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Occurrence and factors predisposing to under nutrition among children under five years attending KIUTH Bushenyi District, Uganda

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ABSTRACT

Malnutrition is one of the major causes of mortality and morbidity among under-five children in sub-Saharan Africa. Western Uganda has persistently registered highest levels of child malnutrition despite being referred to as*" food basket"* of the country. The major objective of the study was to determine the prevalence of under nutrition among children under-five years attending KIUTH Bushenyi district western Uganda**.** The study was a cross sectional descriptive study that used quantitative and qualitative methods. The study was carried out at pediatric ward and pediatric outpatient department of KIUTH. The study was carried out on children under-five years (3 to 59 months). Nutrition level was determined using anthropometric measurements using the US national center for health statistics (NCHS) reference standards, which was approved for use in developing countries by the WHO. Height for age, weight for age and weight for length were used. Data was collected using questionnaires in which questions were asked to the care takers and also measurements of weight, length or height were interpreted using z-score. Those children who were below -2 SD were considered to be undernourished. Data was analyzed using Microsoft excel. In the study, stunting, wasting and underweight were 47%, 25% and 27% respectively. Almost half (47%) of children in the study were stunted which was comparable to the national prevalence of 47.8% for western Uganda which is unacceptably high. This may be because the majority of the participants had underlying diseases and diseases are known to cause under nutrition in children due to lack of appetite and diarrhea. In the study, the prevalence of under nutrition among children under- five years attending KIU TH were 47% stunted, 25% wasted and 27% underweight. The major determinants to under nutrition among children under five years attending KIU TH Bushenyi district were; age (1-3 years), birth interval of 1 to 2 years, breast feeding for less than 6 months, maternal age of less than 20 years, maternal education level (mothers who did not go to school and those who ended in primary school) and maternal occupation (peasant and business).

Keywords: prevalence, under nutrition, children, under five years

INTRODUCTION

Globally there are 101 million (16 %) children under five years of age estimated being underweight. Africa is severely affected and approximately 48 million children under five years are malnourished in Sub-Saharan Africa [1-15]. The majority of the countries in Africa are still struggling with the heavy burden of infectious diseases and poor maternal and child health. These countries need nutrition solutions that are adapted to their circumstances, in order to achieve improved public health.

The World Health Organization [16] estimates that there are 178 million children that are malnourished across the globe, and at any given moment, 20 million are suffering from the most severe form of malnutrition. Malnutrition contributes to between 3.5 and 5 million annual deaths among under-five children. UNICEF estimates that there are nearly 195 million children suffering from malnutrition across the globe.

Malnutrition in Uganda starts at infancy and rises steeply, peaking at about two years when about 50% of toddlers are stunted and from the UDHS findings, Northern (40%) and South Western Uganda (50%) regions are more affected than other regions [17].

Under nutrition among children is an outcome of many interrelated factors including environment, economics, education, and culture and food security. Among these, the ones that have immediate and direct effects on under nutrition are feeding practices and infections. Therefore, the nutrition levels of children can indicate the socio-economic development of a community.

The Uganda food and nutrition policy focuses on nutrition and childhood development as one of the goals with an aim of improving child health especially among those under-five years. This policy is being formulated to address nutrition priority problems with assistance from international and local agencies like UNICEF, Save the Children, Plan International and TASO. The 2004/2005 Uganda food and nutrition policy reform focuses on policies and guidelines on anemia, breastfeeding, HIV/AIDS and a number of other nutrition related disorders prevalent in the country [18]. The Ugandan government has put in place tremendous efforts in reducing the prevalence of malnutrition in the country through effective nutrition programs which act directly on feeding practices. However, the yield would be more significant if the government acted on factors that affect under-five child malnutrition. In addition, addressing the plight of women by strategically targeting their economic, education, and health status can improve nutrition at household level since women are the principal providers and care givers of children at this level.

METHODOLOGY

Study Design

The study design was a cross sectional descriptive study.

Study Area

The study was carried out in Kampala international university teaching hospital. Kampala international university teaching hospital is located in Ishaka in Igara County, Bushenyi District, in western Uganda.

Study Population

The study population consisted of children less than five years.

Inclusion Criteria

Only those care takers who consented for their children to participate in the study were interviewed. All under five year old children both male and female children whose care takers consented were included in the study.

Exclusion Criteria

All care takers who did not consent for their children to participate in the study will not be interviewed. Children without care takers were excluded. All babies less than 3 months were not included in the study.

Sample Size Determination

To determine the sample size, the researcher used Fisher's formula.

$$N = \frac{Z^2 pq}{d^2}$$

Where N= desire sample size, Z= standard normal deviation as 1.96 at a confidence level of 95%, P = prevalence of characteristic under investigation, since there is no baseline, 50% was used to give the widest possible variability. Therefore=0.5 and q= standardized 1.0-0.5=0.5, d= margin of error 0.05 0r 5%

Therefore,

$$N = \frac{(1.96)^2 \times 0.5 \times 0.5}{0.05^2}$$

Since the average admission number of children at pediatric ward is 206 which is less than 10,000

$$nf = \frac{n}{1 + n/N}$$

Where, nf= desired sample size for population less than 10,000, n= calculated sample size for population greater than 10,000, N= Target population.

$$nf = \frac{384}{1 + 384/206}$$

nf=134

This gave appropriate sample size, but for simplicity, because of time and financial constraints, the researcher used a sample size of 100 participants.

Sampling Procedure

Kampala international university teaching hospital Bushenyi Ishaka municipality was selected because of its convenience to the researcher in terms of accessibility and it receives many referrals from many healthy centers in the district. Simple random sampling method was used and 100 people were interviewed.

Data Collection Methods

Questionnaires were used for data collection. Questionnaires were prepared in English and verbally translated into the local language during interview time

Diagnosis of under-nutrition was based on weight for height or length, weight for age and height for age.

Data Analysis

All data collected was edited, coded and errors corrected. It was then analyzed electronically using Microsoft excel.

Ethical Considerations

A letter of introduction was acquired from the school of Allied Health sciences and was presented to KIU-TH administrator to grant me permission to conduct the study. Respondents were requested for their verbal consent prior to interview and confidentiality was maintained throughout the research process. Respondents were given equal chances, treatment and rights at all time of the study.

RESULTS

In the study, 27% of children under five were under weight, 25% are wasted, and 47% were stunted as shown in the table 4.1.

Table 1: Prevalence of under nutrition among children attending KIU TH Bushenyi district

Under nutrition index	Over all status (%)
Stunting	47
Wasting	25
Under weight	27

In the study, half of the study population was females and half were males by coincidence. More than half of children were 12 months and below (54%), 36% were between 13 and 36 months and the rest (10%) were 37 to 59 months. 73% of children in the study were of birth order 1 and 2(first born and second born), 23% were of birth order 3-4 and 4% were of birth order 5 and above.as shown in the table 2.

Table 1: Child Factor

Child factor	Frequency	Percentage
Sex		
Male	50	50
Female	50	50
Age in months		
<13	54	54
13-36	36	36
37-59	10	10
Birth order		
1-2	73	73
3-4	23	23
5+	4	4
Birth interval in years		
1-2	62	62
3-4	28	28
5-6	10	10

The majority of mothers in the study were aged 20-29 years (48%), 39% reached primary school, 87% married, 54% peasant , 80% had family size of <6 people and 48% had estimated monthly income of <150000 Uganda shillings as presented in table 3 below.

Table 3: Maternal Factors

Maternal factor	Frequency	Percentage
Mothers age at birth in years		
<20	**18**	**18**
20-29	**48**	**48**
30-39	**26**	**26**
40-49	**8**	**8**
Education level		
Non formal	**6**	**6**
Primary	**39**	**39**
Secondary	**36**	**36**
College/ university	**19**	**19**
Marital status		
Single	**10**	**10**
Married	**87**	**87**
Divorced	**2**	**2**
Widow	**1**	**1**
Maternal occupation		
Peasant	**54**	**54**

Employed	**26**	**26**
Business	**20**	**20**
Family size		
=<6	**80**	**80**
>6	**20**	**20**
Income per month		
<150000	**48**	**48**
<300000	**30**	**30**
>300000	**22**	**22**

Relationship between under nutrition and child factors are presented in table 4 below

Table 2: Relationship between child factors and under nutrition among children under five years attending KIU TH Bushenyi District

Variables	Total number N=100	Stunting		Wasting		Under weight	
		N	%	N	%	N	%
Sex							
Male	**50**	**27**	**54**	**9**	**18**	**11**	**22**
Female	**50**	**20**	**40**	**16**	**32**	**16**	**32**
Age (months)							
<13	**54**	**23**	**42.6**	**16**	**29.6**	**12**	**22.2**
13-36	**36**	**19**	**52.8**	**9**	**25**	**13**	**36.1**
37-59	**10**	**5**	**50**	**0**	**0**	**2**	**20**
Birth order							
1	**45**	**22**	**48.9**	**10**	**22.2**	**15**	**33.3**
2	**28**	**16**	**57.1**	**6**	**21.4**	**5**	**17.9**
3	**13**	**5**	**38.5**	**3**	**23**	**2**	**15.4**
4	**10**	**1**	**10**	**5**	**50**	**4**	**40**
5	**4**	**3**	**75**	**1**	**25**	**1**	**25**
Birth interval (years)							
1-2	**50**	**30**	**60**	**18**	**36**	**21**	**42**
3-4	**42**	**15**	**35.7**	**6**	**14.5**	**6**	**14.3**
5-6	**8**	**2**	**25**	**1**	**12.5**	**0**	**0**
Breast feeding							
<6 months	**25**	**20**	**80**	**10**	**40**	**11**	**44**
6 months	**60**	**23**	**38.3**	**12**	**20**	**14**	**23.3**
>6 months	**15**	**4**	**26.7**	**3**	**20**	**2**	**13.3**
Meal per day							
<5	**32**	**23**	**71.9**	**12**	**37.5**	**15**	**46.9**
5	**17**	**2**	**11.8**	**4**	**23.5**	**3**	**17.6**
>5	**51**	**22**	**43.1**	**9**	**17.6**	**9**	**17.6**

Table 3: relationship between maternal factor and under nutrition among children under five years attending KIUTH Bushenyi District

Variables	Total 100	Stunting (n)	%	Underweight (n)	%	Wasting (n)	%
Age of mother at birth (years)							
<20	15	10	66.7	7	46.7	4	16
20-29	33	19	57.6	10	30.3	15	60
30-39	40	17	42.5	10	25	6	15
40-49	12	1	14.3	0	0	0	0
Mothers education level							
Non formal	6	3	50	3	50	0	0
Primary	39	21	53.8	16	41	16	41
Secondary	36	18	50	8	22.2	7	19.4
Collage/ university	19	5	26.3	0	0	2	10.5
Marital status							
Single	10	3	30	2	20	2	20
Married	87	43	49.4	24	27.6	23	26.4
Divorced	2	0	0	0	0	0	0
Widow	1	1	100	1	100	0	0
Mothers occupation							
Peasant	54	25	46.3	18	33.3	19	35
Employed	26	11	42.3	2	7.7	4	15.4
Business	20	11	55	7	35	2	10
Family size							
=<6	80	36	48.8	21	26.3	36	21.3
>6	20	8	40	6	30	8	40
Income per month							
<150000	48	30	65.2	18	37.5	17	35.4
<300000	30	10	33.3	6	20	5	16.7
>300000	22	7	31.8	3	13.6	3	13.6

Table 4: Independent variable against stunting among children under-five years attending KIU TH Bushenyi District.

Variable	Stunting
Child factor	
Sex	Male
Age (in month)	13-36
Birth order	1st and 2nd
Birth interval (in years)	1 to 2
Breast feeding	< 6 months
Meals per day	< 5 meals
Maternal factor	
Mothers age at birth (in years)	< 20
Educational level	Non formal and primary
Marital status	Widow and married
Occupation	Business and peasants
Family size	< 6
Estimated monthly income	< 150000

Table 5: Independent variables against underweight among children under five years attending KIU TH Bushenyi District

Variable	Under weight
Child factor	
Sex	**Female**
Age (in months)	**13-36**
Birth order	**1 and 4**
Birth interval (in years)	**<2**
Breast feeding	**<6 months**
Meals per day	**<5**
Maternal factor	
Mothers age at birth	**<20**
Educational level	**Non formal and primary**
Marital status	**Widow and the married**
Occupation	**Business and peasants**
Family size	**< 6**
Estimated monthly income	**< 150000**

Table 8: independent variables against wasting among children under five years attending KIU TH Bushenyi District.

Variable	Wasting
Child factor	
Sex	**Female**
Age (in months)	**<13**
Birth order	**4thand5th**
Birth interval	**<2**
Breast feeding	**<6 months**
Meals per day	**< 5 meals**
Maternal factor	
Mothers age at birth (in years)	**20-29**
Educational level	**Primary**
Marital status	**Married**
Occupation	**Peasant**
Family size	**>6**
Estimated monthly income	**< 150000**

DISCUSSION

Prevalence of stunting, underweight, and wasting in the study were 47%, 27%, and 25% respectively. This indicates that there is a high level of malnutrition as judged by the WHO criteria.

Stunting in the study was 47% which is much close to the western region prevalence of 47.8%(JK Kikafunda, 2014) , and almost similar to the prevalence of stunting in Bushenyi district 46% (JK Kikafunda, 2014) . This is because KIU TH is within those regions and people in these regions have similar problems. However it's higher than the prevalence of stunting in Bushenyi district at 42% UDHS, 2011 and much higher than the current national prevalence of stunting at 29% [19]. This is because the study was carried out in a hospital were the majority of the participants had some under lying diseases and also bushenyi is a known burden to the country in terms of under nutrition. In the study, prevalence of underweight was 27% which was much higher than the national prevalence (11%) according to UDHS 2016 and even higher than the highest prevalence in the country (26%) in Karamoja region [19]. The difference may be due to the fact that diseases predispose to under nutrition and the majority of the participants were admitted to pediatric ward and also bushenyi is among the top burden districts in the country in terms of malnutrition.

The prevalence of wasting reported in the study was 25% which was much higher than the national prevalence of 4% according to UDHS [19] and higher than the known highest prevalence in the country (10%) in Karamoja and west Nile [19] and it is also higher than the prevalence of wasting in Kenya at7% (KNBS). This big difference is

because the study was carried out on sick children and diseases are known to cause under nutrition in children due to diarrhea and loss of appetite. The results from the study show that child's age, birth order, birth interval, breast feeding have an influence on the child's nutritional status. Children between 13 and 36months old were more undernourished than those below 13 months and above 37 months old. This is in line with UBOS and macros international 2007 were 13% of children aged 0 to 8 months malnourished and 45%of children aged between 13and 23 months were malnourished. This may be because of poor weaning practices. Malnutrition was common among children whose mothers delivered when the youngest child is less than 2 years. This is in line with Nure and Goni [20]. It is the same with UBOS and macro international inc 2007, where malnutrition is highest if the birth interval is less than 24 months (41%). This may be because these children are less cared for and less breast feed (less than 6months) when the mother is preparing for the new baby and also less fed. The supplementary feeds they use do not meet the AFASS criteria and also lack essential nutrients. In the study under nutrition was common in children who were breast feed for less than 6 months and those who had <5 meals per day.

In the study the majority of undernourished children were from mothers who did not go to school and those who ended in primary school. This is in line with UDHS [19] which showed that 37% of stunted children were from mothers who did not go to school and 30% from those who ended in primary school. This is because these mothers lack knowledge about health skills related to nutrition, hygiene, preventive care and disease treatment. They may also be poor and unable to purchase food for their children.

Children from married mothers were malnourished than those from single mothers and also the child from the only widowed mother was malnourished making it 100% however this could not be relied on because it needs a large number of children from widows to know the actual prevalence of under nutrition in children from widowed mothers. This result is contrary to the study carried out by Appol and Krekling [21] where married mothers were positively associated with good nutrition. This result may be because the majority of children who participated in the study where from married mothers (87%). This may also be because of large family size leading to high cost of living where these parents may not get enough food to sustain the family. On the other hand, married mothers have to care for both children and the husband there fore she may end up keeping nutritious foods to the husband neglecting children.

The majority of under nourished children were from peasant and business women. This is in line with the study carried out in Vietnam by Nguyen and kam [22] which revealed that children from mothers who were laborers or farmers had a greater prevalence of stunting, underweight and wasting than those from mothers who were employed. This is because peasants in Bushenyi grow most matooke which lack most nutrients and these farmers lack money to buy supplementary foods for their children. Secondly food they grow may not be enough to sustain their family during dry season [24-36]. Business mothers lack time to care for their children and end up leaving them with other elder children who may neglect feeding them in the right way. These mothers sell nutritious foods in search for money leaving less to sustain the family. Most of the under nourished children were from mothers aged less than 20 years. This may be because these mothers get unplanned pregnancies and also lack knowledge on how to feed their babies.

CONCLUSION

In the study, the prevalence of stunting, underweight, wasting among children under- five years attending KIU TH are 47%, 27%and 25% respectively.

Factors leading to under nutrition among children under five years attending KIU TH are;

Age 1-3 years, Birth interval of 1-2 years, breast feeding for less than 6 months, maternal age of less than 20 years, Maternal level of education (mother who did not go to school and those who stopped in primary school), Marital status (the married and the widow), Occupation,(peasant and business).

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