

Prevalence and factors associated with malnutrition among children below 5 years attending Kitagata hospital, Sheema district

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ABSTRACT

World over, malnutrition is one of the most important public health problems. In developing countries especially, Sub-Saharan Africa malnutrition has continued to affect children. In Uganda, 38% are stunted, 6% wasted and 16% underweight mostly affecting Northern Region with 40% and Southwestern region, 50% of the children are malnourished. The objective of this study was to determine the prevalence and factors associated with malnutrition among children below 5 years attending to KITAGATA HOSPITAL in Sheema district. A cross-sectional study design was used. The study employed a quantitative approach of data collection and analysis. The data was analyzed using Statistical package for social scientists (SPSS. Version 16.0). In this study, 95 children and their mothers participated with an overall response rate of 95%. Prevalence of stunting was 49%; prevalence of wasting was 27.3% while the prevalence of underweight was 44.2%. Child HIV status [(coef:1.292, CI:0.13,-2.46, P=0.030)], Child age [(coef:0.044, CI:0.02,-0.07, P=0.002)], Presenting complaint [(coef:0.002, CI:0.51,-2.31, P=0.002)], Occupation [(coef:0.638, CI:0.24,-1.03, P=0.002)], Number of Household members [(coef:-1.092, CI:-2.06,-0.12, P=0.028)], Marital status [(coef:-1.515, CI: -2.84,-0.19, P=0.026)], Food quality [(coef:1.055, CI:0.44,-1.67, P=0.001)] were the significant factors associated with malnutrition. The prevalence of malnutrition in children under five attending to Kitagata General Hospital was 39%. Child HIV status, Child age, presenting complaint, Caretaker occupation, Number of household members, Marital status, and Food quality were significantly associated with malnutrition.

Keywords: Malnutrition; Prevalence; Children under five; Factors associated; Kitagata Hospital

INTRODUCTION

Malnutrition is a deficiency or imbalance in a person's intake of energy and/nutrients to ensure growth and maintain specific functions. Malnutrition can be both over (overweight and obesity) and under nutrition (wasting, stunting, underweight, and micronutrient deficiency [1, 2]). Although child malnutrition was an important indicator for monitoring progress towards the achievement of MDG nutrition indicators for young children and their mothers have not improved much over the past years, with some indicators showing a worsening trend [3, 4]. Childhood malnutrition remains a significant cause of mortality and is a development issue in the region. It is one of the most important public health problems in developing countries especially Sub-Saharan Africa [5, 6]. Among children, inappropriate nutrition affects brain development [7]. A diet in excess or lacking essential nutrients is likely to have mental adverse effects [8]. In Uganda, 45% of children under 5 years old are reported to be short for their age (stunted) in 1995 and over 20 years later, the prevalence of stunted under-5s (had fallen to only 29% [9]; thus the majority of the respondents were from rural areas (86.9%), had no education (70.1%) and belonged to the poorest household (81.8%). The highest population of respondents belonged to the catholic faith

(75.8%), these children were below 1 year (33.2%) and were males (54.1%) respectively [10]. Although the country has made tremendous progress in economic growth and poverty reduction over the past 20 years, its progress in reducing malnutrition remains very slow. As noted, the meager improvements in ensuring the nutritional well-being of Ugandan children stand in stark contrast to the large gains in economic growth and poverty reduction over this period [11]. The causes of malnutrition often occur together and result from multiple underlying factors including inadequate access to food and health services [12]. Other basic causes include poverty, illiteracy and social norms [13]. However, the nature and magnitude of such factors vary from one place to another [14]. Research indicates that malnutrition has devastating effects on human performance, health, and survival and a recent global analysis demonstrated that child malnutrition is the leading cause of the global burden of Disease [15]. 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-two children [16, 17]. Also, UNICEF estimates that there are nearly 195 million children suffering from malnutrition across the globe; and in developing countries, malnutrition is one of the most important risk factors for high child mortality rates [17]. In Uganda, 29% are stunted, 4% wasted and 10% underweight mostly affecting Northern Region 65% and Western region 26.5% children malnourished [17]. This study therefore assessed factors associated with malnutrition among children below five years in Sheema District. At least 19 million preschool children are affected by severe acute malnutrition (SAM) globally [18, 19]. Malnutrition is a contributing factor to nearly 60 % of the over 10 million deaths that occur annually among children under five years old in developing countries [20], where 2 % of children (about 13 million children) suffer from severe acute malnutrition [20]. In Africa, malnutrition is worsened by the presence of diarrhea and mortality rate. Sub-Saharan Africa alone, accounts for more than 90% mortality in children 5 years [21]. Uganda is among the 15 nations with the highest number of diarrheal related child mortality due to poor nutrition [22]. Despite the availability of favorable natural resource capacity and a variety of nutritional supplements in the Uganda, malnutrition has remained an important health and welfare problem especially among children under five years [22]. Therefore, this study seeks to determine the factors influencing malnutrition among children under five years attending Kitagata Hospital in Sheema district.

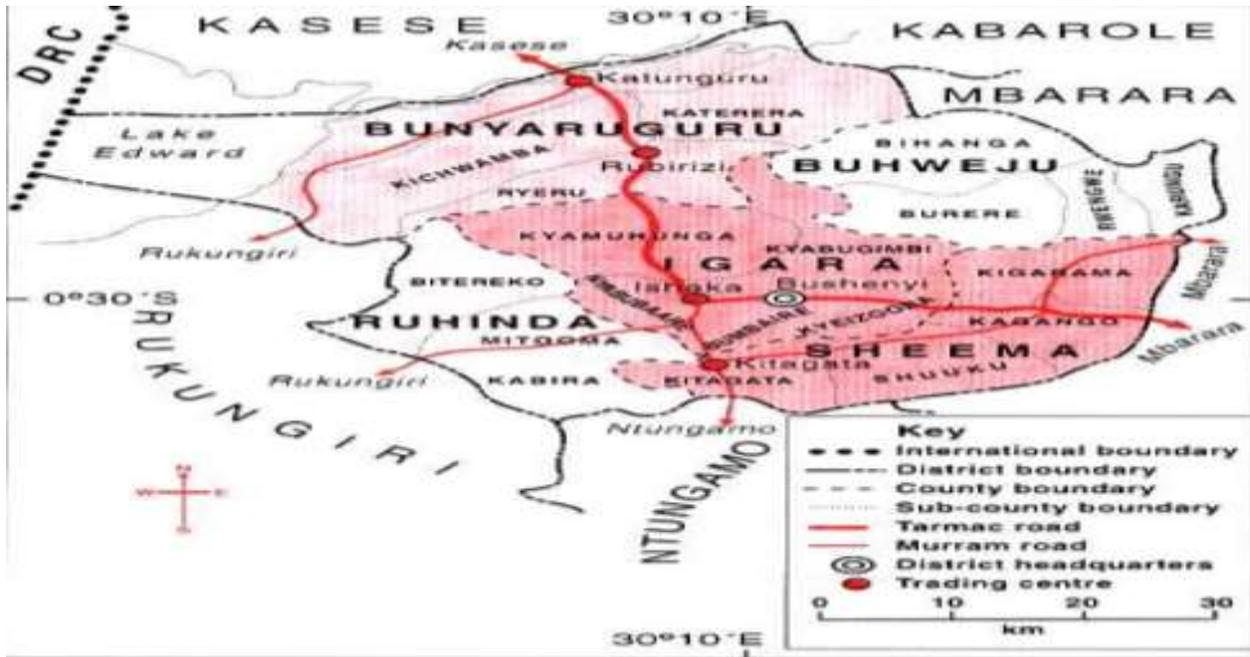
METHODOLOGY

Study Design

A descriptive cross-sectional study design was adopted for the study. The prevalence of malnutrition ascertained using Anthropometric measurements. Quantitative method was used for data collection. Also, hospital registers were visited to get previous information on the received cases of malnutrition in children under five years.

Study Area

Kitagata Hospital is located in Sheema district western Uganda, approximately 16.9 km from Ishaka town along Ishaka-Kagamba road.



**Figure 1: Uganda Districts Information Handbook
Study Population**

Our study recruited children under five years.

Inclusion criteria and exclusion criteria

We included children under five years attending to Kitagata Hospital whose parents consented to participate. We excluded children who were too ill and those that had physical disabilities that would affect our assessments.

Sample Size Determination

This was determined using the formula according to Brown, (2004)

Where;

$$n = \frac{Z^2 P(1-P)}{e^2}$$

n- Total number of subjects required in the sample

Z= a standardized normal deviate value that correspond to a level of statistical significance equal to 1.96

P= prevalence of malnutrition in Uganda which is estimated at 7% (0.07) (UDHS, 2016)

e= margin of error which corresponds to the level of precision of results desired and in this case 5 % (0.05) was taken.

Therefore;

$$\frac{(1.96)^2 \times 0.07(1 - 0.07)}{(0.05)^2}$$

n=100 children under five years

Therefore 100 children were used in the study.

Sampling Technique

Consecutive continuous sampling techniques were applied to select children under five years with malnutrition. Participants were enrolled consecutively based on the inclusion criteria. Children who met the inclusion criteria were enrolled in the study and anthropometric measurements taken and the questionnaire administered to the parents or care takers.

Data Collection Instrument

The prevalence of malnutrition was collected using Anthropometric measurements, including weighing scale for weight, tape for height/length and MUAC Tape for mid-upper arm circumference. Data on child and maternal factors was collected using a self-administered questionnaire. Also, hospital registers like Health Management Information System were checked to access previous malnutrition cases.

Methods

To examine the extent of malnutrition among the children under five years attending to Kitagata Hospital, we used length-for-age(stunting), weight-for-length(wasting), and weight for age(underweight)and MUAC for age(wasting) nutritional indices.

Data Analysis

Data was analyzed using statistical package for social scientists (SPSS) version 16.0 and Stata version 13. The findings were presented as frequencies/percentages for categorical variables and mean/standard deviation for numeric variables. We conducted bivariate analyses to assess the association between various factors and nutrition indices. We further conducted multivariable logistic regression analyses adjusting for probable confounders. Our outcomes being numeric, we presented coefficients plus their corresponding confidence intervals and p-values. All p-values less than 0.05 were considered statistically significant.

Ethical Consideration

A letter of data collection which was addressed to the District Health Officer for permission was collected from the School of Allied Health Sciences. After the permission was granted, the letter was taken to the hospital administrators for permission to access hospital to collect data.

Limitations and Delimitations of the Study

Some of the limitations of the study were misdiagnosis, noncompliance in some respondents and inaccurate information from respondents.

RESULTS

Socio –Demographics of study participants

Child and caretaker characteristics are presented in **Table 1**; Majority (63.2%) of the children included in our study were males and on average our children were 24.6 months old (± 14.2 SD). Most of the participants (69.5%) had non-nutritional related complaints and only 29(30.5%) presented to the hospital with nutrition related complaints. As per caretaker occupation, majority were peasants (61.1%) and most of them (71.6%) reported to be earning less than 200,000uganda shillings per month. about half (53.7%) of the participants came from households that had less than 5 members. Nearly half (46.3%) of the caretakers attended only primary school, 30(31.6%) were secondary leavers, 14(14.7%) had tertiary education, 7.4% were illiterate. Most of our participants (83.2%) came from households that were headed by fathers. For marital status, majority 83(87.4%) were married, 9(9.5%) were single, and 3(3.2%) were widows. About 56(58.9%) were the only ones that could eat 3 meals per day in their households. More than half (51.6%) of the participants were reported to have had a recent illness. Majority (75.8%) of the children were born with a normal birth weight and about 70(73.7%) were fully immunized. Looking at access to clean water, majority 75(78.9%) reported to have access to clean water, while 20(21.1%) had no access to clean water.

Table 1: Participant Characteristics

Characteristic	Mean/frequency (n)	SD/percentage (%)
Child sex		
Male	60	63.2
Female	35	36.8
Child age	24.6 (mean)	14.2 (SD)
Presenting complaint		
Nutrition related	29	30.5
Others	66	69.5
Caretaker occupation		
Peasant	58	61.1
Civil servant	6	6.3
Self employed	19	20.0
Others	12	12.6
Child MUAC	13.8 (Mean)	2.3(SD)
Caretaker salary		
<200000	68	71.6
200000- 500000	20	21.1
>500000	7	7.4
Number of household members		

<5	51	53.7
5-10	43	45.3
>10	1	1.1
Level of education of the caretaker		
Primary	44	46.3
Secondary	30	31.6
Tertiary	14	14.7
None	7	7.4
Household head		
Father	79	83.2
Mother	16	16.8
Number of children		
1-3	42	44.2
4-6	52	54.7
7-9	1	1.1
Marital status		
Single	9	9.5
Married	83	87.4
Widow	3	3.2
Number of meals per day		
1	1	1.1
2	38	40.0
3	56	58.9
Quality of food		
Carbohydrates	11	11.6
Proteins	7	7.4
All	77	81.1
Birth order		
First born	19	20.0
Second born	25	26.3
Third born	24	25.3
Forth born & above	27	28.4
Birth interval		
After 2 years	30	31.6
After 1 year	42	44.2
After 6 months	6	6.3
Below 6months	2	2.1
N/A	15	15.8
Recent child illness		
Yes	49	51.6
No	46	48.4
Weight of the baby at birth		
<2.5	11	11.6
2.5-4	72	75.8
>4	11	11.6
N/A	1	1.1
Child immunization		
Fully immunized	70	73.7
Partially immunized	25	26.3
HIV status of the child		
Positive	13	13.7
Negative	70	73.7
N/A	12	12.6

History of recent drought		
Yes	13	13.7
NO	82	86.3
Food prices in the community		
High	31	32.6
Low	17	17.9
Affordable	46	48.4
Access to clean water		
Yes	75	78.9
No	20	21.1
Weight For Age Z score	-1.7	1.9
Length For Age Z score	-2.4	2.6
Weight F Length Z score	-0.3	2.7

Prevalence of malnutrition among children below five years

The study indicated the prevalence of malnutrition assessed using various methods. Based on weight for length, majority 69(72.6%) of the children had a normal nutritional status, 16(16.8%) had severe acute malnutrition (SAM) and the least 10(10.5%) had moderate acute malnutrition (MAM). We assessed underweight using weight for age z scores nearly half of our participants were underweight. We further assessed stunting status using length for age z-scores and only about half (50.5%) of the children were normal and 40(42.1) had severe stunting. By use of mid upper arm circumference, we assessed acute malnutrition (wasting), and similar to weight for length, majority 62(65.3%) of the children were classified as normal (see table 1).

Table 2: Prevalence of malnutrition among children below five years attending Kitaga Hospital

Nutritional Indices	Category	Frequency	Prevalence (percentage)
Weight for Length Z-score(Wasting)	Normal	69	72.6
	Moderate wasting	10	10.5
	Severe wasting	16	16.8
Weight for Age Z-score (Underweight)	Normal	53	55.8
	Moderate underweight	18	18.9
	Severe underweight	24	25.3
Length for Age Z-score (Stunting)	Normal	48	50.5
	Moderate stunting	7	7.4
	Severe stunting	40	42.1
Mid Upper Arm Circumference (Wasting)	Normal	62	65.3
	Moderate Acute Malnutrition	19	20.0
	Severe acute malnutrition	14	14.7

Factors associated with malnutrition among children below five years

The bivariate analysis for the factors associated with nutrition indices are presented in table 3 below; Presenting complaint and HIV status were the only factors found to have an association with weight for length Z score (P=0.040 and 0.014 respectively). Looking at Z score (WFAZ), child age and presenting complaint were found to have statistically significant associations (P=0.002 and <0.001 respectively). Child age, presenting complaint, occupation and HIV status were associated with length for age Z score (all p-values less than 0.005), Child age, presenting complaint and food quality were found to be significantly associated with MUAC (**Table 3**). After adjusting for all probable confounders, we present the result of multivariate analysis in **table 4**; Child HIV status was significantly associated with malnutrition according to WFLZ (coef:1.292, CI:0.13 to 2.46, P=0.030) in that children who were HIV positive were more likely to have lower weight for length z scores. Child age (coef: 0.044, CI: 0.02 to 0.07, P=0.002) and presenting complaint (coef: 0.002, CI: 0.51 to 2.13, p=0.002) were associated malnutrition according to WFAZ. Child age, presenting complaint, occupation, house hold members, marital status and HIV status had statistically significant associations according to LFAZ (all p values < 0.005). Finally, Age, presenting complaint and food quality were associated malnutrition according to child MUAC (P=0.049, <0.001 and 0.001 respectively) (**Table 4**).

Table 3: bivariate analysis of the association between participant characteristics and child nutrition indices

Factor	WFLZ			WFAZ			LFAZ			MUAC			Page 71
	Coeff	P value	CI	Coeff	P value	CI	Coeff	P value	CI	Coeff	P value	CI	
Age	.014	0.489	-0.03 to 0.05	0.043	0.002	0.02 to 0.07	0.049	0.010	0.01 to 0.09	0.043	0.009	0.011 to 0.08	
Gender	0.345	0.548	-0.79 to 1.48	0.220	0.588	-0.58 to 1.02	0.293	0.603	-0.82 to 1.41	0.325	0.506	-0.64 to 1.29	
Complaint	1.220	0.040	0.06 to 2.38	1.640	0.000	0.87 to 2.41	1.410	0.015	0.28 to 2.54	2.871	0.000	2.05 to 3.70	
Occupation	-0.393	0.105	-0.87 to 0.08	0.023	0.895	-0.32 to 0.36	0.661	0.005	0.21 to 1.11	0.168	0.419	-0.24 to 0.58	
HH members	0.240	0.652	-0.81 to 1.29	-0.369	0.326	-1.11 to 0.37	-0.793	0.127	-1.81 to 0.23	-0.277	0.541	-1.17 to 0.62	
Education	-0.373	0.206	-0.95 to 0.21	-0.302	0.147	-0.71 to 0.11	-0.214	0.461	-0.77 to 0.36	-0.120	0.633	-0.62 to 0.38	
Marital status	0.643	0.416	-0.92 to 2.21	0.068	0.903	-1.04 to 1.18	-1.235	0.109	-2.75 to 0.28	0.970	0.149	-0.35 to 2.29	
No of children	0.552	0.302	-0.51 to 1.61	-0.009	0.981	-0.76 to 0.74	-0.634	0.227	-1.67 to 0.40	0.303	0.507	-0.60 to 1.21	
Food quality	0.543	0.189	-0.27 to 1.36	0.510	0.080	-0.06 to 1.08	0.257	0.528	-0.55 to 1.06	1.313	0.000	0.67 to 1.96	
Birth order	0.107	0.672	-0.39 to 0.61	0.011	0.953	-0.34 to 0.36	-0.090	0.714	-0.58 to 0.40	0.124	0.563	-0.30 to 0.55	
HIV status	1.301	0.014	0.26 to 2.34	-0.215	0.573	-0.97 to 0.54	-1.701	0.001	-2.69 to -0.71	0.097	0.834	-0.82 to 1.01	
Drought	0.325	0.687	-1.27 to 1.92	-0.254	0.656	-1.38 to 0.87	-1.242	0.114	-2.79 to 0.30	0.254	0.711	-1.11 to 1.61	

TABLE 4: Multivariate analysis of the association between participant characteristics and child nutrition indices

Factors	WFLZ			WFAZ			LFAZ			MUAC		
	Coeff	P value	CI	Coeff	P value	CI	Coeff	P value	CI	Coeff	P value	CI
Age	.028	0.188	-0.01 to 0.07	0.044	0.002	0.02 to 0.07	0.036	0.044	0.00 to 0.07	0.029	0.049	0.00 to 0.06
Gender	0.303	0.617	-0.90 to 1.50	0.044	0.911	-0.74 to 0.83	-0.134	0.789	-1.12 to 0.86	0.029	0.944	-0.79 to 0.85
Complaint	0.873	0.164	-0.36 to 2.11	1.318	0.002	0.51 to 2.13	1.217	0.020	0.20 to 2.24	2.407	0.000	1.56 to 3.25
Occupation	-0.424	0.082	-0.90 to 0.06	-0.015	0.924	-0.33 to 0.30	0.638	0.002	0.24 to 1.03	0.1655	0.316	-0.16 to 0.49
HH members	0.530	0.374	-0.65 to 1.71	-0.278	0.476	-1.05 to 0.50	-1.092	0.028	-2.06 to -0.12	-0.208	0.608	-1.01 to 0.60
Education	-0.519	0.093	-1.13 to 0.09	-0.376	0.063	-0.77 to 0.02	-0.116	0.644	-0.62 to 0.38	-0.164	0.834	-0.58 to 0.25
No of children	0.880	0.186	-0.43 to 2.19	0.128	0.768	-0.73 to 0.99	-0.787	0.151	-1.87 to 0.29	0.755	0.097	-0.14 to 1.65
Marital status	0.638	0.433	-0.97 to 2.25	-0.102	0.849	-1.15 to 0.95	-1.515	0.026	-2.84 to -0.19	0.439	0.428	-0.66 to 1.54
Birth order	-0.428	0.200	-1.89 to 0.23	-0.136	0.534	-0.56 to 0.29	0.339	0.218	-0.20 to 0.88	-0.155	0.494	-0.60 to 0.29
Food quality	0.002	0.997	-0.91 to 0.91	0.366	0.224	-0.23 to 0.96	0.690	0.070	-0.06 to 1.44	1.055	0.001	0.44 to 1.67
HIV status	1.292	0.030	0.13 to 2.46	-0.312	0.419	-1.07 to 0.45	-1.845	0.000	-2.80 to -0.89	-0.387	0.144	-1.38 to 0.21
Drought	0.405	0.636	-1.29 to 2.10	-0.235	0.675	-1.34 to 0.87	-1.228	0.084	-2.62 to 0.17	0.209	0.720	-0.95 to 1.36

DISCUSSION

According to our findings the prevalence of stunted children was 49.5% whereas the prevalence of wasted children was 27.3%. Out of the 95 children, 44.2% were underweight. From the study findings 27.3% of the children were wasted, this prevalence was generally high unlike other National prevalence 4% of wasting prevalence in children below 5 years and 3.5%. 44.2% of children were underweight from our findings of which compared to the national prevalence 11% was a very high value [23]. Almost half (49.5%) of the children in the study were stunted which was high compared to the national prevalence of 29% for Uganda [23]. This value is unacceptably high in addition, these findings were higher than those in Nakaseke and Nakasongola (38.5%) study done by [24]. 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. The prevalence of malnutrition among children under 5 years of age attending to Kitagata general hospital is 34.7% based on Mid Upper Arm Conference (MUAC). From our study findings; presenting complaint was associated with malnutrition, most of the children that were malnourished had nutritional related conditions like loss of appetite, diarrhea, poor growth that led to loss of weight which eventually leads to loss of weight hence wasting. The symptoms listed above could be exacerbations of underlying conditions like HIV, tuberculosis, malaria and parasite infestation. For example, poor water quality, hygiene and sanitation practices are increasingly said to cause "enteropathy" that contributes to acute malnutrition [25]. Malnutrition is a cause of substantial health problems and is caused by multiple etiology has association with infections [26]. Some other infections like worm infestations directly suck digested food directly and deprive children of nutrients from the body in related studies, [25]. Similarly, HIV status was associated with malnutrition. Children living with HIV contracted it from their mothers whose percentage transmission rate from mother to child by CDC in 2000 was 2.8%. Malnutrition is one of the major complications of HIV/AIDS infection and HIV infection can compromise nutrition through mal-absorption and altered metabolism resulting in weight loss, loss of muscles and fat tissue. This may also lead to poor growth and reduced appetite, in this way children become immune-compromised hence being prone to infections. The same effects of HIV infection were found to cause stunting and underweight growth according to Weight for Age Z and Length for Age Z indices. Malnutrition is a threat in HIV positive patients in rural communities in Uganda [27]. HIV infection negatively affects nutritional status of children under five years of age, early detection of malnutrition is necessary and adequate [28].

Also to note food quality was identified to be as associated with malnutrition. This is mainly due to inadequate information about the proper food to feed their children. Most families rely mainly on starchy foods like posho, cassava. High carbohydrates foods would predispose patients in the community to protein-energy malnutrition which is highly prevalent in developing countries like Uganda [29]. Low levels of education have been found to be the main factor behind the poor feeding in homes. It is likely that such women lack adequate nutrition knowledge that could be beneficial to child feeding [29]. Children who are not fed according to dietary guidelines are at a risk of developing malnutrition. This study findings are in line with UMOH and Uganda bureau of Statistics that found out that foods provided complementarily to breast milk mostly consist of vegetables or cereals (such as maize/posho or matooke) and are lacking in protein, fat and vitamin which are building blocks of the body. Globally, iron deficiency is the most common form of micronutrient malnutrition [30]. Iron deficiency always occurs in most children with malnutrition [30]. Most people may also lack the knowledge needed to make sound choices about the food they eat or provide to their children, this study findings concur with a study done by Flax [31] about care givers behaviors and attitudes towards use of lipid based nutrition supplements for treating underweight children in Malawi at University of Tampere.

Care taker occupation was associated with malnutrition. People with low paying jobs or income may not have money to care for their children, seek medical treatment for their children which causes susceptibility to nutritional deparative states like diarrhea. Our findings are in agreement with related studies in Sub Saharan Africa that also found that children whose mothers were engaged in professional, technical and managerial work had better nutrition outcomes compared with those other occupation categories like peasant hood [31]. In another study earnings from employment also enhances child nutrition and health [31]. Maternal employment has a bearing on both child and maternal health. Some of the pathways through which maternal employment affects child nutrition include level of income and child care practices [32]. In other studies children whose mothers engaged in agriculture and manual work were more likely to be stunted compared to those whose mothers engaged in professional work in addition children whose mothers were employed by nonfamily members were more likely to be wasted and underweight than those whose mothers were employed by family members [32]. Another study in Uganda revealed that children from mothers who were laborers or farmers and house wives had a greater prevalence of stunting, underweight and wasting than those from mothers who worked in

office or were house wives [32]. House hold members was associated with malnutrition. The number of people in a house hold determines the availability of food in the home, large families tend to be hard to provide basic needs especially food (food security). In cases where the house has a large number of children and economically disadvantaged, children may be deprived of food and this may lead to poor nutritional outcomes. A similar study by Ajao, Ojofeitimi found out that the number of children in the household may influence quality of care including the amount of food that is dedicated to each child [33]. Other findings suggest that household food insecurity is associated with nutritional status of children in rural areas of northeastern Peninsular Malaysia [33]. Food insecurity remains a predictor of chronic under nutrition highlighting the need for multisectoral strategies and policies to combat to multiple forms of malnutrition[33]. Marital status influences malnutrition greatly in society, divorced mothers and single mothers with many children face over responsibility making it difficult for them to provide basic needs. Their children are at high risk of malnutrition than children whose mothers are married with exception of married women with big families. Some married mothers lack support from their husbands while some married mothers that are married at young age lack basic knowledge on care for young children. However a study done by Faustini [34] in Tanzania revealed that married mothers were less likely to have underweight children unlike those that were unmarried which could be because of the cost of maintaining families hence at times these families fail to produce nutritious supplements to the under 5 children.

CONCLUSION

The malnutrition rate of children under 5 years attending to Kitagata general hospital was high with a prevalence of 39%. In every 100 children under 5 years of age, 24 are severely malnourished while 14 were moderately malnourished. HIV status of the child, occupation of the caretaker, marital status of the parent and food quality, number of household members are the fundamental factors associated with malnutrition in children under 5 years attending to Kitagata general hospital.

Recommendation

We recommend that the;

- 1) Government / local authorities should organize outreaches which will help mothers access antenatal services for education about HIV and nutrition related factors.
- 2) There is need for feeding education to mothers which would help to improve nutrition habits among the needy children mainly to control malnutrition. This should be done under monitoring and evaluation.
- 3) Mothers should be encouraged to always pick nutritional supplements from health centers for example vitamin A and zinc among others.
- 4) Nutrition education to mothers and caretakers in communities at health centers to prevent poor feeding in families, this will improve nutritional status in children.
- 5) Sensitization of girl child education to prevent early pregnancies in young and dependent girls who cannot sustain themselves and their children as mothers, this also reduces numbers of single mothers.
- 6) Use of family planning methods to reduce burdens of large house hold members. Family planning enables caretakers to have children corresponding to economic abilities and capacities.
- 7) Mothers should be taught to monitors their babies' growth using growth monitoring charts to seek health advice in time in case the child shows signs of poor growth.

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