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Publications 2023

OPEN ACCESS
ONLINE ISSN: 2992-5460
PRINT ISSN: 2992-6041

NEWPORT INTERNATIONAL JOURNAL OF RESEARCH IN MEDICAL SCIENCES (NIJRMS)
Volume 3 Issue 3 2023

Prevalence of Malnutrition and Associated Risk Factors among Children Aged 6-59 Months in Mubende Regional Referral Hospital

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ABSTRACT

Globally, approximately 151 million children under 5 suffer from stunting and in 2017, nearly 51 million children under 5 were wasted. In Uganda, child malnutrition is one of themost serious public health problems and among the highest in the world with about 28.9% stuntedand 3.6 % wasted in 2015. Therefore, the purpose of this study was to identify prevalence of malnutrition and associated factors among children aged 6-59 months in Mubende Regional Referral Hospital. A facility based cross-sectional descriptive study was conducted. Data collection was done using a pretested questionnaire and the Emergency Nutrition Assessment software version 2015 was used to generate z-scores and the Weight for Height Z-scores (WHZ) were generated using WHO 2005 Growth Standards. The data was then exported to IBM SPSS version 25 for analysis. Malnutrition was found to be at 31.9% (n=135) and factors associated with malnutritionwere, sex of the child where, female children were more likely to be malnourished than boys (X^2=9.56; P=0.002). Low birth weight was statistically associated with malnutrition (P=<0.001; X^2=18.19). Results further showed that children who had no history of illness had reduced risk ofbeing malnourished have (OR=0.276; 95%CI=0.119-0.641). Lack of formal education by the caretaker and being a peasant were statistically significant at (P=<0.001, X^2 =20.09) and (P=<0.001, X^2=17.94) respectively. This study found out that prevalence of malnutrition was high (31.9%). This was associated with female sex, low birth weight, history of infectious disease, caretakers with no formal education and being a peasant were all significantly associated with malnutrition. It is recommended that a strong nutrition specific and sensitive intervention should be implemented in the study area with a special focus on supporting housewives, promoting education on child feeding and nutrition.

Keywords: malnutrition, risk factors, children, 6-59 months

INTRODUCTION

Child malnutrition remains a major public health problem in developing countries and major contributor to global disease burden [1]. Malnutrition's impact on child survival and future national economic productivity cannot be over-emphasized [2]. Although estimates suggested a declining trend in the global prevalence of stunting and wasting among children less than five years, Africa among other United Nation regions registered the lowest percentage decrease in prevalence of stunting (12.2%) from 1990 (42.5%) to 2017 (30.3%)[3]. In most sub-Saharan African countries, the level of wasting among childrenunder-five years of age remained below emergency threshold level but at poor nutritional thresholdlevels (6.4%) for East Africa [4]. Subramanianand colleagues showed that approximately 45% of all deaths in children under five years were associated with malnutrition [5]. This further underpins the impact of malnutrition on child survival [6-10]. The 2016 Uganda Demographic and health survey (UDHS) showed a wasting and stunting prevalence of 3.6% and 28.9% respectively among children under five years of age [11].Rural children were more disproportionately affected than their urban counterparts. In addition, the

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PRINT ISSN: 2992-6041

economic costs associated with childhood malnutrition in Uganda are of serious concern to policy makers, public health professionals and public health researchers. To reduce the burden of wasting and stunting among children under five years, globally applicable evidence-based nutrition specific and sensitive interventions were recommended [12], however the success of these interventionsdepends on several factors among which include identification of local and country specific malnutrition risk factors, the benchmark for nutrition policy and interventions development, advocacy for resource envelop and political commitment [13-21]. Risk factors for wasting and stunting are overt across the globe. In the Lancet series of maternal and child nutrition, two systematic reviews by Black et al delineated the potential risk factors for wasting and stunting among children under five years of age at both global and regional level [22], in middle and low-income countries [23], let alone the comprehensive UNICEF framework of determinants of malnutrition [24]. Risk factors for stunting range from socio-economic to individual level factors such as inadequate dietary intake and infections. Low socio-economic status is an important distal risk factor for stunting. In particular limited maternal opportunity to earn and limited health knowledge resultingfrom lack of or limited formal education as opposed to paternal education, aggravates other correlates of stunting such as poor child-care practices related to nutrition, health and access to existing nutrition and health interventions [25].

METHODOLOGY

Study design

This was a facility-based study which used a descriptive cross sectional study design.

Study setting

The study was conducted in Mubende Regional Referral Hospital, commonly known as MubendeHospital and is located in the town of Mubende, in the Central Region of Uganda about 150 kilometres (93 mi) west of Kampala, the Ugandan capital city. It is the referral hospital for the districts of Mubende, Mityana, Kiboga, and Kyankwanzi. The hospital serves a catchmentpopulation estimated at about 610,600 people, as of July 2020 with the coordinates of 0°34'03.0"N, 31°23'35.0"E (Latitude:0.567496; Longitude:31.393041).

Study population

The study population included children aged 6-59 months attending Mubende Regional Referral Hospital during the time of the data collection.

Inclusion criteria

Only children aged 6 – 59 months whose caretakers gave informed consent recruited in the study.

Exclusion criteria

Children who were seriously sick, Care takers who refused to consent, Children with deformity like kyphosis

Sample size determination

The sample size was calculated using Kish and Leslie formula (Rutterford, Copas, & Eldridge,2015) which states that.

$n = \frac{z^2(1-p)}{d^2}$ for a population ≥10,000

Where:
n = the desired sample size
P = 9.7% estimated number of children with malnutrition in Central region [11].
Z^2 = (1.96) Standard normal value at 95% confidence level
d = Margin of error between the sample and the population = 5%

Therefore $n = \frac{1.96^2 x\ 0.097\ (1-0.097)}{0.05^2}$ **=135. Therefore, the required sample was 135.**

Sampling procedure

Using the average number of children admitted on the ward and the total sample required, the sampling interval was determined, and the first sample was randomly selected from the admissionregister. The sampling interval was then added to enroll the remaining sample. Any eligible participant whose parent/caretaker did not consent for the study was replaced by the next availableparticipant till the whole sample was achieved.

Data collection methods and management

The weight was measured using electronic digital weighing scale (Seca®). For height/length, children <2 years were measured lying down (recumbent length) while those >2years were measured standing up. For MUAC and head

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PRINT ISSN: 2992-6041

circumference, a non-stretch tape was used. An interviewer administered questionnaire was used for each participant to obtain demographic, clinical, nutritional and economic information. Data entry, cleaning and validation was done using Microsoft excel version 2019. Anthropometricdata was analyzed using the Emergency Nutrition Assessment (ENA) software version 2015 to getthe z-scores. Z-scores obtained from ENA will then be incorporated into the Microsoft excel data.The data will then be exported to IBM SPSS version 25 for analysis.

Data analysis

Central tendency and dispersion for continuous and proportions of categorical variables were measured. Chi-square statistics at 95% confidence interval were calculated and variables with p- value ≤0.5 were considered to be statistically significant.

Ethical consideration

Ethical approval was sought from Kampala international university western campus Faculty of clinical medicine and an introduction letter was issued after approval of the proposal. A written consent was sought from the mothers/caretakers before participating in the study. Permission to collect data was sought from Mubende hospital administration.

RESULTS

Results from the study show that majority 81 (60%) of children were females, 96 (71.1%) had anuptodate Vit A supplement, 93 (68.9%) were feeding adequately and 80 (59.3%) of the care takerswere peasants. Table 1.

Table 1: Characteristics of study participants (N=135)

Characteristics of study participants		Frequency	Percent
Sex of child	Female	81	60.0
	Male	54	40.0
Age of the child	6-11	46	34.1
	12-23	30	22.2
	24-35	12	8.9
	36-47	34	25.2
	48-59	13	9.6
Birth weight	Low	26	19.3
	Normal	66	48.9
	Large	43	31.9
Vitamin A supplement	Not up to date	39	28.9
	Up to date	96	71.1
Infectious disease	No	54	40.0
	Yes	81	60.0
Adequacy of feeding	Adequate	93	68.9
	inadequate	42	31.1
Care taker	Not the mother	14	10.4
	Mother	121	89.6
Care taker's education level	No formal education	81	60.0
	Primary	38	28.1
	Secondary	12	8.9
	Tertiary	4	3.0
Employment level	Peasant	80	59.3
	Employed	14	10.4
	Self employed	41	30.4

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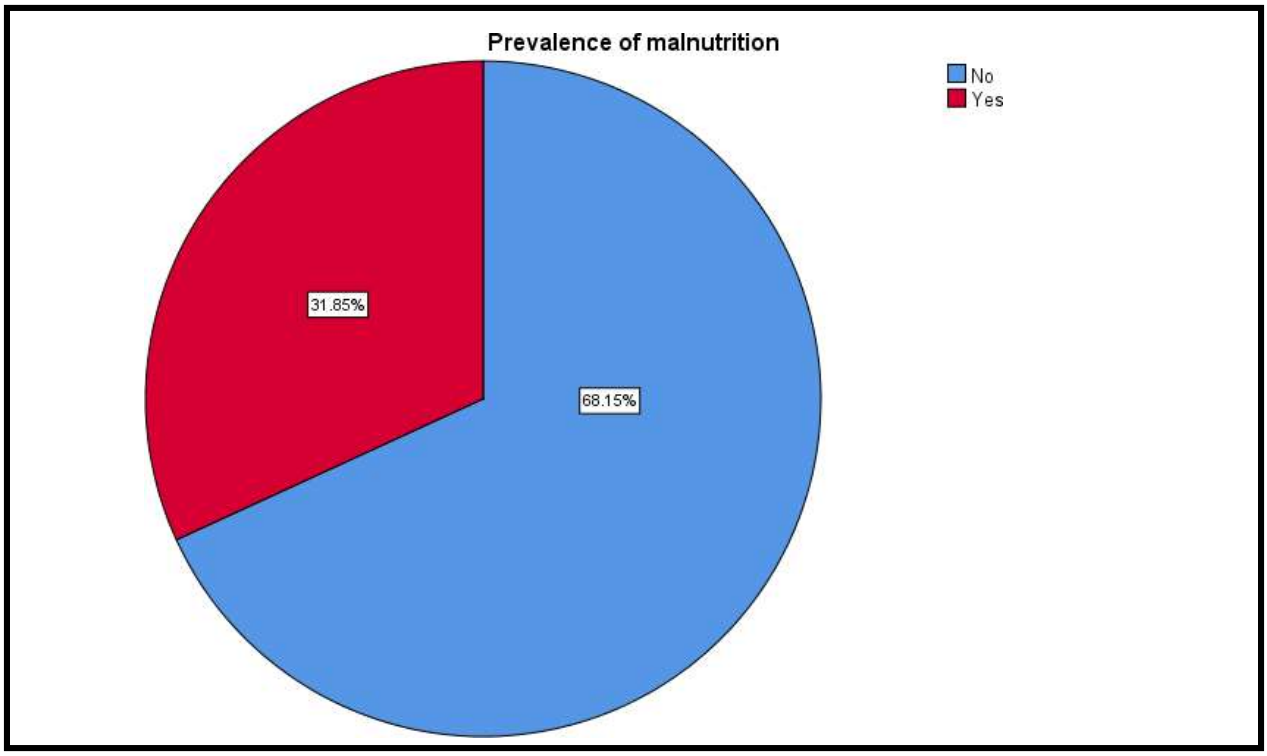
PRINT ISSN: 2992-6041

Findings from the present study show that out of the total 135 participants, 43 (31.9%) of thechildren had malnutrition while their counterparts 92 (68.1%) did not have malnutrition. Figure 2.

Figure 2: Prevalence of malnutrition



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PRINT ISSN: 2992-6041

Among the number of factors studied, sex of the child (P=0.002), birth weight (P=<0.001), historyof infectious disease (P=0.002), care takers' education level (P=<0.001), and caretakers' employment status (P=<0.001) were found statistically significant. Table 2.

Table 2: Association of respondents' characteristics and malnutrition

Characteristics of Participants		Malnutrition		Total	X^2	P value
		No	Yes			
Sex of child	Female	47	34	81	9.56	**0.002***
	Male	45	9	54		
Age of the child	6-11	30	16	46	0.34	0.987
	12-23	21	9	30		
	24-35	8	4	12		
	36-47	24	10	34		
	48-59	9	4	13		
Birth weight	Small	10	18	26	18.19	**<0.001***
	Normal	53	13	66		
	Large	29	12	43		
Vit A supplement	Not up to date	26	13	39	0.06	0.840
	Up to date	66	30	96		
Infectious disease	No	45	9	54	9.66	**0.002***
	Yes	47	34	81		
Feeding adequacy	Adequate	68	25	93	3.41	0.075
	inadequate	24	18	42		
Care taker	Not the mother	10	4	14	0.08	1.000
	Mother	82	39	121		
Care taker's education level	No formal education	50	31	81	20.09	**<0.001***
	Primary	35	3	38		
	Secondary	4	8	12		
	Tertiary	3	1	4		
Employment level	peasant	48	32	80	17.94	**<0.001***
	Employed	6	8	14		
	Self employed	38	3	41		

***Statistical significance**

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DISCUSSION

Prevalence of malnutrition among children 6-59 months in this study was 31.9%. This prevalence is higher than the 28.9% that reported by the Uganda demographic and health survey of 2016 [11]. The reasons for this difference may include study settings and the period in whichthe surveys were conducted. The National Demographic Survey was conducted over a six-monthperiod from June to December 2016 while this study was done over a period of one month of September. The prevalence of malnutrition was higher (79%) in the female children than male children. The higher prevalence of malnutrition among girls may be related to the higher growth rate in girls resulting in greater need for nutrients not supplied by diet. This contradictsthe results of the study by Rahman and colleagues in Bangladesh who reported that boys were more malnourished than girls. In this study, birth weight was statistically associated with malnutrition (P=<0.001; X^2=18.19). Having a low birth weight had a high risk (41.9%) of being malnourished. This implies that thereis an early exposure to nutritional stress and therefore the need for nutritional intervention right from the time of child conception. The observed association between birth weight and malnutrition in children is consistent with findings of several other studies [26-33]. In this study, more than half of the children (60%) were reportedly ill in the preceding two-weeksof the study and this was statistically significant (P=0.002). Children who had no history of illness had a reduced risk (20.9%) of being malnourished. Malnutrition can impair the immune system hence leading to increased susceptibility to infectious diseases [34-39]. On the other hand, helminthic infections, malaria and diarrhea have direct impact on malnutrition. For instance, hookworm infections lead to loss of blood and nutrients as a result of the blood sucking activities of the worms [28-39].

CONCLUSION

This study found out that prevalence of malnutrition was high (31.9%). Among the factors that were investigated, female sex, low birth weight, history of infectious disease, caretakers with no education and being peasants were all significantly associated with malnutrition.

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Emmanuel Kasaine (2023). Prevalence of Malnutrition and Associated Risk Factors among Children Aged 6-59 Months in Mubende Regional Referral Hospital. NEWPORT INTERNATIONAL JOURNAL OF RESEARCH IN MEDICAL SCIENCES (NIJRMS) 3(3):123-130.