

Status of Malnutrition of Children Under Five Years in Institutional School

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Abstract

Simply, bad nutrition is malnutrition. The aim of this study was to assess the condition of malnutrition of students under five years. The study followed descriptive cross-sectional research design. For the study, school was selected purposefully and grade was selected randomly. However, 51 students of LKG were participated in the study and only the data of 43 students (24 boys and 19 girls) were analyzed. Age of the students was identified from the school record. Height measuring tape and weighing machine were used to measure height and weight of students. Data were analyzed manually with the reference to World Health Organization (WHO) growth chart 2006. Mean age, height, and weight of students were respectively 49.53 months, 104.88 cm, and 16.326 kg. No students were found stunted whereas only two girls (4.7%) were found wasted and underweight. The status of malnutrition among less than five years students of institutional school is very low. Parents should be suggested to take care of their daughter's nutritional status.

Keywords: Anthropometric measurement, malnutrition, stunting, under nutrition, underweight, wasting

1. Introduction

Etymologically malnutrition indicates 'bad nutrition' (Centers for Disease Control and Prevention [CDC] & World Food Programme [WFP], 2005) that constitutes both 'under nutrition' and 'over nutrition' (Blossner & Onis, 2005; CDC & WFP, 2005). Under nutrition (stunting, wasting, underweight and micronutrients deficiencies) and over

nutrition (obesity and diet related non-communicable diseases) that are result of deficiencies, excesses or imbalances of nutrients in body is malnutrition (World Health Organization [WHO], 2016). Stunting is chronic malnutrition, wasting is acute malnutrition and underweight is acute or chronic or both type of malnutrition (Food and Agriculture Organization [FAO], 2007). Stunting indicates low height below -2 SD with

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respect to age, wasting is low weight below -2 SD with respect to height and low weight below -2 SD for age indicates underweight (Blossner & Onis, 2005). Poor feeding practice, scarcity of food, illness and infection are responsible for wasting whereas having no proper food for a long time or recurrent infection is responsible for stunting (Aneja et al., 2013; World Vision International, 2017) and acute or chronic or both type of malnutrition produces underweight (Aneja et al., 2013).

Malnutrition in children impairs physical and cognitive growth and development (Global Panel, 2016) that contributes to the intergenerational cycle of malnutrition (Blossner & Onis, 2005; MSNP, 2014; Thapa, n.d.; United State Agency of International Development [USAID], 2018). It “increases the risk of mortality in the early stages of infancy and childhood, impair cognitive function of those who survive and hinders efforts to enhance national social and economic development goals and attainments of Millennium Development Goals (MDGs) 1-6” (Adhikari, 2013, para. 2). Undernutrition is attributed to 45% of child preventable death and severely undernourishment increases 9-fold death rate among children (Global Panel, 2016).

In the world, 52 million children under five years of age are wasted, 17 million are severely wasted, and 155 million are

stunted, while 41 million are overweight or obese, 45% of deaths among under-five years of age are linked to under nutrition that occurs mostly in low and middle-income countries (WHO, 2018). One-third (33.33%) children of under five are stunted in South Asia and sub-Saharan Africa and 14.29% children of under five are wasted in South Asia (United Nations Children’s Fund [UNICEF], 2019). According to National Demographic Health Survey 2016 among under 5 years old children, 36% are stunted, 12% are severely stunted, 10% are wasted, 2% are severely wasted, 27% are underweighted and 5% are severely underweighted and only 1% are overweight or obese in Nepal (Ministry of Health et al., 2017).

However, Food and Nutrition Security Plan of Action (FNSP) 2013-2022; Multi-Sectoral Nutritional Plan (MSNP) 2018-2022; Agriculture Development Strategy (ADS), Nepal Zero Hunger Challenge: National Action Plan 2016-2025; Sustainable Development Goals 2016-2030, have vision to ensure national food and nutrition security (as cited in Acharya et al., 2018) the prevalence of malnutrition is not satisfactory in our country. It further states that prevalence of stunting (37%), wasting (13%) and underweight (30%) respectively keep Nepal in the third, the fourth and the fourth position in stunting, wasting and underweight among SAARC countries.

In Nepal, stunting, wasting and underweight contribute to 52% of all child death (National Planning Commission [NPC], 2074). Further, it states that children could not achieve their physical growth, intellectual and emotional development due to under nutrition. It effects in their education and economical achievement decreases by 3%. In addition, it increases the risk of blood pressure and diabetes in their future life. There is lack of studies related to nutritional status of under five years children of institutional school. Therefore, this study aims to assess the prevalence of stunting, wasting and underweight of children under five years of institutional school.

2. Method

Study design and setting

The study followed descriptive survey research design. Study was conducted on 2076/02/28 (2019, June 11) in an institutional school of Panga, Kirtipur Municipality, Kathmandu, Nepal.

Participants and study size

Participants of the study were students below 5 years and their age ranged from 36 to 59 months. One institutional school was purposefully selected and LKG was randomly selected from Nursery, LKG and UKG. All students of selected grade were eligible for the study who were

present during data collection. Altogether, 51 students participated in the study but eight students of them were excluded because their age was below 36 or above 59 months and data of 43 students were analyzed.

Variables

To assess malnutrition anthropological measure, biochemical measure and clinical signs are used (Blossner & Onis, 2005) but in this study, only anthropological measure was used to assess malnutrition of students. Anthropometric measurement (height, weight and age) is important to determine the nutritional status and prevalence of malnutrition (WFP, 2004) and help to assess stunting, wasting and underweight. Therefore stunting, wasting and underweight were the outcome variables of the study.

Measurement

Height, weight and age of student were taken to assess stunting, wasting and underweight. Height was measured in cm with the help of scale fixed on the wall of a room of school. Height was taken in nearest 0.1 cm. Weight was measured in kg and nearest 0.1kg was recorded. Age of students was identified through school record that was recorded in months completed.

Data quality management

To assure height and weight of student

scale made on wall and weighing machine were checked properly. Researcher himself with coordination of class teacher took measure of height and weight of students. Height and weight of each students were taken twice to assure correct measure. Height and weight of students were taken without shoes. Age of students were assured through school record.

Data collection procedure

After preparing meter scale and weighing machine, measurements were taken in coordination of researcher and class teacher. Data related to age of student were taken from administrative section of school.

Statistical analysis

Data were entered to statistical package for social science (SPSS) version 20 to analyze it. Percentage, mean, range and standard deviation were used to present data. WHO growth table (WHO, 2006) was used as reference to analyze the data. In the study only age, height and weight of students were collected rather than their socio-economic background. To classify stunting, wasting and underweight based on Z-score 0.1 cm to 0.4 cm height of students was rounded down and 0.5 cm to 0.9 cm height of students was rounded up. Z-score equal to and below-2 SD indicates stunted, wasted and underweight and Z-score below-3

SD indicates severely stunted, severely wasted and severely underweight (WHO, 2008).

Ethical consideration

Approval of the principal of the school before data collection was assured and no any harm or difficulty was created to students during data collection.

3. Result

In this section, the data related to nutritional status of children according to stunting, wasting and underweight measurement is mentioned to draw result of nutritional status of children.

General information about students

Table 1 presents that 55.8% boys and 44.2% girls participated in the study. Mean age of students was 49.53 (\pm 4.97) months that ranged from 36 to 58 months. Mean height of students was 104.88 (\pm 5.48) cm that ranged between 93 and 114 cm. Similarly, mean weight of students was 16.326 (\pm 2.244) kg that varied between 11 and 24 kg.

Table 1

General Information of Students

	n (%)	Minimum	Maximum	Mean	Standard Deviation
Boys	24 (55.8)				
Girls	19 (44.2)				
Age		36	58	49.53	4.97
Height		93	114	104.88	5.48
Weight		11	24	16.326	2.244

3.2 Situation of malnutrition of students

Table 2 illustrates that no students were stunted. Percentage of wasted and underweight among all students was only two (4.7%) and among girl it was only two (10.52%).

Table 2

Situation of Malnutrition of Students

	Frequency			Percent		
	Boys	Girls	Total	Boys	Girls	Total
Stunting						
Stunted	-	-	-	-	-	-
Severely Stunted	-	-	-	-	-	-
No Stunted	24	19	43	55.8	44.2	100
Wasting						
Wasted	-	2	2	-	10.52	4.7
Severely Wasted	-	-	-	-	-	-
No Wasted	24	17	41	55.8	39.53	95.3
Underweight						
Underweight	-	2	2	-	10.52	4.7
Severely Underweight	-	-	-	-	-	-
No Underweight	24	17	41	55.8	39.53	95.3

Note. (-) Students do not fall under respective level of malnutrition

4. Discussion

This study has tried to assess the situation of malnutrition status of under five years children following the anthropometric indices and WHO's reference growth chart. Deviation of the anthropometric indices from the standard value is regarded as evidence of malnutrition. More than half of the students were boys. Age of students varied between 36

and 58 months having mean age 49.53 months. Mean height of students was 104.88 cm that ranged between 93 and 114 cm. Weight variation of students was 11 to 24 kg having mean weight 16.326 kg. Overall, no students were stunted. No boys were stunted, wasted, or underweight whereas a few girls were wasted and underweight.

This study found that no students were stunted that is not supported by other studies. Other studies have shown higher prevalence of stunting among children. NDHS2016 reported that half (48%) of the children were stunted (Ministry of Health et al., 2017). Similarly, Sarki et al. (2016), Chataut & Khanal (2016), and Tiwari et al. (2014) have found respectively 26%, 39.9% and 56.5% stunted children among under five years and in Ethiopia, it was 41.2% (Endris et al., 2017). Review studies conducted by Abdulahi et al. (2017) and Akombi et al. (2019) show respectively 14.6 to 67.8% and 5 to 56 % variation in prevalence of stunting in individual studies. Further, they show pooled prevalence was respectively 42% and 29%. Kanan (2020) has found that variation in stunting and severe stunting among under-five Sudanese children respectively was 20.3 to 51.0% and 12.9 to 25.2%. Dhoubhadel et al. (2020) has shown that stunting increased from 26.7 to 31.9%.

This study found that only two girls (4.7%

among all and 10.57% among girls) were wasted that differ from and not supported by other studies. The prevalence of wasting were 7% (Chataut&Khanal, 2016), 10% (Ministry of Health et al., 2017) and 9.7% (Endris et al., 2017) that is higher than findings of this study. Prevalence of wasting ranged from 4.5% to 42.0% (Abdulahi et al., 2017), 0.3% to 40.4% (Akombi et al., 2019) and 3.3 to 21.1% (Kanan, 2020) in individual studies and its pooled prevalence were 15.0 % (Abdulahi et al., 2017) and 7.5% (Akombi et al., 2019). Dhoubhadel et al. (2020) has shown that wasting has decreased from 4.2 to 2.5%.

This study evidences that one in twenty students was underweight while among girls one in ten girls was underweight. NDHSreport 2016 shows that 5% children were severely underweight and 27% were moderately underweight (Ministry of Health et al., 2017) that highly deviates from the findings of this study. Chataut & Khanal (2016), and Endris et al. (2017) found respectively 18.9% and 27% prevalence of underweight that is higher than the findings of this study. Sarki et al. (2016) has also found higher prevalence (10%) of underweight than prevalence of underweight of this study. Dhoubhadel et al. (2020) has shown that prevalence of underweight of children who were residing in shelter during earthquake 2072 increased from 10.9% in 2015 to 14.0% in 2017. Prevalence of underweight

ranged from 12.0% to 47.2% (Abdulahi et al., 2017) and 0.4% to 24 % (Akombi et al., 2019) in individual studies that had pooled prevalence 33% (Abdulahi et al., 2017) and 15.5% (Akombi et al., 2019). A review study among the under-five Sudanese children shows that prevalence of underweight and severe underweight were respectively 24.4 to 35.0% and 6.6 to 48.0% (Kanan, 2020).

Findings of this study show low prevalence of malnutrition among students compared to findings of other studies. However, the same students having age, height and weight respectively 44 months, 93 cm and 11 kg was both wasted and underweight. Similarly, a student having age, height and weight respectively 52 months, 106 cm and 14 kg was wasted and a student having age, height and weight respectively 53 months, 104 cm and 14 kg was underweight. Actually, only three students were in state of malnutrition. This might be the iffin management conducted by school. Students from class one have option to bring mid-day meal prepared in their home but students below class one have compulsory to take mid-day meal available at canteen. For students below class one, there is schedule for every day mid-day meal. There is no written routine but they practice like jaulo, fry potato chips, microni, milk and bread, egg, and samosa and malpuwa respectively Sunday, Monday, Tuesday, Wednesday, Thursday and Friday. However, milk and

bread is replaced by fruits in summer season. The school has fixed 20 rupees for mid-day meal available at canteen and totally prohibited of taking mid-day meal from outside (Personal communication with the principal of school and personal observation during study) that help to reduce prevalence of malnutrition among students.

Other possibilities for low prevalence of malnutrition might be due to age group, sex and type of school of participants; high economic and educational status of parents of participants. In this study, economic and educational status of parents of participants should be assumed high because this study was conducted at Kathmandu district that has the highest human development index (Sharma et al., 2014). Many studies (Ahmed Hussain et al., 2020; Tiwari et al., 2014; Qsei et al., 2010; Budhathoki et al., 2020; Endris et al., 2017; Fariha Binte Hossain et al., 2020) show that malnutrition is lower among the children of family having better economic status than family having lower economic status. Similarly, Fariha Binte Hossain et al. (2020) and Endris et al., (2017) found that prevalence of malnutrition is lower among children of family with higher educational status compared to family with lower educational status. Ghimire et al., 2020; Bloss et al., 2004 and Endris et al., 2017 found that malnutrition was lower among upper age group of

children than lower age group of children within less than five years of children. In addition, Ahmed Hussain et al. (2020) found that malnutrition is lower among boys than girls are and Ashok et al. (2014) showed that malnutrition among children of institutional schools is lower than malnutrition among children of community schools.

This study was not free from selection bias of sample, and due to small sample size, it could not assure generalization. However, it provides new insights about the situation of malnutrition and encourages for comprehensive study about it at school level. It did not include students of community school and children who are outside of school. Other aspects like socio-economic background related data of students were not collected to see association with malnutrition. It did not include over nutritional part of malnutrition and unable to assess malnutrition of students as whole.

5. Conclusion

It is concluded that the status of malnutrition among less than five years of students of institutional school is very low. As nutritional status depends upon dietary practices parents are suggested to provide nutritional diet to their children and they should be counseled to take care of their daughters' nutritional status.

6. Acknowledgement

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