



Nutrition Assessment and Factors Influencing Malnutrition among Children under Five in Adjumani District Uganda

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Authors' contributions

This work was carried out in collaboration among all authors. Author ESP designed the study, performed the statistical analysis, wrote the protocol and wrote the first draft of the manuscript. Authors SHA and RSH managed the analyses of the study. Author RSH managed the literature searches. All authors read and approved the final manuscript.

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ABSTRACT

Globally and specifically within the sub-Saharan African region, the nutritional status of children under five has remain a public health concern. Deficiency in nutrients has been documented as a cause of morbidity and mortality in children under five in most developing countries. The study was conducted to determine factors influencing malnutrition among children under five in Adjumani district in Uganda. The study design adopted was a descriptive and cross-sectional type. Three hundred children aged under five years together with either their mothers or adult care givers were selected. An interviewer administered structured questionnaire was completed by 200

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mothers/caregivers. Nutritional status was assessed by anthropometric measurements while focus group discussions with medical personnel and direct observation were also conducted. The result depicts that Wasting was significantly associated with sex of the children with females more likely to be wasted than males ($p=0.023$). Age of the studied children was found to be significantly associated with mid upper arm circumference ($p<0.001$). Also education level of mothers/care givers was significantly associated with malnutrition of children under five. (P value 0.013). Stunting and underweight were identified as the main nutrition problems in Adjumani District. Poor weaning practices, poor sanitation due to inadequate hand washing and poor maintenance of latrine as well as low income for house hold due to few loan/ credit facilities were identified as factors influencing malnutrition.

The study therefore recommends that nutrition survey for children under five should be done regularly at community level. Sanitation can be improved by availing hand washing facility for each latrine. Female education be encouraged while agriculture to should be modernized in order to boost household income and improve food security.

Keywords: Poor nutrition; risk factors; children; Uganda.

1. INTRODUCTION

Globally malnutrition has raised serious public health concerns and has remained a major health problem in developing countries. It affects almost 800 million people and has also been associated with half of all childhood deaths worldwide [1]. According to the World Food Programme (WFP) malnutrition is defined as a state in which the physical functioning of an individual is impaired to the point where he/she can no longer maintain adequate body performance process such as growth, pregnancy, lactation, physical work, resting, or recovery from disease. Akib [2] Identified some of the major causes of malnutrition in sub Saharan Africa as low income, subsistence agriculture, high prevalence of communicable diseases, ignorance, cultural taboo, as well as food insecurity. Nutritional status can be measured by anthropometric measurement of body size, dietary intake and intake of specific nutrients can be measured by biochemical analysis of blood [3]. According to Madzingira [4] duration of breast feeding, weaning procedure are important factors in curbing malnutrition in children under five. In a study by Moidusolamuo and Akagun [5] in Adamawa state in Nigeria factors influencing childhood malnutrition were identified as poor weaning and feeding children on cereals which contains mainly calories. Thus it is advised that exclusive breast feeding should take at least six month because during this period breast milk has sufficient nutrients and contains anti-infective factors [6]. Other factors found to influence malnutrition include Lack of access to basic sanitation, damage of infrastructure, potable water, food insecurity due to price increase

and poverty due to effects of armed conflict [4,7,8].

In Uganda, Malnutrition has remained a priority component of the national minimum health care packages (NMHCP) of ministry of health. An estimate revealed that in Uganda 35% of under-fives are stunted, 6% wasted and 20% underweight [9]. The country has an average population of about twenty five million people, where Children aged 0-4 years are about 18.8% with an under five mortality rate of about 125 per 1000 live births [10]. The country produces a wide range of crops including cereals such as maize, millet and sorghum; root crops such as cassava, sweet potatoes and Irish potatoes. It produces animal products from diary and animals, poultry, sheep, goats, pigs, rabbits and edible insects. Inland fresh water bodies provide large families of fish, however [11] pointed out that malnutrition can be caused by inappropriate food preparation, harmful cultural practice, illiteracy and poverty. Malnutrition contributes to poor health which aggravates diseases; reduce productivity and compounds poverty.

Some of the interventions which has been in place to reduce malnutrition includes a multisectoral approach to improve nutrition status of under-fives. Vitamin A supplementation and food fortification programme were launched as partnership between government and private sectors. The core interventions for nutrition were:

- i. Growth monitoring.
- ii. Routine supplementation with vitamin A, Iron, Zinc and de-worming to prevent micro-nutrient deficiency disease.
- iii. Food fortification with vitamins and minerals.

- iv. Improve infants and young child feeding, breast-feeding promotion.
- v. Increase micronutrients supplementation during the bi annually year child days.
- vi. Increase routine iron, folic acid and vitamin A supplementation to both Antenatal and post natal clinics. (Health sector II 2004).

Despite all these interventions, the prevalence of under-five malnutrition is still high. Over (35%) under-fives are stunted (6%) are wasted (20%) are underweight totaling to (61.0%) [9]. Factors such as weaning practice, diseases, sanitation, water, and low income level are said to be major contributors to malnutrition [11]. If the above factors are properly addressed, it will play a major role towards tackling the issue of malnutrition thus combating high infant and childhood mortality rates in the World, Sub Saharan Africa, Uganda and Adjumani where the research was conducted. There is no study known to the researcher that has assessed and documented factors associated with malnutrition in Adjumani district of Uganda. This study therefore focused on finding out factors associated with malnutrition among under-fives in Adjumani district in particular and Uganda in general.

2. MATERIALS AND METHODS

The study design was a descriptive and cross-sectional type. Three hundred under five children and 200 mothers /care givers participated in the study. Cluster sampling was used to select households' into sampling units. Parishes were selected using simple random sampling by the use of balloting while villages were equally randomly selected from the selected parishes. Using the formula

$$\left[\frac{n=Z^2}{e^2} \right] pq$$

Z = Parameter standard for a normal distribution curve at

α =0.05 at 95% confidence interval.

p = prevalence of malnutrition. Uganda (UDHS 2006)

q = 1-p

e = Allowable error at 5%

By Kothari C.R [2002] an approximate sample size of 366 was deduced. However, the number of under five children assessed for nutrition status were 300, these was due to the fact that 40 households visited had no responders, some

homes had no people around at time of study while others refused to consent. Anthropometric measurement carried out to assess nutritional status were weight, height and mid upper arm circumference of participants. This was made possible using weighing scale –UNICEF spring hanging Salter scale weighing up to25kg. Measurement was taken to the nearest 0.1kg. Child health card and birth certificate were used to obtain the age of children, Tape measures was used for children two years and above or >85cm measured while standing and Lengths were measured for children below 2 years while lying down to nearest 0.1cm for heights, Mid upper point of children, were obtained by measuring the distance between the tip of shoulder blade and tip of elbow joint dividing by two. Measurement was done using unstretchable tear resistant insertion tape supplied by TALC (Teaching Aid at Low Cost St Albans. UK).

A structured questionnaire was administered to mothers/care givers by research assistant. Focus group discussion was conducted with medical personnel of health center three Pakelle were most of the cases of malnutrition where handled in the district. Six medical staff participated. Direct observation of feeding practices, food preparation practices, presence of diseases in children, hygiene practices of mothers was also carried out by the principal investigator using an observation check list.

2.1 Inclusion and Exclusion Criteria

2.1.1 Inclusion criteria

All children under five years were included in the study.

2.1.2 Exclusion criteria

Children under five years with any case of intrauterine growth retardation was exclude from the study.

2.2 Ethical Consideration

- Clearance letter was obtained from Kampala International University research and ethics committee for permission to carry out the research project.
- Informed consent to participate in the study was obtained from parents of under five children or their guardians by filling the consent form and signing.

- Protection of privacy and confidentiality of the study participants was ensured.

3. RESULTS

Table 1 shows demographic characteristics of the studied under five children. The results depicts that 145 (48.2%) were males while majority 155 (51.8%) were females. A larger percentage of the studied under five children were rural dwellers accounting for 156 (52%) while 144 (48%) were urban dwellers. On the age of studied under five children, the results show that those 24 months and below accounted for 169 (58.1%) and those above 25 months accounted for 131 (41.9%). The mean age was found to be 26.6 with a standard deviation of 16.8.

Table 2 shows results on the anthropometric measurement of the surveyed children. The results revealed that 207 (69.1%) were underweight, 240 (80.1%) were stunted while wasted children accounted for 118 (39.5%). Table 2 however shows results on Anthropometric measurement using standard deviation (z-score) for underweight, wasting and stunting. The results depict that underweight was seen in 87 (29%) mild, 51 (17.0%) moderate and 25 (8.3%) were severe and the total children underweight was given as 161 (54, 3%) of the studied population. On wasting, 59 (19.7%) were mild, 13 (6.3%) were moderate, while 81 (27%) accounted for the total children wasted. Also for stunting, 64 (21.3%) were mild, 50 (16.7%) were moderate, while 86 (28.7%) were severe accounting for a total of 200 (67.7%) that are stunted.

Table 3 shows results for the FGD on factors influencing malnutrition in the study area, the results depicts that poverty, famine, traditional farming method, ignorance as well as diseases were some of the factors found to influence malnutrition in the study area as pointed out in the focus group discussion.

4. DISCUSSION

In this study, it was revealed that underweight children accounted for 207(69.1%), stunting 240 (80.1%) and wasting 118(39.5%) in proportion of 37%, 21% and 42% respectively. This shows that the main malnutrition among children under five in Adjumani district was stunting due to starvation and chronic malnutrition. Underweight due to growth retardation caused by diseases. Wasting was comparatively low and was sign of acute malnutrition. According to Filiz [12] nutrition status of children should be periodically assessed, appropriate action taken to combat malnutrition while keeping in mind a multisectoral approach to determine reasons and solutions to the identifies issues.

Table 1. Demographic characteristics of the surveyed children

Demographic characteristics	Frequency	Percentage
Gender		
Male	145	48.2
Female	155	51.8
Location		
rural	156	52%
urban	144	48%
Age		
≤ 24 months	169	58.1
≥25 months	131	41.9

Our study showed stunting was more prevalent among children under five followed by underweight and wasting. This is in line with similar studies done by Ergin (2007) in Uganda Kasese District where underweight accounted for 14.7%, wasting 1.29%, and stunting 49.8%. also most nutrition survey conducted in developing countries portray similar result except in Libya where there are cases of overweight especially in urban setting among under five children.

Table 2. Anthropometrics measurement of the surveyed children

Variable	Sub category	Count (n)	Percentage%
Weight for age	Normal	93	30.9
	Under weight	207	69.1
Height for age	Normal	60	19.9
	Stunting	240	80.1
Weight for height	Normal	182	60.5
	Wasting	118	39.5

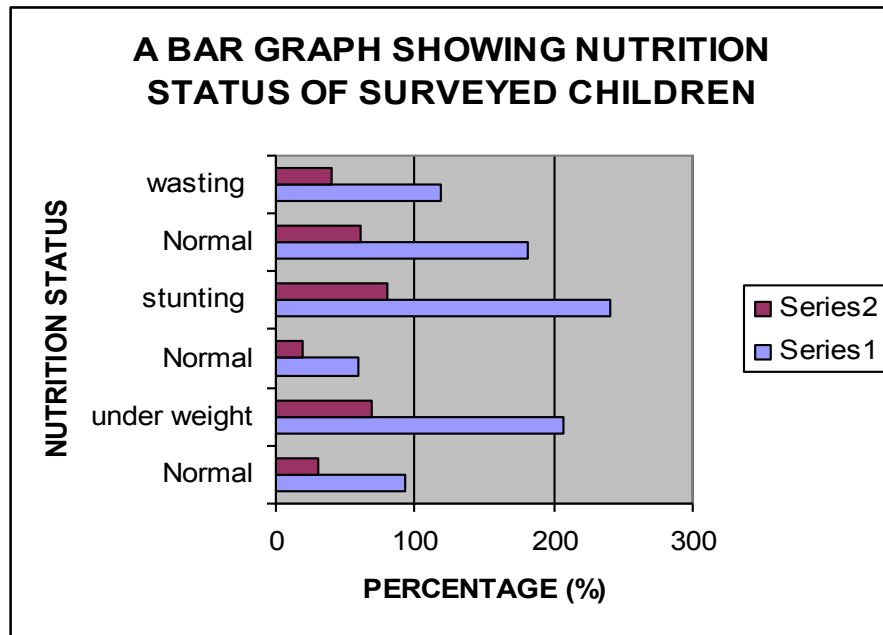


Fig. 1. Anthropometric measurements of the surveyed children for underweight, wasting and stunting

Table 3. Focus group discussion on factors influencing malnutrition in the study area

Factors	Focus group discussion
Poverty	The absence of income generating activities has been identified as the major cause of poverty in the community. This therefore necessitates the drift of men to neighboring countries in search of better opportunities thus leaving women alone to cater for siblings which has consequences on the nutritional status of children under five.
Famine	The discussion revealed that factors such as Unreliable climate causing drought or flooding, poor harvests, uncontrolled sale of food crops to neighboring countries (cross border trade) are some of the factors threatening food security in the district.
Traditional farming method	The farmers in the district still make use of traditional crude methods of farming such as hand hoes for digging. This entails that farmers can only engage in the production of traditional food crops at subsistence level.
Ignorance	The discussion also depicts that the Lack of knowledge on best nutritional practices such as food preparation and handling has also been identified as a cause of malnutrition in under five children in the district. The sauce served after word has fewer nutrients.
Diseases	The study also revealed that some of the diseases that are mostly affecting children in the community includes malaria, respiratory tract infection and Diarrheal diseases.

In addition, results from focus group discussion revealed that the major factors found to influence malnutrition in the district were identified as poverty, ignorance of mothers on good food preparation and handling methods, famine, traditional farming methods employed in the district as well as diseases affecting children. However observations revealed that the Stable food crops in the gardens mostly are made of cassava plantation, sweet potato hip, millet sim sim, ground nut and cow pea (lapena). Domestic animals reared are goats, sheep, cattle and poultry (chicken) in most homes. Fish is obtained from market while latrines where observed as ordinary pit latrine with poor super structure. They lack proper super structure and no hand washing facilities thus depicting poor sanitary practices which in turn lead to disease and thus affecting the nutritional status of under-fives. Emphasis on educating mothers and care givers on the importance of personal and environmental hygiene, proper food preparation and handling practices should be considered as practical solutions towards addressing the problem of malnutrition in the district.

5. CONCLUSION

Stunting was a major public health problem which is a sign of chronic malnutrition. Most under five children are not starved enough food for growth and development. This under nutrition is due to food insecurity, low income and unreliable climate.

Malaria and diarrheal disease were identified to be common in the study area. Lack of hand washing facilities and inadequate latrine coverage can be identified as contributory factors to diarrheal diseases.

Also Most of the mothers have attained primary education thus mothers are better placed to attend seminars/workshops aimed at understanding negative health effect of poor feeding, poor food preparation and handling practices.

CONSENT

As per international standard or university standard, patient's written consent has been collected and preserved by the author(s).

ETHICAL APPROVAL

As per international standard or university standard, written approval of Ethics committee has been collected and preserved by the author(s).

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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