (Sisay, 2015). Nutrition is very significant in the children's physiological, intellectual and emotional development, the progress of any country depends on the healthy generation of the children (Unicef, 2015). A healthy generation of the children can be proved the guarantee of the national development. Malnutrition among school going children has a major effect on children's mind and their mind have no such strength to function properly in cognitive activities such as capability to learn, concentrating, lack of attention, testing questions in solving problem and organizing as well as severely damaging psychomotor and intelligence academic development (Chinyoka, 2014). The medical evidence shows that malnutrition in children is a threat and a major factor in the formal academic system (Hirani, 2012). Primary School age is the active developing stage of childhood as well as the mental expansion of the child (Kesari, Handa, & Prasad, 2010). Nutritional status is a major environmental cause that can negatively affect academic performance of school children. Weak immune system, risk of sickness and diseases due to malnutrition among school children has major adverse effects on school progress, children's ability to learn, cognitive and physical development (Unesco, 2014)**.** EFA Global Monitoring Report (2007) indicates that the half of the children in Pakistan under fifteen years of age are the victim of the malnutrition and they are reported underweight due to the shortage of food and improper diet. Due to these condition children are unable to focus at on their education and school (EFA, 2007) .

Background

Malnutrition is a Universal problem. There are 150 children under five years who are reported stunted and 50.5 million were wasted in the world. Half of them live in Asia and south Asia Globally, 150 million children under 5 years old were stunted in 2017. (UNICEF; WHO; Word Bank, 2018). Nearly half of all children (49.8%) in Pakistan are stunted while 17.5% per cent are wasted. According to the Asia Hunger Report (2017) Pakistan is the second main country, where new-born and young child mortality rate is high in South Asia (Asia et al., 2017). It is found out that 72 percent of households are food insecure, 48.8 percent of the children under five are malnourished, 48% children are stunted and 19.6 percent of children suffered from wasting – low weight for height in Sindh (World Food Program, 2018). In District Tharparkar 53% of the total children are underweight about 45.9% are stunted and 29% are wasted (Sindh BOS, 2014). Globally at least 3.1 Million children die due to malnutrition each year. 66 million primary school-age children attend classes hungry across the developing world, with 23 million in Africa alone (World Food Program, 2018).

Hypothesis of the Study

1. There is a significant effect of malnutrition on low attendance of the students studying in class 5th at government primary schools

2. There is a significant effect of malnutrition on students' exam score at government primary schools

Literature Review

Frye, Kristin Huldah (2013) expressed that the 19% children at primary schools who are malnourished and stunted more likely to make mistake in reading simple sentence, 19% of the students cannot read simple sentence for example "sun is hot. 12.5% stunted students at primary schools are also not able to write simple sentence and they were recorded worse in basic mathematics. Similarly, children who provide insufficient food are more likely to fail in their exam and they remain in same class (Frye, 2013). McCain & Mustard (1999) found out in their research and described that those children who has sound mind in a sound body, physically and psychosocially strong and healthy children are found active and conscious enough to learn well and attend school regularly (UNICEF, 2000). Ghuman (2006) in this research study it is indicated that the malnutrition is found to have significant lifeless consequences for children's school routine in the shape of interruptions in enrolment, grading, a high coincidental of drop out, and lesser achievements, during the course of study (Ghuman, 2006). While the Kudzai Chinyoka (2014) had also stated in their research article that Stunting has direct impacts on poor performance along with cognitive tests, including deficits in literacy, proficiency, cognitive, and vocabulary, among more many other factors as well. There is also a strong relationship between the stunted children and overall school achievements, most of those children remain poor in enrolment, replication of grades, remain dormant and absent as well (Chinyoka, 2014). According to the research study by Ross and Amy (2010) indicated that the children consumptions small calorie of its genuine requirement but in spite of that children have no symptoms of hunger and looking like ordinary, on the other hand the children's weight for his/her age is too small that's why children have no confrontation power to save themselves from contagions and illnesses. Many research based studies indicate that a child who is sixty percent low weight for his actual age than the normal weight and age is related with the ineffectiveness and has no power of confrontation basically they are unskilled (Ross & Amy, 2010).

Similarly around 40% of the Pakistani children ages from 10 years to above cannot read and write in government schools (Government of Pakistan, 2016). Presently, the academic results of Pakistani children as concluded through a sample national assessment survey (2014), indicate that students perform faraway lower the mandatory national standards in all provinces and do not attain least mastery of arithmetic, reading, and language. Sindh province is on the lowest position among all the other provinces in English language competencies and mathematics ability of class 5th students (Government of Pakistan, 2016). In this regard UNICEF (2015) exposed that the causes of low ability of reading and writing is not only malnutrition but there are some other factors exist (UNICEF, 2017)

Material and Methods

Research Design: The cross-sectional survey research design was used. Students were assessed in the months of August to October 2018.

Target population: The students of class five from primary schools of the 7 Union councils of the district Tharparkar. The rational of the selecting 7 UCs is that these UCs were the more vulnerable in terms of the malnutrition.

Sample and sampling procedure All the students of class five from the 40 schools were selected. Total (300) students were selected for the study using random sampling techniques.

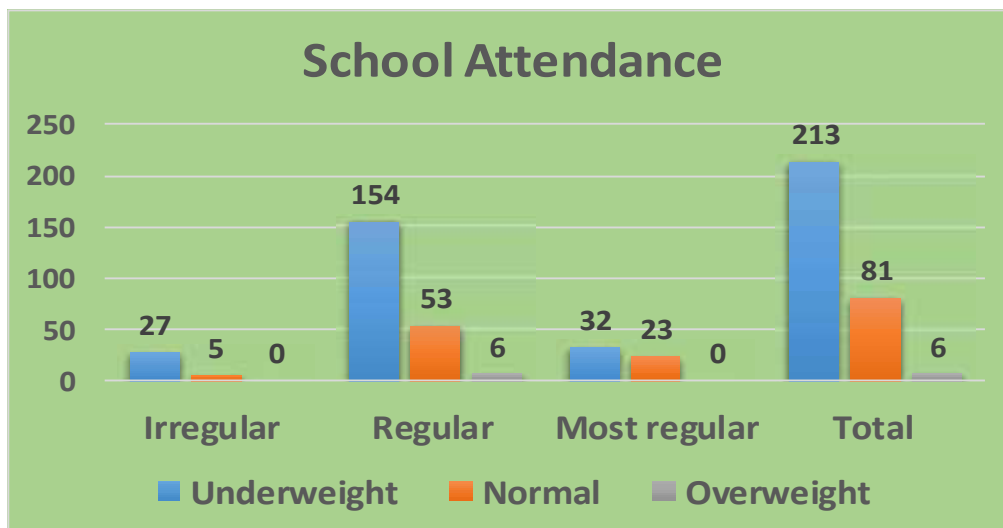**Research instruments:** The researcher used following instruments

a. Anthropometric tools to assess the students weight and height

b. Close-ended questionnaire was used to assess the students' attendance and previous exam score.

Results and Discussion

Table 1
Crosstab

Category of Malnutrition (BMI = kg/m2)	Irregular	Regular	Most Regular	Total
Underweight (<16 - 18.5)	27	154	32	213
Normal (18.5 - 24.9)	5	53	23	81
Overweight (25.0 - 29.9)	0	6	0	6
Total	**32**	**213**	**55**	**300**

Source: School Record

An Ordinal Logistic Regression was examined to decide if the probabilities of observing each response classification of BMI could be described by the difference in school students' attendance.

The results of the regression analysis were not statistically significant based on an alpha level of 0.05, $\chi^2(2) = 5.32$, *p* = .070, signifying the observed effects of school attendance on BMI were not maximal sufficient to reject the null hypothesis. McFadden's R-squared was calculated to scan the model fit, where values larger than .2 are revealing of models with outstanding fit (Louviere et al., 2000). The McFadden R-squared value calculated for this model was 0.01. Subsequently the overall model
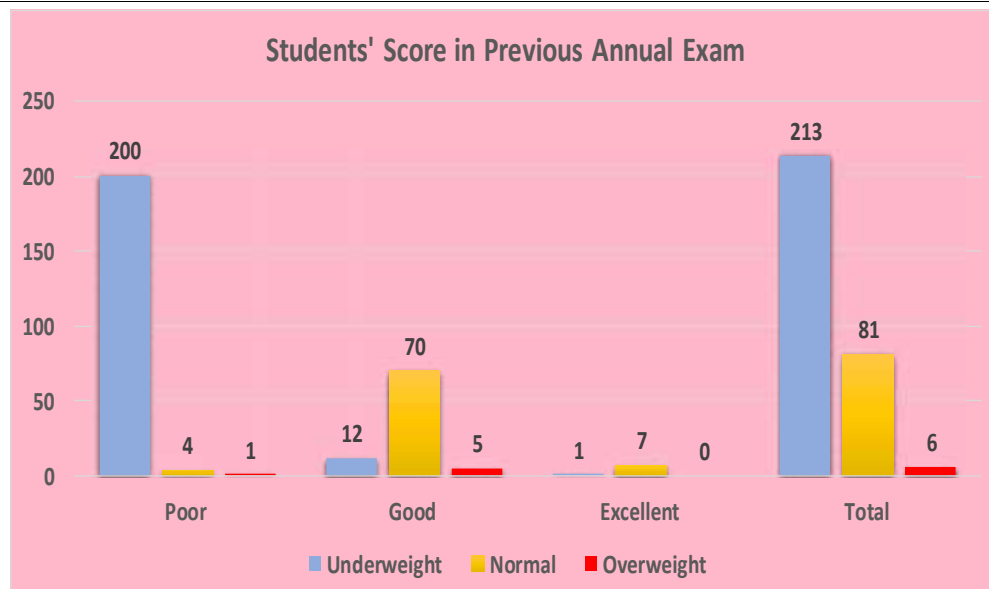
was not statistically significant, the individual independent variable (predictors) were not examined more. Table No.1 reviews the results of the ordinal regression model.

Table 2
Ordinal Logistic Regression Analysis Results for attendance predicting BMI

Predictor	*B*	*SE*	95% CI	^{2}	*p*	*OR*
(Intercept):1	1.48	0.45	[0.59, 2.37]	10.61	.001	
(Intercept):2	4.50	0.60	[3.31, 5.68]	55.28	< .001	
Attendance Regular	0.76	0.48	[-1.69, 0.18]	2.53	.112	2.14
Attendance Most Regular	0.12	0.56	[-1.23, 0.98]	0.05	.825	1.13

Table 3
Crosstab

Category of Malnutrition (BMI = kg/m2)	Poor	Good	Excellent	Total
Underweight (<16 - 18.5)	200	12	1	213
Normal (18.5 - 24.9)	4	70	7	81
Overweight (25.0 - 29.9)	1	5	0	6
Total	**205**	**87**	**8**	**300**

An Ordinal Logistic Regression was analysed to decide and conclude if the chances of observing each response dependent variable category of BMI could be clarified by the difference in annual exam score.

The regression analysis model was measured based on an alpha level of 0.05. The outcomes of the regression model were statistically significant, $^2(2) = 235.25$, *p* < .001, signifying the observed effects of annual exam score on BMI were unlikely to happen lower than the null hypothesis. So, the null hypothesis can be rejected. McFadden's R-squared was considered to inspect the model fit, where values larger than .2 are revealing of models with outstanding fit (Louviere et al., 2000). The McFadden R-squared value calculated for this model was 0.58.

Coefficients. The regression coefficient for annual exam score Good was statistically significant, $B = 5.48$, $\chi^2 = 101.39$, $p < .001$, signifying that a one-unit rise in annual exam score Good would rise the chances of observing a higher category of dependent variable (BMI) by 23775.17%. The regression coefficient for annual exam score Excellent was significant, $B = 5.27$, $\chi^2 = 29.76$, $p < .001$, signifying that a one-unit rise in annual exam score Excellent would rise the odds of observing a higher category of dependent variable (BMI) by 19300.03%. Table No.2. summarizes the results of the ordinal regression analysis model.

Table 4
Ordinal Logistic Regression Analysis Results for annual exam score (IV) predicting BMI (DV)

Predictor	B	SE	95% CI	χ^2	p	OR
(Intercept):1	3.68	0.45	[2.80, 4.57]	66.51	< .001	
(Intercept):2	8.18	0.66	[6.88, 9.48]	151.68	< .001	
Annual exam score Good	5.48	0.54	[-6.54, -4.41]	101.39	< .001	238.75
Annul exam score Excellent	5.27	0.97	[-7.16, -3.38]	29.76	< .001	194.00

Discussion

The study has supposed out that the malnutrition in students have a serious negative effects on the attendance and the annual exam score in this regard students' wish to learn, but due to the absence of their essential need they cannot be able to focus on their studies because of this reasons the malnourished (underweight) students had a lower score in their previous exam score than their normal class fellows whose essential needs are met. Majority means 211 (70.3%) students of class fifth, out of the 300 did not take breakfast they only take tea before going to school, only 30% students took breakfast e.g. tea with biscuits or paratha. This shows that most of the students went to school while hungry and this could therefore lower their ability to concentrate in class work.

The teachers who were interviewed recognized cause of malnutrition to food shortage while some of the teachers said that the major cause of malnutrition is the ignorance of the parents. This shows that that the major cause of malnutrition is food shortage in the area.

7 teachers recognized that malnutrition effects on attendance to poor concentration due to hunger while 13 teachers denied this that students who are recorded were punctual and regular in school.

13 teachers endorsed that well-nourished students always score good in exam than malnourished students, those students more likely to repeat in the same class if their food requirement is not meet properly, while some teachers denied in this regard.

Conclusion and Recommendations

Malnutrition is an emerging problem in school students in Pakistan. As a developing nation, it is important to talk on this issue to get healthy future of school students of the country. A country having status of a developing nation cannot afford its next generation to be sick and dull. Role of Government, Parents, teachers and schools is crucial in controlling malnutrition in school-going children. The area of study is mostly affected by long-lasting hunger and the performance of the school children was greatly affected by the malnutrition on the basis of research findings following recommendations were made.

1. In order to improve academic performance of the students at primary school level in district Tharparkar and other affected areas, water should be supply in proper way in order to have better agricultural production.

2. In order to improve the academic performance of the students' nutrition program should be launch in schools. So that students in primary schools are delivered with basic nutrition during the school time. E.g. Glass of Milk

3. Educational Programs and awareness on importance of nutrition and health consequences of malnutrition for the community should be started in schools.

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