

Factors that contribute to under-fives' malnutrition at Fort Portal Regional Referral Hospital in Uganda

Abaya Majiyebo Samuel

Department of Medicine and Surgery, Kampala International University, Uganda.

ABSTRACT

Malnutrition is a significant global issue, causing between 3.5 and 5 million annual deaths among under-five children. A study was conducted in Uganda to assess the determinants of malnutrition among under-five children. The study involved 128 children diagnosed with malnutrition, with the majority of caregivers being below 35 years old. The study found that 77.9% of the mothers were illiterate, and most were housewives. The majority of caregivers used unprotected water sources for drinking and had poor handwashing practices. Malnutrition was more prevalent in children aged six to 12 months, with more boys than girls. Most malnourished children were not premature, and over two-thirds of children admitted to the nutrition ward were immunized. A strong relationship was found between breastfeeding and malnutrition diagnosis. The study suggests that promoting parental education, particularly among mothers, can improve nutritional education and household income. The study highlights the need for better nutrition education and household income for under-five children.

Keywords: determinants, malnutrition, children

INTRODUCTION

The World Health Organization [1] estimates that there are more than 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. In 2017, the World Health Organization had observed that 40% of the deaths occurring among all the under-five children in developing countries were attributed to malnutrition [2]. Most of the damage caused by malnutrition occurs in children before they reach their second birthday, in the time when the quality of a child's diet has a profound impact on his or her physical and mental development [3, 4].

It has been estimated by the global burden of disease study that under-five malnutrition alone has caused approximately half (15.9%) of the global loss of Disability Adjusted Life Years (DALYs) that is the sum of years of life lost from premature mortality years lived

with disability adjusted for severity [5]. This consequently affects the intelligence level of children, their behavior and school performance. The impaired mental development is taken as the most serious long-term handicap associated with under-five malnutrition. Malnutrition among under-five children is one of the most important public health problems in developing countries especially Sub-Saharan Africa [6] and about 35% of under-five deaths in the world are associated with malnutrition. An estimated 230 million under-five children are believed to be chronically malnourished in developing countries. Similarly, about 54% of under-five deaths are believed to be associated with malnutrition in developing countries. In Sub-Saharan Africa, 41% of under-five children are malnourished and deaths from malnutrition are increasing on daily basis in the region. Malnutrition continues to be a significant public health problem throughout the low-income countries, particularly in Sub-Saharan Africa and South Asia [7]. In Uganda, malnutrition remains a serious health and welfare problem

Abaya

affecting the under-five children to whom it contributes significantly to mortality and morbidity. According to Uganda Demographic and Health Survey of 2006, nearly four in ten Ugandan children under-five years of age (38 percent) are stunted (short for their age), six percent are wasted (thin for their height), and sixteen percent are underweight [8, 9]. Indeed, the story may not be different for the district of Fort Portal, Uganda.

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 [8]. Malnutrition among children is an outcome of many interrelated factors including environment, economics, education, and culture and food security. Among these,

Study Design

The study design was a descriptive cross-sectional study [11].

Study Population

The study population consisted of children diagnosed with malnutrition at Fort Portal Regional Referral Hospital (FRRH), aged below five years.

Sampling Technique

A convenient sampling technique was used.

Inclusion criteria

Mothers of children under five years of age diagnosed with malnutrition who consent were included.

Exclusion criteria

Mothers of children under five years of age diagnosed with malnutrition who did not consent were not be included.

Sample size determination

The sample size was determined using Fishers et al., 2006 formula i.e. $N = Z^2PQ/D^2$:

Where;

N is the desired sample size,

Z is the standard normal deviation taken as 1.96 at a confidence interval of 95%.

P is the prevalence of uptake of modern contraceptives = 32.1% (2011 statistics as per Andi et, al, 2014)

D is the degree of accuracy= 0.05.

www.iaajournals.org

the ones that have immediate and direct effects on malnutrition are feeding practices and infections. Therefore, the nutrition levels of children can indicate the socio-economic development of a community [10].

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.

METHODOLOGY

$Q = (1-P)$ which is the population not on modern contraceptives.

Therefore, $N = 1.96^2 \times 0.321 (1-0.321) / (0.05)^2 = 128$ was the sample size.

Data collection method

A researcher-administered questionnaire used for the study. With the help of three assistants fluent in both English and the local language, the researcher asked respondents questions as per the objectives of the study. Where more information is needed the researcher asked clarifying questions.

Data analysis

Each questionnaire was checked and verified for completeness, missing values and unclear responses and then manually cleaned up on such indications. Data was exported to SPSS version 22. Using double entry, the data was cross checked for consistency and accuracy.

Ethical considerations

Clearance was obtained from Kampala International University-Western Campus faculty of clinical medicine & dentistry through IREC. Approval was sought from the hospital administration at KIUTH. Participants were assured of confidentiality and use of the information obtained was only be for the purpose of the research [12].

RESULTS

Table 1: Socio-demographic factors for the patients

Variable	Category	Number	Percentage
Gender of the caregiver	Male	4	2.9%
Age of the caregiver	Female	124	97.1%
	19 - 25	55	43%
	26 - 34	56	43.5%
	35 - 44	14	10.9%
	Above 44	3	2.6%
Mother/caregiver Marital status	Single	2	1.8%
	Married	102	79.4%
	Divorced	20	15.6%
	Widowed	4	2.9%
	Others	1	0.3%
Mother literacy status	Cannot read and write	97	77.9%
	Can read and write	28	22.1%
Father literacy status	Cannot read and write	81	63.1%
	Can read and write	47	36.9%
Mother's Occupation	Housewife	115	89.8%
	Merchant	10	8.1%
	Employed	3	2.1%
Source of drinking water	Unprotected water source	117	91.7%
	Protected water source	11	8.3%
Hand washing practice (n=128)	After latrine use	110	86.0%
	Before food preparation	111	86.5%
	After cleaning child	101	79.2%
	Mostly after lunch	95	74.2%
	After all the above	87	68.0%
How the caregiver wash hands?	Only with water	35	26.8
	Sometimes with soap	64	49.7
	Always with soap	30	23.4

Majority of the children's caregivers, 97.1% were females while male caregivers accounted for only 2.9% of all the caregivers, see Figure 1 below.

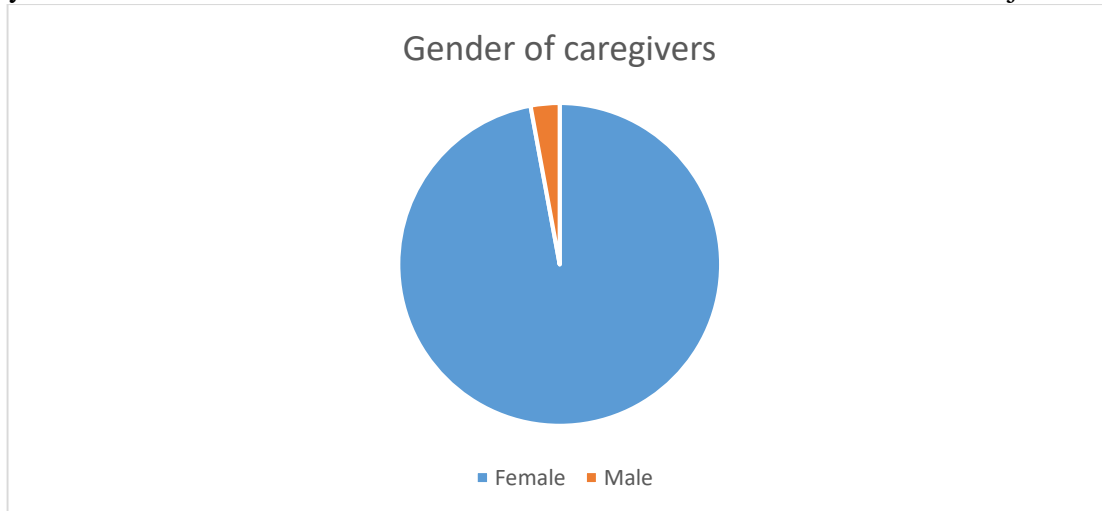


Figure 1: Gender of the caregiver.

The caregivers were of different age groups with majority of them within the age groups 26 - 34years (43.5%) and 19 - 25years (43.0%). This means that majority of the children’s caregivers (86.5%) were

below the age of 35years and only 13.5% of the caregivers were 35 years and above. This result, is further displayed in the following Figure 4.2.

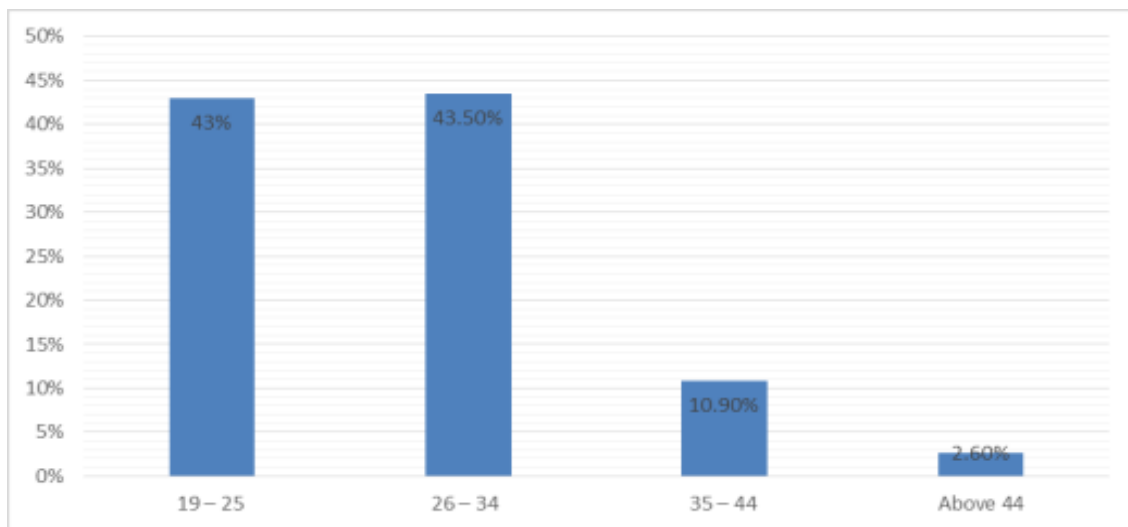


Figure 2: Gender of the caregiver

As regards the marital status of the caregivers, 79.4% of the caregivers were married, 15.6% of the caregivers had divorced while only 2.9%, 1.8% and 0.3% of the caregivers were widowed, single and others respectively. This reveals that in this study majority of the malnutrition patients were under care of the married caregivers. The study findings also revealed that the illiteracy status (inability to read and write) of the parents of the child was high among the mothers (77.9%) as compared to fathers (63.1%).

Only 36.9% and 22.1% of the child fathers and mothers respectively could read and write.

In relation to the child’s mother occupation, majority of the mothers (89.8%) were housewives while only 2.1% and 8.1% of the mothers were salaried employees and Merchants, respectively. As regards the source of drinking water the findings reveal that only 8.3% of the households use drinking water from protected sources while a large proportion 91.7% of the families with

malnourished children drink water from unprotected sources. This finding is as displayed on the chart below;

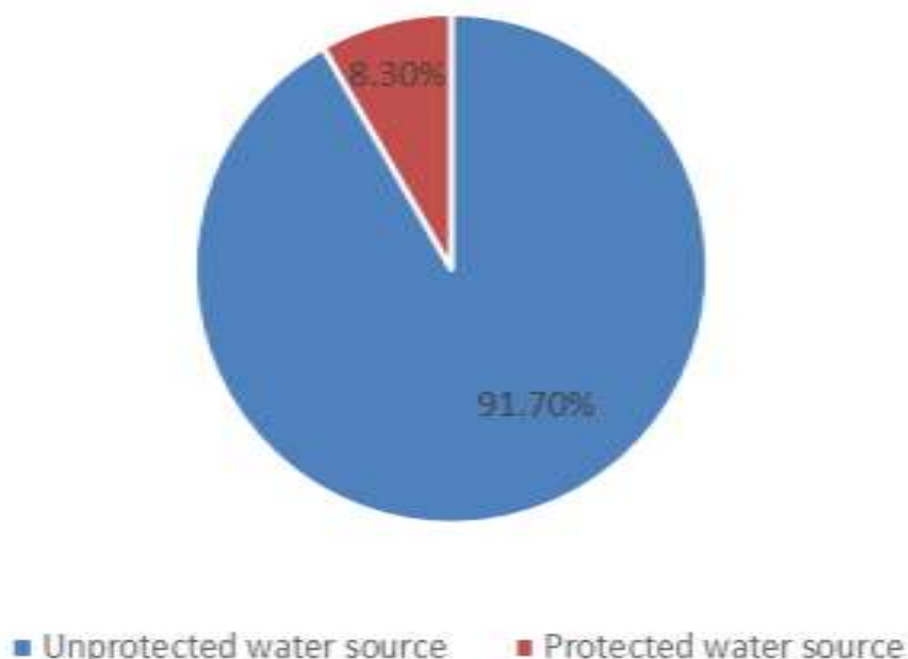


Figure 3: Source of drinking water

As far as the hand washing practice is concerned, the study results indicate that a significantly high number of the caregivers wash their hands after latrine use (86%), before food preparation (86.5%), after cleaning the child (79.2%), mostly after lunch (74.2%) and 68.0% were found to wash their hands after all the four activities. This shows that over two-thirds of the caregivers washed their hands. However, as regards the way caregivers wash their hands, the results indicate that only 23.4% always wash their hands with soap, 26.8% wash their hands with only water while 49.7% of the

caregivers use soap sometimes to wash their hands.

Results in Table 4.2 below, relates to the maternal/caregiver factors and includes among others mother/caregiver nutritional status; the results show that out of the total children, 97.9% had their mothers still alive while only 2.1% had lost their mothers. However, the results indicate that only 90.1% of the children stayed with their mothers most of the time while 4.7%, 3.1% and 2.1% of the children stayed with grandparents, other family members and aunt/uncle respectively.

Table 2: Maternal factors associated with malnourished children admitted to FRRH

Variable	Category	Number	Percentage
Is mother still alive?	Yes	125	97.9%
	No	3	2.1%
With whom the child is staying most of the time?	Parent(s)	115	90.1%
	Grandparent(s)	18	4.7%
	Aunt/Uncle	2	2.1%
	Other family members	4	3.1%
Where was the child delivered?	Healthy Facility	52	40.4%
	Home	69	53.9%
	Other	7	5.7%

Abaya

As far as the place where the child was born, the study findings reveals that majority of the children 53.9% were born at home while only 40.4% were born in a healthy facility (Hospital, Clinics or

www.iaajournals.org
community health centers) while 5.7% were born from other places other than health facilities and homes. This finding is as displayed on the chart below.

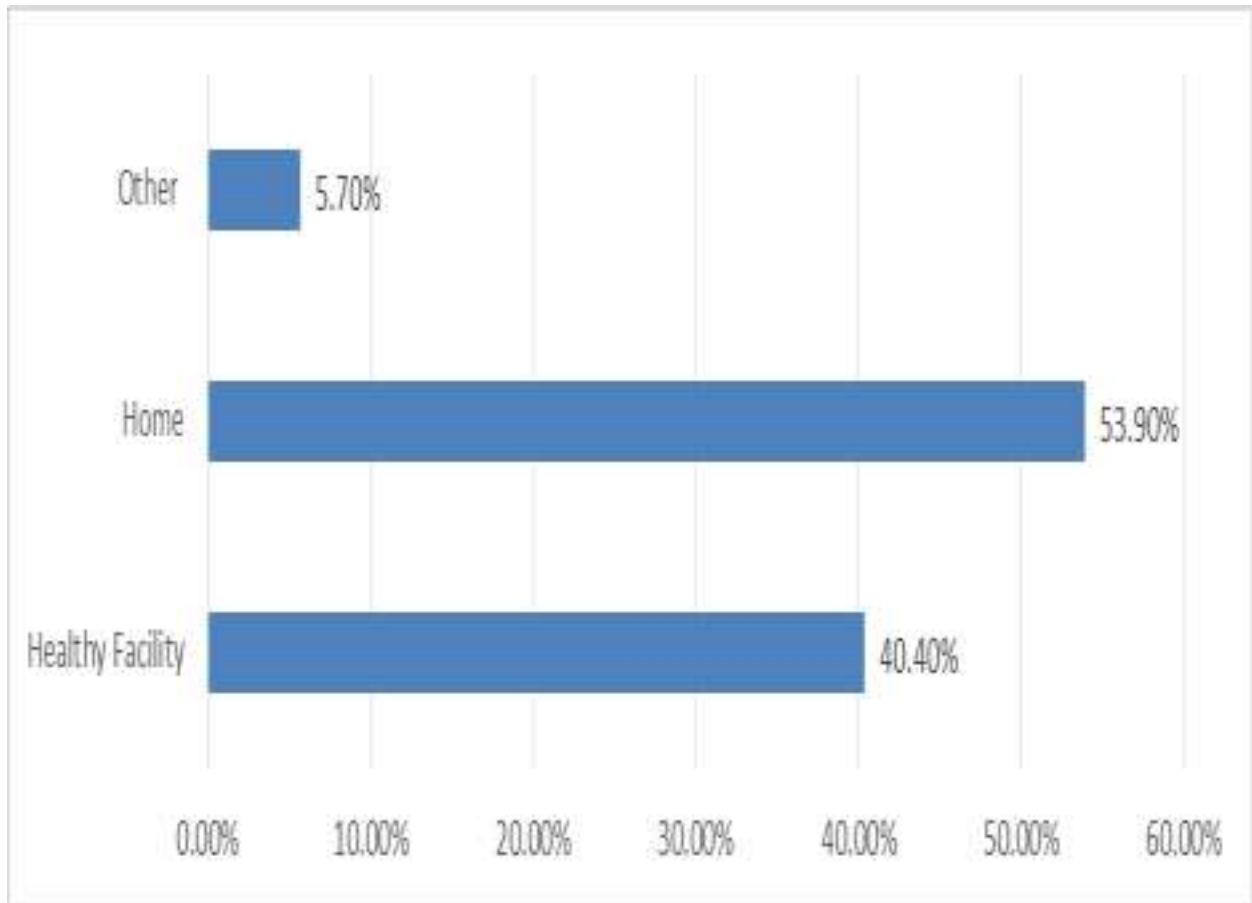


Figure 4: Place of delivery

Results from Table 1 show that out of the total children, 97.9% had their mothers still alive while only 2.1% had lost their mothers. However, the results indicate that only 90.1% of the children stayed with their mothers most of the time while 4.7%, 3.1% and 2.1% of the children stayed

with grandparents, other family members and aunt/uncle respectively.

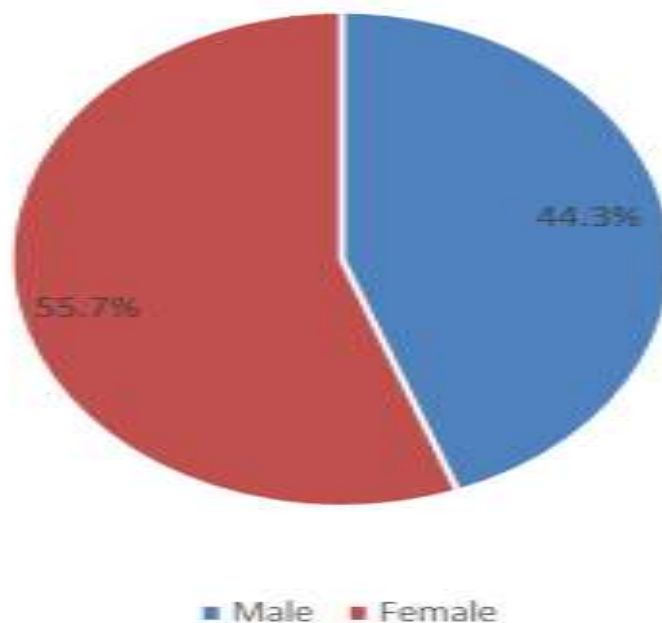
The study sought to assess the child factors associated with malnourished children and the results are as presented in the table below.

Table 3: Child factors associated with malnourished children admitted to FRRH

Age of the child (months)	0 - 6 months	15	11.5%
	6 - 12 months	85	66.4%
	13 - 24 months	13	18.0%
	25 - 59 months	5	4.1%
Gender of the child	Male	57	44.3%
	Female	71	55.7%
Was the child born prematurely?	Yes	22	17.2%
	No	105	82.0%
	Don't Know	1	0.8%
Has the child been immunized up to date?	Yes	90	70.3%
	no	38	29.7%
Has the child been breastfed?	Yes	73	56.8%
	No	55	43.2%
Duration of exclusive breastfeeding (months) (n=219)	1 - 2 months	29	22.8%
	3 - 4 months	46	36.1%
	5 - 6 months	53	41.1%

Findings in the above table show that more than a half (55.7%) of the malnourished children were females

while the males/boys accounted for only 44.3% (See Figure 5 below).

**Figure 5: Child factors associated with malnourished children admitted to FRRH.**

The findings also show that majority of children (66.4%) by time of interview were aged between 6 - 12months. This group was followed by those aged between 13 and 24 months while 11.5% and 4.1% of the children were aged between 0 - 6months and 25 - 59months

respectively. This means that in Mogadishu, malnutrition is more prevalent among the children between 6 months and 24months of age. This finding is further portrayed in the following chart.

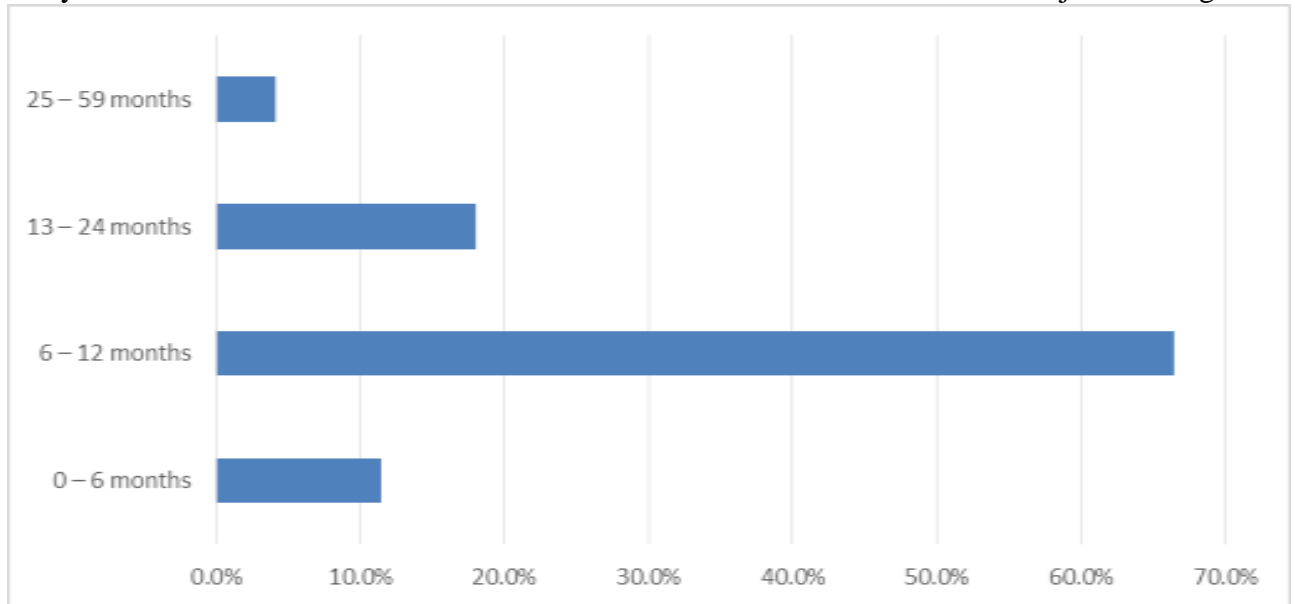


Figure 6: Percentage Age composition of the malnourished children (months).

The study findings further indicate that majority of the malnourished children 82.0% of all the children were not premature and only 17.2% were

premature while only 0.8% of the children’s birth status was not known. This finding is as displayed in the following figure.

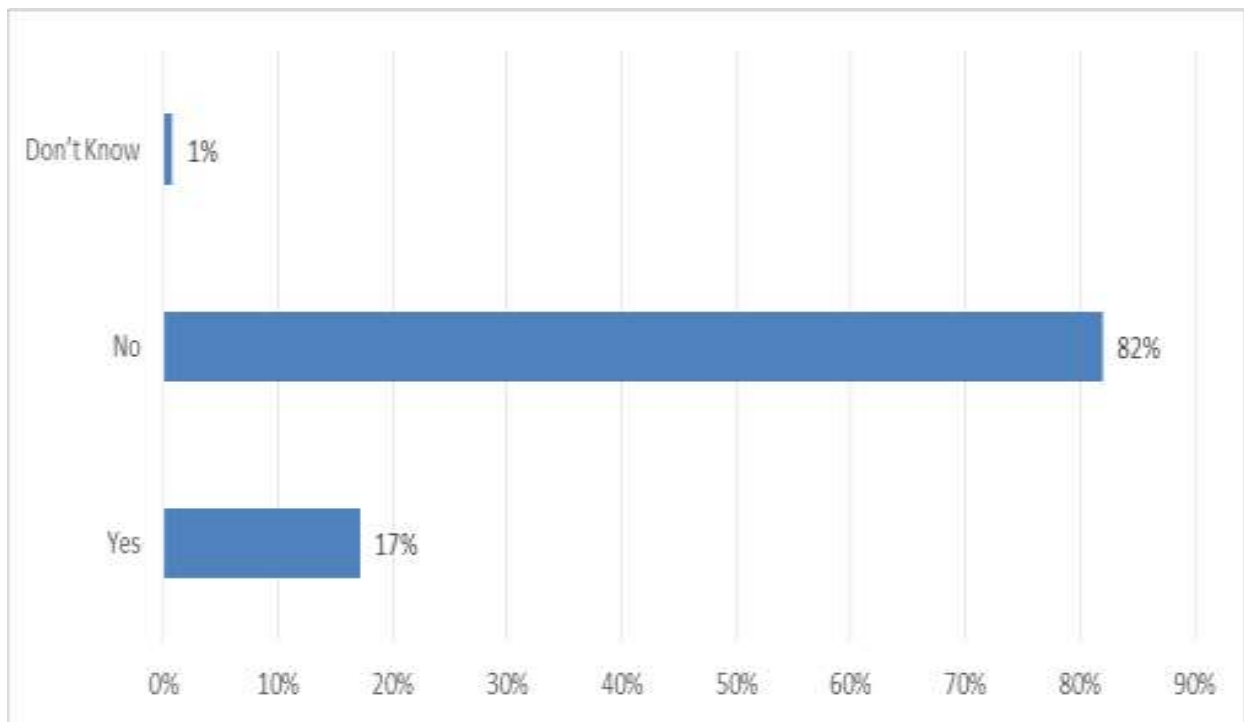


Figure 7: Whether the child born prematurely.

Results in Table 4.3 also reveals that 70.3% of the children under study were immunized up to-date and only 29.7% had their immunization schedules not up to-date. This shows that over two-thirds

of the children admitted to the nutrition ward of FRRH were immunized. As regards the child’s breastfeeding status, results show that a proportion slightly above average (56.8%) of the total

Abaya

children had been breastfed while 43.2% were not breast fed. This shows that a child being malnourished, may be

www.iaajournals.org

attributed to low /lack of breast feeding. This finding is as portrayed on the following chart.

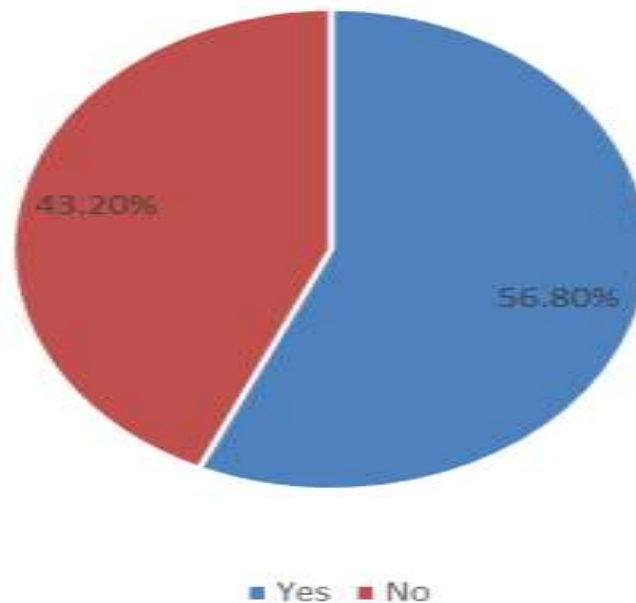


Figure 8: Whether the child had been breastfed

As regards the duration at which the child was exclusively breastfed, results show that 41.1% of the children were exclusively breastfed up to the 5th and 6th month of the child's age, 36.1% were exclusively breastfed to the age of between 3 and 4 months while only 28.3% were exclusively breastfed for a duration between 1 and two months. With respect to the duration the child was partially breastfed, the results show that 66.2% of the children were partially breastfed between the age of 7 and 12 months, 28.3% were breastfed between the age of

1 and 6 months while only 5.5% were partially breastfed between the age of 13 and 24 months.

As far as the age at which solid foods were introduced, results show that 59.3% of the malnourished children breastfed(n=73), were introduced to solid foods at the age between 7 and 12 months. 29.7% of the breastfed malnourished children were introduced to solid foods before the age of 6 months while only 11.0% of the children had solid foods introduced at the age between 13 and 24 months.

DISCUSSION

Children eight to 36 months old at the Princess Marie Louise Hospital in Accra, Ghana were studied by [13] to determine the risk factors for developing severe malnutrition, underweight, and low birth weight. They discovered that severely malnourished children were more likely to have young mothers [14]. Studies at the Moi Teaching and Referral Hospital in Eldoret, Kenya, and the Mulago Hospital in Kampala, Uganda, which focused on children three to 35 months and zero to 60 months of age, respectively, discovered a connection between PEM and young (15 to 25 years old), single moms [10]. When a mother is expecting a

child, her age is crucial since younger and older women often run a higher risk of giving birth to children who are already underweight or have other difficulties [15]. According to this study's Table 4.1, the majority of mothers (43.5%) were between 26 and 34 years old, while 43% were younger (19 to 25 years old). This indicated that the majority of child carers (86.5%) were under the age of 35, with only 13.5% being 35 years or older.

In comparison to educated mothers who are more concerned about their children's health, tend to engage in health-seeking behavior, and take better care of them, studies have shown that

Abaya

mothers who did not attend school or had only a primary level of education had a higher risk of their children developing malnutrition [16]. In this survey, moms (77.9%) had slightly higher levels of illiteracy than fathers (63.1%) in terms of their ability to read and write. Only 22.1% and 36.9% of the parents of the children, respectively, were literate in both reading and writing. Similar findings were made in a research conducted in Machakel Woreda, Northwest Ethiopia, where mothers were more likely to be illiterate (84.3%) than dads (63.20%) [17]. This was also in line with a study conducted in Ethiopia [18], which assessed maternal knowledge there and discovered that men were frequently better educated than women in a home. In Ethiopia, households with post-secondary education were exclusively found in urban areas, and just 3% of all parents had a post-secondary degree compared to 6% of men [18].

According to the study, only 2.9%, 1.8%, and 0.3% of caregivers were widowed, single, or other, while 79.4% of caregivers were married and 15.6% had divorced. This was in contrast to research conducted in Botswana by [19] among children aged 0 to 3 where 22.1% of moms and 76.4% of single mothers had malnourished children [19]. Malnutrition in children is also influenced by the marital status of the mother, with a married mother being more stable financially than a single, divorced, or separated mother. The family can be viewed as having a better economy if the mother is married and continues to reside with the child's father [15].

The results of this study are consistent with those of a study by [17] among under-five-year-old children in Machakel Woreda, Northwest Ethiopia, where 88.2% of the mothers of malnourished children were housewives and 2% of the mothers had jobs [17]. In this study, 89.8% of the moms of underweight children were housewives, 8.1% were business owners, and only 2.1% were workers.

In order to minimize child malnutrition, the supply of sanitary facilities and clean water is viewed as a crucial complement to the availability of food. According to the survey, only a small percentage of children with malnutrition belonged to

www.iaajournals.org

moms or other caregivers who consistently cleansed their hands with soap. Poor hand washing habits among caregivers were also discovered by [17], who found that just 5.88% of moms and carers said they always cleansed their hands with soap.

In this study, almost all the mothers were alive (97.9%) while only 2.1% had lost their mothers. [20] found that children that lived in households where grandparents were caregivers had the highest rate of stunting.

In rural communities, grandmothers are typically the primary carers, however research in Limpopo, South Africa, among infants aged 12 to 24 months, found that children had a lower risk of stunting if their mothers provided care [20]. 450 moms were questioned in Nigeria; 77% of them cared for their own children, while 23% had someone else look after them [21]. 90.1% of the children in this study were mostly cared for by their parents since they were with their mothers most of the time, compared to 4.7%, 3.1%, and 2.1% who were with grandparents, other family members, and aunts and uncles, respectively.

Poor nutritional status in children under the age of four in Tamil Nadu, India, was found to be directly correlated with the child's gender in a study by [22]. However, this survey revealed that whereas boys/men made up only 44.3% of the malnourished youngsters, girls made up over half (55.7%) of them. This study also showed that malnutrition was detected in more female children than male youngsters. In contrast, a study in Machakel Woreda, Northwest Ethiopia, found that malnutrition was more prevalent among men (52.94%) than women (47.06%) [22]. Most research show that more men are undernourished. In a study in Bangladesh on malnutrition in children six to 60 months old, there were an equal number of males and females (240 males and 239 females) [23]. A study in Nairobi, Kenya, found that in the malnourished group of children three to 36 months old, 51.2% were males and 48.8% were female [24].

More than 30 million children are unimmunized either because vaccines are unavailable, because health services

Abaya

are poorly provided or inaccessible, or because families are uninformed or misinformed about when and why to bring their children for immunization. Pneumonia, diarrhoea, malaria, measles, HIV/AIDS and malnutrition are the primary killers of children in the developing world. These children die because they are poor, they do not have access to routine immunization or health services, their diets lack sufficient vitamin A and other essential micronutrients, and they live in circumstances that allow pathogens (disease-causing organisms) to thrive [25]. In this study, 70.3% of the children under study were immunized up to-date and only 29.7% had their immunization schedules not up to-date. This shows that over two-thirds of the children admitted to the nutrition ward of FRRH were immunized. In Uganda over 80.2% of children three to 36 months old were fully immunized and the proportion of malnourished children that were fully immunized for age was not significantly different from that of well-nourished

Majority of the children caregivers were female and below the age of 35 years with high illiteracy status among caregivers. Other factors are inappropriate child caring and feeding practices such as using unprotected source of water for drinking and caregiver poor hand washing practices. In most cases, the mother was still alive and the children stayed with their parents. In our setting, malnutrition is more prevalent in

CONCLUSION

www.iaajournals.org
children (77.6%) [24]. In Bangladesh 77% of children between six and 60 months of age received BCG and 82% received full or partial DPT and polio immunizations. There was a significant association with malnutrition when no vaccines were available. Of the children in Bangladesh, 75% had received measles immunizations [23].

According to [26], less than 40% of infants in the developing world receive immediate breastfeeding after birth. Only 39% of babies are put to the breast one hour after birth despite the fact, that early initiation of breastfeeding can contribute to reduced neonatal mortality through skin-to-skin contact that can prevent hypothermia [26]. In study in Ethiopia, researchers found that 57.84% of mother's cases were squeeze out their first breast milk whereas 42.16% of mother's cases were not squeeze out their first breast milk [17]. Similarly, this study showed that a proportion slightly above average (56.8%) of the total children had been breastfed while 43.2% were not breastfed.

children between six to 12 months of age and significantly, more boys than girls in this study presented with malnutrition. Majority of the malnourished children were not premature. Over two-thirds of the children admitted to the nutrition ward of FRRH were immunized up-to date. There was a strong relationship between breastfeeding and the malnutrition diagnosis.

REFERENCES

1. World Health Organization. (2020). Essential nutrition actions: Improving maternal, newborn, infant and young child health and nutrition. WHO Document Publications
2. Murray, C. J. L. and Lopez, A. D. (2017). Measuring global health: motivation and evolution of the Global Burden of Disease Study. *Lancet*, 16;390(10100):1460-1464. doi: 10.1016/S0140-6736(17)32367-X. PMID: 28919120.
3. Odwee, A., Kasozi, K. I., Acup, C. A., Kyamanywa, P., Ssebuufu, R., Obura, R. and Bamaiyi, P. H. (2020). Malnutrition amongst HIV adult patients in selected hospitals of Bushenyi district in southwestern Uganda. *African health sciences*, 20(1), 122-131.
4. Mada, S. B., Bawa, K. D., Saliu, M. A., Garba, A., Abarshi, M. M., Muhammad, A., and Garba, I. (2020). Evidence of Malnutrition and its Associated Factors among Under-five Children in Danko-Wasagu Kebbi State, North-western Nigeria. *Nigerian Journal of Basic and Applied Sciences*, 28(1), 56-65.
5. Faruque, A.S.G., Shamsir, A.M.A., Tahmeed, A., Munirul, M.I., Iqbal, M.H., Roy, S. K., Nurul, A., Kabir, I. and Sack, D. A. (2018). Nutrition: Basis for healthy children and

Abaya

- mothers in Bangladesh. *Journal for health and population health*, 26(3), 325-339.
6. Gulati, J. K. (2010). Child Malnutrition: Trends and issues. *Anthropologist*, 12(2), 131-140.
 7. Kimokoti, R.W., and Hamer, D.H. (2018). Nutrition, health and aging in sub-Saharan Africa.
 8. Uganda Bureau of Statistics (UBOS) and ICF International Inc. (2012). *Uganda*
 9. Eze, E. D., Barasa, A., Adams, M. D., Rabi, K. M., Ayikobua, E. T., Ezekiel, I. and Okpanachi, A. O. (2018). Assessing factors contributing to the prevalence of protein-energy malnutrition among children under five years of age attending Kigoma District Hospital, Tanzania. *Journal of Food and Nutrition Sciences*, 6(5), 123-128.
 10. Bwire G, Munier A, Ouedraogo I, Heyerdahl L, Komakech H, Kagirita A, et al. (2017) Epidemiology of cholera outbreaks and socio-economic characteristics of the communities in the fishing villages of Uganda: 2011-2015. *PLoS Negl Trop Dis* 11(3): e0005407. <https://doi.org/10.1371/journal.pntd.0005407>
 11. Ugwu, Chinyere. N. and Eze Val, H. U. (2023). Qualitative Research. *IDOSR Journal of Computer and Applied Sciences* 8(1) 20-35. <https://www.idosr.org/wp-content/uploads/2023/01/IDOSR-JCAS-8120-35-2023.docx.pdf>
 12. Ugwu Chinyere Nneoma, Eze Val Hyginus Udoka, Ugwu Jovita Nnenna, Ogenyi Fabian Chukwudi and Ugwu Okechukwu Paul-Chima (2023). Ethical Publication Issues in the Collection and Analysis of Research Data. *Newport International Journal of Scientific and Experimental Sciences (NIJSES)* 3(2): 132-140. <https://nijournals.org/wp-content/uploads/2023/07/NIJSES-32-132-140-2023.pdf>
 13. Rikimaru, T., Yartey, J.E., Taniguchi, K., Kennedy, D. O. and Nkrumah, F. K. (2018). Risk factors for the prevalence of malnutrition among urban children in Ghana. *Journal of Nutritional Science and Vitaminology*, 44(3), 391-407.
 14. Owor, M., Tumwine, J. K. and Kikafunda, J. K. (2014). Socioeconomic risk factors for severe protein energy malnutrition among children in Mulago Hospital, Kampala. *East African Medical Journal*. 77(9), 471-475.
 15. Teller, H., and Yimar, G. (2000). Levels and determinants of malnutrition in adolescent and adult women in southern Ethiopia. *Ethiopian Journal of Health Development*, 14, 57-
 16. Rayhan, M. I. and Khan, M. S. H. (2016). Factors Causing Malnutrition among under Five Children in Bangladesh. *Pakistan Journal of Nutrition*, 5(6), 558-62.
 17. Bantamen, G., Belaynew, W. and Dube, J. (2014). Assessment of factors associated with malnutrition among under five years age children at Machakel Woreda, Northwest Ethiopia: A case control study. *J Nutr Food Sci*, 4(1). doi: 10.4172/2155-9600.1000256
 18. Christiaensen, L. and Alderman, H. (2011). Child Malnutrition in Ethiopia: Can Maternal Knowledge Augment the Role of Income? The World Bank. [Internet] Available from: <http://www.worldbank.org.za> [Accessed June 7th, 2016].
 19. Mahgoub, S.E.D., Nnyepi, M. and Bondeke, T. (2016). Factors affecting prevalence of malnutrition among children under three years of age in Botswana. *African Journal of Food, Agriculture, Nutrition and Development*, 6(1), 1-15.
 20. Kleynhans, I. C., MacIntyre, U. E. and Albertse, E. C. (2016). Stunting among young black children and the socioeconomic and health status of their mothers/caregivers in poor areas of rural Limpopo and urban Gauteng - the NutriGro Study. *South African Journal of Clinical Nutrition*, 19(4), 163-172.
 21. Ogunba, B. O. (2018). Psychosocial care in complementary feeding of children: a comparative study of the urban and rural community in Osun state, Nigeria [Internet] Available from: www.iaajournals.org

Abaya

- <http://www.informaworld.com/smp/p/content~content>
22. Saito, K., Korzenik, J. R., Jekel, J. F. and Bhattacharji, S. (2017). A case-control study of maternal knowledge of malnutrition and health-care-seeking attitudes in rural South India. *Yale Journal of Biology and Medicine*, 70(2), 149-160.
23. Iqbal Hossain, M., Yasmin, R. and Kabir, I. (2019). Nutritional and immunization status, weaning practices and socioeconomic conditions of under five children in three villages of Bangladesh. *Indian Journal of Public Health*, 43(1), 37-41. Available from: <http://www.ncbi.nlm.nih.gov/pubmed/11243087>
24. Abate, G., Kogi-Makau, W. and Muroki, N. M. (2010). Hygiene and health-seeking behaviors of households as predictors of nutritional insecurity among preschool children in urban slums in Ethiopia: The case of Addis Ababa. *South African Journal of Clinical Nutrition*, 14(2), 56 - 60.
25. UNICEF (2015b). Immunization - Why are children dying? Available from www.unicef.org/immunization/index_why.html [Assessed August 11th, 2022].
26. UNICEF (2019a). Child malnutrition and household food insecurity remain major concerns for Bangladesh. Press Centre. [Internet] Available from: http://www.unicef.org/media/media_48981 [Accessed July 8, 2016].

CITE AS: Abaya Majiyebo Samuel (2023). Factors that contribute to under-fives' malnutrition at Fort Portal Regional Referral Hospital in Uganda. IAA Journal of Scientific Research 10(3):67-79.