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NUTRITIONAL STATUS AND ASSOCIATED FACTORS AMONG SCHOOL GOING CHILDREN AGED 4-10 YEARS IN KISII CENTRAL SUB- COUNTY

R. B. OPINI, J. M. KIPLANGAT and S. K.MUTURI

ABSTRACT

***Background*: Malnutrition is a major challenge in developing world with children less than ten years bearing most of these conditions. In Kenya malnutrition is the greatest contributor to child mortality at 53%. Malnutrition among school age children is due to inadequacies in one or more of the three main pre-conditions for food nutrition, care and health.**
***Objective*: Nutritional status and associated factors among school going children aged 4-10 years in Kisii Central Sub-county.**
***Design*: A descriptive cross-sectional study.**
***Settings*: Five public primary schools representative of fifty four public primary schools in Kisii**
***Subjects*: Three hundred and fifteen children (155 males and 160 females) aged 4-10 years old.**
***Results*: This study showed that 6.5%, 1.9%, 3.9% were HAZ, WHZ, and WAZ respectively. The prevalence of WHZ among school boys was 8.2% compared to school girls 5.2%. Among the school boys 7.0% were prevalent to HAZ compared to school girls 0.9%. The prevalence of WHZ among children aged 6-10 was 3.9% compared to prevalence of children aged 4-5 years which was 1.1%. The prevalence of WAZ among children aged 6-10 years was 1.9% versus 4.0% for children aged 4-5 years. Study showed that different socio-economic/cultural factors were significantly associated to nutritional status of children namely;mothers' knowledge about a child's nutrition 73.35% and father's knowledge 62.5%, size of household (χ2= 45.8, p= 0.005), amount of income per household (χ2= 45.82, p= 0.005), and marital status of the guardians (χ2= 36.89, p=0.045). Dietary intake per day was 28.3% and minimum of three meals were taken.**
***Conclusion*: The prevalence of malnutrition was significantly associated with some socio-economics factors such as; mothers 'knowledge about a child's nutrition, amount of income per household and size of the household of which eradication of poverty may promote nutritional status on school children in Kisii County.**

INTRODUCTION

Nutritional status is the degree to which the individual' physiological need for nutrients is being met by the foods that an individual is eating. It is the state of balance in the individual between the nutrient intake and the nutrient expenditure. There are three reasons why nutritional assessment is undertaken: to diagnose malnutrition, to provide a means of monitoring nutritional effectiveness of nutrition support, to identify the reasons for malnutrition(1). There are six types of nutrients in the diet of a healthy person. The six types include the following: proteins, carbohydrates, fats, mineral elements, vitamins and water. The general deficiency of all nutrients leads to under nutrition and in extreme cases starvation(2).It is important to do nutritional assessment to children(3) because it is an early detection of nutritional risk especially in children. Nutritional conditions that are commonly related to children like overweight, underweight, stunting and wasting. These conditions most probably occur because of malnutrition. Children's eating habits that are developed during childhood affect their health and nutritional status during adulthood. Children from low socio-economic areas might not be able to exercise good nutritional

practices due to limited household income and consequently food availability(4, 5).Communities in rural areas are usually related to low monthly income and it is very hard to provide their children with stable and nutritious diet (6). Growth assessment defines the health and nutritional status of children while serving as useful indirect measurements of population's overall socio-economic status. Studies for vast numbers of subjects usually use anthropometry in nutritional status assessment (7, 8). Growth statuses of children can be an indicator of children's nutritional status. There are two ways on how a child's body may respond to malnutrition, retardation ofheight growthandbody wasting as body weight-for height is not suitable. However, growth status can be indicated by anthropometry measurement data, anthropometry indices, in order to identify the prevalence of malnutrition. A child's eating patterns and dietary intake might influence a child's growth especially school-aged children (9,10). Thus the dietary intake of a child must supply the nutrients that are needed for children's growth and development, and also for body maintenance and body's physical activities.

Normal growth of children depends on many factors such as race, nutrition, and environment if being inflicted with diseases (11). Children's inadequacies in nutrient would eventually alter child's growth status, as children would adapt to low supply of nutrient intakes through the reduction of physical activity and slowed rate of growth. Socio-economic status; as children's from better off socio-economic circumstances tend to be on the average, taller, heavier and fatterfrom poorer socio-economic circumstances (9).

Nutritionist always uses anthropometry measurements to tell the proportion of the human body. Body weight and stature are measures of body size, and ratios of body weight to height can be used to represent body proportion (10).The measurements are done in three indices namely: weight-for-age, height-for-age and BMI-for-age(4).

MATERIALS AND METHODS

Study population:All children aged 4-10 years attending 5 selected public primary schools and their guardians in Kisii Central Sub-County.

Study area: was conducted in five randomly selected public primary schools out of 54 publicprimary schools in Kisii Central Sub- County.

Sample size and Study design: It was a descriptive cross-sectional study employing quantitative techniques for data collection. A total of 315 pupils were recruited.

Sampling design: Two methods were employed in sampling namely: simple random sampling and systematic random sampling methods.Systematic random sampling technique was used to recruit respondents in the selected public primary schools for nutritional status measurements. This was done first by calculating the sampling interval (k) of participants in the five selected public primary schools. The skip interval was calculated as: K=N/n (Total population/ sample size)

MethodsofDataCollection:Semi-structured questionnaire were administered to the guardians of the selected school children to collect demographics, socio-economic/cultural and dietary intake. Anthropometry measurements were used to collect height, weight and Mid Upper Arm Circumference among school going children. The procedures to be followed in taking anthropometric measurements were as described by (WHO, 2006). The weights were measured to the nearest 0.1kg using a portable bathroom scale. The heights were measured to the nearest 0.01m using the height board.

Statistical analysis: Data from demographic characteristics, socio-economic/cultural factors, intensity of common parasites and dietary intake practices was analyzed using Statistical Package for Social Sciences (SPSS) version 17. Descriptive analysis were summarized where data for demographic characteristics of the study population were expressed as frequency, percentages and mean (SD). The anthropometric data were analysed using ENA FOR SMART Software and were referenced using (WHO, 2006; NCHS, 1977).

RESULTS

Table 1

Percentage distribution of mothers with regard to their knowledge about a child's nutrition

	Frequency	Odds ratio
Mother's knowledge about a child's nutrition=YES	231(73.3%)(68.1-78.10)	1.242(0.53-2.051)
Mother'sknowledge about a childs' nutrition=NO	84(26.7%)(21.9-31.9)	1.059(0.927-1210)

Table 2

Percentage distribution of fathers with regard to their knowledge about a child's nutrition

Fathers'	Frequency%	Odds ratio
knowledge about a child's nutrition=YES	197 (62.5%)(56.9-67.9)	0.649(0.410-1.028)
Father's knowledge about a child's nutrition = NO	118(37.5%)(3.4-8.9)	1.310(0.982-1.748)

Figure 1

Percentage distribution with regard to number of meals a child takes per day

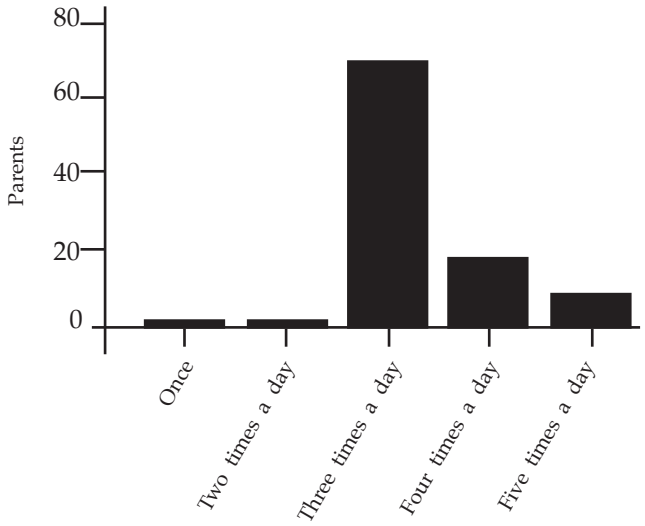

Table 3

Percentage distribution of respondents with regard to weight-for-height z -score

Prevalence of malnutrition	All Sample size (n)=107) n%95% CI	Boys n = 49 n%95%C.I.	Girls n = 58 n%95%C.I.
Prevalence of global malnutrition (<-2 z-scoreand/or oedema)	7(6.5)(1.9-11.2)	4(8.2)(0.5-15.8)	3(5.2)(-0.5-10.9)
Prevalence of moderate malnutrition (<-2 z-score, no oedema)	6(5.6)(1.2-1.0)	3(6.1)(-0.6.9-12.8)	3(5.2)(-0.5-0.9)
Prevalence or severe malnutrition (<-3 z-score)	1(0.9)(-0.9-2.8)	1(2.0)(-1.9-6.0)	0(0.0)(0.0-0.0)

Table 4

Percentage distribution of respondents with regard to height-for-age z-scores

Prevalence of malnutrition	All Sample size (n)=108) n%95% CI.	Boys n = 50 n%95%C.I.	Girls n = 58 n%95%C.I.
Prevalence of stunting(<-2 z-score and/or oedema	2(1.9)(-0.7-4.4)	1(1.1)(-1.9-5.9)	1(1.7)(-1.6-5.1)
Prevalence of moderate stunting(<-2z-scores))	2(1.9)(-0.7-4.4)	1(1.2)(-1.9-5.9)	1(1.7)(-1.6-5.1)

Table 5
Distribution of respondents with regard to weight-for-height z scores

Prevalence of Acute malnutrition	All (n)=206) n%95% CI.	Boys n = 100 n%95%C.I.	Girls n = 106 n%95%C.I.
Prevalence of global acute malnutrition (<-2 z-score and/or oedema)	8(3.9)(3.1-4.6)	1(1.0)(-0.7-2.7)	7(6.2)(6.2-7.0)
Prevalence of acute moderate malnutrition (<-2 z-score, no oedema)	7(3.4)(1.5-5.3)	1(1.0)(-0.7-2.7)	6(5.7)(3.8-7.6)
Prevalence or severe acutre malnutrition (<-3 z-score)	1(0.5)(0.7-1.6)	0(0.0)(0.0-0.0)	1(0.9)(-1.3-3.2)

Table 6
Amount of income with regard to household

Amount of income (Kshs.)	Percentage (%)	95%C.I.	Size of bedrooms	Number of household (%)	95%C.I
5,000.00	47.3	(47.3%)(42.0-52.0)	54.9	2	(54.9%)(49.0-60.0)
<10,000.00	36.2	(36.2%)(40.0-51.0)	19.4	3	(19.4%)(15.0-24.0)
10,000.00-30,000.00	2.2	(2.2)(1.0- 4.0)	18.1	4	(18.1%)(14.0-23.0)
+60,000.00	0.3	(1.0%)(-.0.5-2.0)	5.4	5	(5.4%)(3.0–9.0)

DISCUSSION

A total of 315 school children (155 males and 160 females) were enrolled. The children were aged between 4-10 yearsmean age of 7 and standard deviation of 2.118. Out of 315 respondents 49.2% were among males while 50.8% were among females. The proportion of males among school children was not significantly different from the proportion females school children in this sample population (p=0.23). The overall prevalence of GAM was 6.5% (Table 3) where WAZ was 1.9% (Table 4) and WHZ was 3.9% (Table 5) respectively. The prevalence of WHZ among school boys was 8.2% (Table 1) more compared to school girls 5.2% (Table 1). The prevalence of HAZ among school boys was 7.0% compared to school girls was0.9%taking a minimum of three meals per a day was28.3%which contributed to daily energy intake of school children (Figure 1). The present study showed that more emphasis should be given to nutrition education, personal hygiene, health education poverty eradication in this Sub-County and nationally.The prevalence of stunting (9.3%) in Kisii Central Sub-County was lower than the prevalence of stunting found in study carried out in Zambia among school going children where 28.9% were stunted. The prevalence of school boys were more stunted than school girls and the prevalence of acute malnutrition were more prevalent in school girls (7.0%) than in school boys (0.9%). This differs from the previous study in Nyambene district, Kenya which showed that 6-10 years children's nutritional status was better in girls than in boys. (Koigi *et al*., 2000).

Some socio-economic factors showed significant associations with nutritional status of children namely; mother's knowledge about a child's nutrition, size of household, amount of income per household (Table 4.6), marital status of guardians (p=0.005). About 38.3% of the children were taking meals three times a day. These findings were similar to a study in Pakistan which showed that 42.2% of children consumed four or more food groups (Luke *et al*., 2003).

In conclusion, the prevalence of malnutrition is still an important problem among school going children aged 4-10 years in Kisii Central Sub-County. The prevalence of Stunting was 9.3%, Underweight was 1.9%, and wasting was 3.9% respectively These signified that in Kisii Central malnutrition cases were below the WHO threshold of 15.0%. However this will be controlled by eradication of poverty, promotion of nutrition education and improvement of hygienic practices in the area.

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