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Abstract

When a baby enters a school, the parents often complain that it isn't getting enough nutrition. Since nursery school is for kids older than 30 months to 59 months, infant boys and girls were measured for height, weight for height/length, and MUAC. Due to absences, only 27 infant boys and girls—out of the 40 students in this age group—were included in the study population. One of the finest options to control malnutrition in children under the age of five should be identified in this school when the children are entered. Schools have human resources (HR) to support parents and even provide a healthy food to the children. To identify the right malnutrition, measurements were acquired of the subject's age, height, weight, and MUAC. Excel, SPSS, and WHO Anthro were used to analyze the data. During the age range of 24 to 35, it was discovered that there were actually no wasting children, with a total of more than +1 SD found 11.1% and +2SD 3.7%, respectively and MUAC also found in total -2SD 3.7% and in the age group of 24 -35 months children were with <-2SD in 7.7%. This does not indicate severe acute malnutrition. All school should have checked the nutritional status of the children during the time of admission from nursery level, so that children would have been protected to damage their future life, in some cases from death.

Key words: Children, Malnutrition, Nursery school, Parents

Declaration: There is no conflict of interest and followed all the research ethics while collecting data.

Introduction

Malnutrition is a serious issue to the age group of birth to 5 years. Stunting is low weight to the age, this is irreversible even after the getting good diet, the main cause of the malnutrition is low intake of proper diet; the chronic malnutrition will result in stunting – an irreversible condition that literally stunts the physical and cognitive growth of children' (UNICEF, 2023). "Malnutrition is a health condition resulting from eating food that contains either insufficient or too many calories, carbohydrates, vitamins, proteins or minerals. It is a state of under- or over nutrition, evidenced by a deficiency or an excess of essential nutrients. Good nutrition is the basic need for children to thrive, grow, learn, play and participate" (Indiran Govender; Selvandran Rangiah; Ramprakash Kaswa, & Doudou Nzaumvila, 2021). The constitution of Nepal has protected the children as under fundamental rights 39.2 explained on Rights of Child (2) as "Every child shall have the right to education, health, maintenance, proper care, sports, entertainment and overall personality development from the families and the State" (Government, 2015).



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Malnutrition has not directly written but it has health and proper care would be covered. Proper nutrition is the right of the children as mentioned in the constitution of South Africa “Good nutrition is the basic need for children to thrive, grow, learn, play and participate. Section 28(1)” (Indiran Govender; Selvandran Rangiah; Ramprakash Kaswa, & Doudou Nzaumvila, 2021). “ ECD is a universal human right – for all children As a universally recognized human right under the Convention on the rights of the child, all children are entitled to support and services to ensure their healthy development” (WHO-UNICEF, 2023). Being right does not mean that the government has implemented with the law, so that if any one breached the right of the children should be punished.

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In DHS surveys, the anthropometric indices height-for-age (stunting), weight-for-height (wasting), and weight-for-age (underweight) are used to measure nutritional status in young children. The three indices can be expressed in standard deviation units (z scores) from the median of the reference population. Values that are more than two standard deviations below (-2 SD) the median of the WHO Child Growth Standards population are used to define under nutrition” (NDHS, 2022). Malnutrition among the children is not only the problem of Nepal, it has global the WHO reported in 2021 “149 million children under 5 were estimated to be stunted (too short for age), 45 million were estimated to be wasted (too thin for height), and 38.9 million were overweight or obese” (WHO, 2021) The quick approach to measure malnutrition is MUAC (Measurement of Upper Arm Circumference) is a method to identify the Malnutrition quickly and easily. To measure Special tape is also developed but it could be taken by the normal tape also.

Malnutrition and its Impact: Malnutrition has becoming serious problem globally, it could have different reasons; whatever the reason it has been a cause of deaths of the children according to WHO 2021 report “ around 45 %” deaths were due to under nutrition and the report further clarified this has been happening mostly in low and middle income countries’ (WHO, 2021).

Relevancy of the Study: SDG (sustainable Development Goal) set a target to reduce neonatal mortality by 2030 to “reduce neonatal mortality (i.e. mortality among newborn babies during the first month of life)



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at least as low as 12 per 1000 live births, and setting the under-five mortality target (i.e. mortality among children under 5 years of age) for the same period to at least as low as 25 per 1000 live births (WHO, Health for all, 2023)".

Nursery to preprimary school gong children should have checked their malnutrition status in intervals since they are growing day by day. They need proper diet to grow properly. The study of the Nursery school children to the age of entering in grade one found crucial. This is the age of 24 months to 5 years completion.

Indicators of Malnutrition: The SD denotes standard deviation, WHO *Child growth standards* median, these are also divided as Severe Malnutrition $-3SD$ and lower then , Moderate malnutrition $-2SD$ to $-3SD$ AND $-2SD$ to $+2SD$ regarded as Normal, More than this is regarded as overweight, underweight also cut of point is $-2SD$.

Stunting - height-for-age <-2 SD; **Wasting** - weight-for-height <-2 SD; **Overweight** - weight-for-height $>+2$ SD and **Underweight** - weight-for-age <-2 SD; these are taken as cut off point to identify the Malnutrition.

MUAC: According to WHO, '6-60 months old children the MUAC standard less than 115mm have highly elevated risk of death' (WHO, 2023)

Gender	Frequency	Percent
Male	17	63.0
Female	10	37.0
Total	27	100.0

Method: All children of the nursery was measured their Height and age, age and weight and MUAC. These there components were taken. Height was taken in CM and weight was in KG, MUAC also taken in CM. These aware recorded as per the months of the baby children, both male and female. The data was analyzed by the use of WHO Anthro and SPSS as well.

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Findings with discussion

The analysis was carried out by the use of WHO Anthro statistical tool, the set standard was measured on the WHO standard, since the analysis itself provides the standard norms of WHO. The analysis indicated the age group from 24 to 35 months old - 13, 36 - 47 months old 10 and 48 to 60 months old 4 baby boys and girls.

Demographic Analysis: In this analysis only baby boys and baby girls are shown in the table, their age, height, weight and MUAC.

In the study, there are only 27 children of Elite Nursery department of elite Boarding school of Birendranagar Municipality. Among them 63 percent are baby boys and 37 percent are girls.
Wasting:

Weight-for-length/height (%)

Age groups	N	(95% CI)	% > +1SD	(95% CI)	% > +2SD	(95% CI)	Mean	SD
Total:	27	(0%, 1.9%)	11.1	(0%, 24.8%)	3.7	(0%, 12.7%)	0.09	0.75
(24-35)	13	(0%, 3.8%)	23.1	(0%, 49.8%)	7.7	(0%, 26%)	0.34	0.96
(36-47)	10	(0%, 5%)	0	(0%, 5%)	0	(0%, 5%)	-0.15	0.45
(48-60)	4	(0%, 12.5%)	0	(0%, 12.5%)	0	(0%, 12.5%)	-0.12	0.05

In totality there is no -3SD and -2SD, as per the WHO standard -3SD severe Malnutrition and -2SD upward (WHO, Health for all, 2023), moderate malnutrition. -2 SD to + 2SD regarded as Normal, above +2SD to +3SD regarded as Moderate Overweight.

The indicated that there are no wasting children, %> +1SD 11.1 and more than %> +2SD 3.7 % Percent in total, at the age group 24 to 35 found %> +1SD found 23.1, these percent are normal. The total children studying in the school are not wasted nor obese or over weight. If the SD was found more than +3SD it would have been over weight.

Age groups	N	Length/height-for-age (%)				Mean	SD
		% < -3SD	(95% CI)	% < -2SD	(95% CI)		
	27	11.1	(0%, 24.8%)	11.1	(0%, 24.8%)	-0.66	1.27
24-35	13	23.1	(0%, 49.8%)	23.1	(0%, 49.8%)	-1.07	1.73
36-47	10	0	(0%, 5%)	0	(0%, 5%)	-0.16	0.08
48-60	4	0	(0%, 12.5%)	0	(0%, 12.5%)	-0.61	0.58



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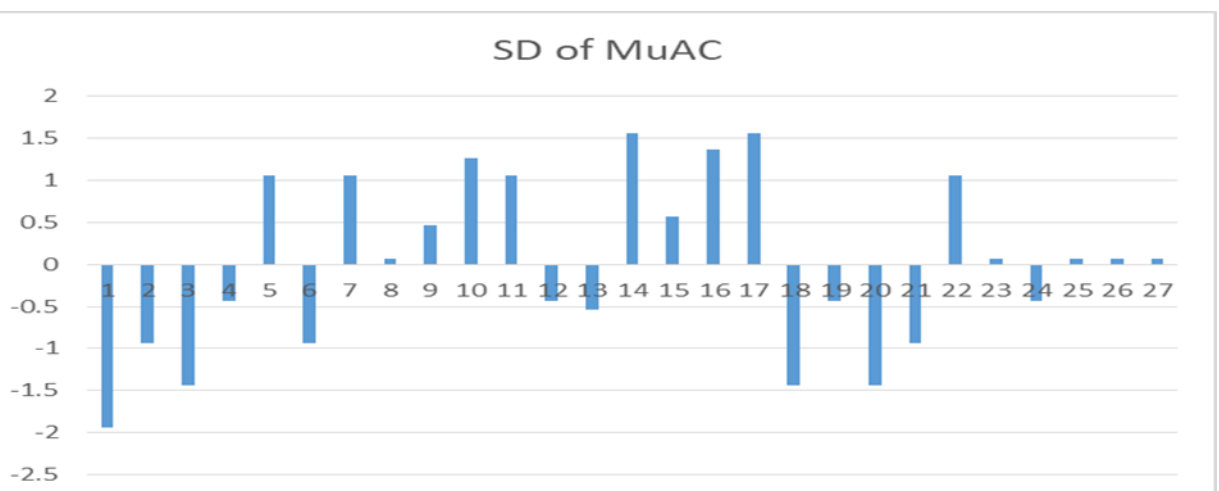
Stunting: Height for age

Age Group	N	% < -3SD	(95% CI)	% < -2SD	Mean	SD
Total:	27	0	(0%, 1.9%)	3.7	-0.73	0.84
(24-35)	13	0	(0%, 3.8%)	7.7	-0.9	0.89
(36-47)	10	0	(0%, 5%)	0	-0.25	0.72
(48-60)	4	0	(0%, 12.5%)	0	-1.32	0.19

Source: primary data.

The Data indicated less than %<-3SD found 11.1, it indicates in total these are moderately stunted or malnourished and less than %< -2SD found 11.1, these also calculated as normal, but risk of being malnourished. Highest percent found in the children at the age of 24 to 35 months. -3SD found as MAM and heading towards SAM.

MUAC (Measurement of Upper arm circumference)



Source: Primary data: % MUAC is not calculated under 3 months children.

MUAC Analysis also towards the normal -3SD – 0 in totality %of <%-2SD 3.7 found and the age of children 24 -35 found %< 2SD 7.7, these could lead to moderate malnutrition. These are according to WHO standard.

This was generated by MS Excel program and clearly indicated the SD and its status, It has found out that the total SD in Negative side found out 12, more than -1.5 found out only 1 and more than -1SD found only 4, this also verified that in totality the children in the nursery school are not malnourished

Conclusion: The research found out, in the school there are no serious case of malnutrition, some are in the verge of moving towards the -2 SD could lead to malnutrition, these should be considered in counselling to the parents and school should have made provision of checking the students malnutrition.



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