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Original article

TO ASSES THE FACTORS INFLUENCING THE STATE OF NUTRITION CARE IN THE INPATIENT THERAPEUTIC UNIT AT HOIMA REGIONAL REFERAL HOSPITAL IN UGANDA.

Allan Komugisa*, Ribon Okot Musoga

Makerere University

Abstract

Aim:

The study was conducted to assess the factors influencing the state of nutrition care in the Inpatient Therapeutic Unit of Hoima Regional Referral Hospital.

Methods:

The study design used was a cross-sectional and retrospective study. Random sampling was used to select the participants. A questionnaire was used to draw data which was analyzed in Excel, and means, percentages, graphs, and charts were extracted.

Results:

The unit had 15 staff members, mostly (60%) female, and had no doctor. The staff members were mainly (33%) nurses and (13%) nutritionists. Most of the caretakers (93%) were females and were mainly peasants, single mothers and primary school drops 93%, 64%, and 57% respectively. Fevers (93%) and cough (64%) were the leading complaints, affecting (93%) and (64%) of the patients respectively. Septicaemia (79%) and malaria (50%) were the most common comorbidities, affecting 79% and 50% of the patients, respectively.

Conclusions:

The study established that knowledge, attitude, and practices had a great influence on the state of nutrition care in the in-patient therapeutic unit. It was also recognized that comorbidities had a significant influence on the treatment outcome of the patients. Nutrition care remained multi-dimension, requiring multi-stakeholder approaches.

Recommendations:

Establish a functional multi-stakeholder Quality Improvement Committee (QIC) to guide the operations of the unit.

Keywords: Nutrition Care, Hoima Regional Referal Hospital, Nutrition KAP, Comorbidities,
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1. Background

Nutrition care in inpatient therapeutic units is the integrated caution, supervision, custody, charge, and protection guaranteed while receiving feeds (Gomes et al., 2019). Globally, inpatient

*Corresponding author.
Email address: allankomugisa@gmail.com (Allan Komugisa)

therapeutic units have continued to face multi-dimension nutrition care challenges as a result of some invisible factors of influence (Schuetz & Stanga, 2020). As a result, the cost of management of malnutrition has risen with- one of the major global problems in the Millennium Development Goals (MDGs) era with at least 462 million (5.8% of the world population) underweight, 159 million stunted and 50 million wasted worldwide with low-income countries (LIC) have up to 83% of undernutrition cases diagnosed worldwide. Poor nutrition care in undernutrition has remained one of the leading causes of death in sub-Saharan Africa, about 26.9% deaths of the total global mortality of children under 5 diagnosed with acute malnutrition are from Sub-Saharan Africa (Akombi et al., 2017). Desalew et al., (2017) reported that management of malnourished patients in refugee camps in southwestern parts of Tigray in Ethiopia was limited by operational costs, limited equipment services, and limited utilities among others, responsible for at least 4 in 10 deaths of children under five under treatment. Another study done in Malawi during the COVID-19 lockdown indicated that in-patient nutrition care lacked a nutrition department with qualified nutritionists or dietitians in their respective hospitals and lacked nutrition protocols for acutely critically ill adult patients in the wards. (Chimera et al., 2020). A meta-analysis study by Akombi, 2017, concluded that the management of malnutrition in inpatient treatment centers was highly challenged within East African countries like the rest of Sub- Saharan hence requiring prioritization of appropriate nutrition interventions rotating on nutrition care to meet the WHO global nutrition target of improving maternal, infant and young child nutrition by 2025. The study aimed to identify demographic factors and co-morbidities as well as the Knowledge, Attitudes, and Practices of caregivers and Health workers, as factors that influence the state of nutrition care in ITC

2. Methodology

The study was a cross-sectional, retrospective study. Random sampling was used to select the samples. The study included severely malnourished patients and their caretakers, and unit staff attending ITC at the Nutrition Unit. The target population consisted of severely malnourished individuals under treatment, their caretakers, and medical personnel at HRRH in ITC by that time. Patients not enrolled in nutrition care services in ITC were excluded from the study. But also, patients enrolled in ITC but not severely malnourished were not considered. Cochran's sample size formula below was used (N=30: n = 14) Participants were selected randomly using their feeding charts. Medical Staff on duty availed information. A questionnaire was used (appendix ii) used to collect information regarding basic demographic, clinical treatment progress, knowledge, attitudes, and practices of the study population. Microsoft Excel was used to analyze the data collected (valves of dispersion and central tendency). The study was a cross-section study by interview, consent before the interview was thought from the individuals. Permission to access retrospective data was thought for by relevant authorities.

However, electronic databases created for this analysis were stripped of personal health identifiers and maintained securely and confidentially. Approval and consent to access any relevant data from the hospital were obtained from the hospital administration.

3. Results and Discussion

3.1. Staff Enrollment.

The results showed that the unit did not have any doctor directly attached onto it, there were only 2 nutritionists, and 5 nurses (Figure 1). The unit also had student nurses, clinical officers and 2 cleaners (of which both are female). While 40% were (male staffs) with 60% (female staffs).

Results showed that the nutrition unit had more (33%) nurses, only (13%) were nutritionists while the unit did not have any special medical doctors. Fortunately, doctors from paediatric unit

Figure 1: Total staff enrollment in ITC/Nutrition Unit.

would visit the nutrition unit to review the patients. However, it was reported that sometimes because of 'case load' in paediatric unit, doctors did not manage to deliver services in the nutrition unit. This was applicable in the WHO emergency response guidelines for human resource but negatively deviated from the Core Commitments of Children by UNICEF (2010).

Secondly, the unit had 2 nutritionists who would work in shifts. However, one was the UNICEF Bunyoro Regional Co-ordinator, so this would at times attract other duties to attend to leaving other to handle all the remaining work load to serve the entire hospital. This fairly limited effective implementation of nutrition-based services not only in ITC but also in the entire hospital. Fortunately, some (33%) nurses reported that they had expertise in basics nutrition though most (67%) lacked skills in nutrition sensitive matters like medicine and feeds prescription.

These results correlated with the study which was done in Malawi exploring the factors that influence clinical nutrition care in hospitals which found out that the whole country (Malawi) had on 11qualified clinical dieticians/nutritionists to serve a population of about 19 million people (Chimera et al., 2020). Furthermore, this study showed that the available nurses completely lacked any skill in management of malnutrition. This doubled the fatalities during 2020 COVID-19 lockdown since the available nutritionists and clinicians concentrated in Intensive Care Unit where massive COVID-19 patients where.

The unit received interns and student nurses. However, the 'sister in-charge' said the former and latter lacked prior training in the management of malnutrition. Fortunately, it was reported that with continued guidance from the senior staffs, they were of great help. Though, this obviously limited their potential to give support to the staffs in ITC. These results were similar to what the Shakkour, (2007) expressed about human behaviour.

In another study in Bangladesh about assessment of human resources among in-patient nutrition units by Gomes et al., (2019) reported that management of SAM cases for hypoglycaemia (step 1) was poor across hospitals with a median proportion of 17.3% (67/644) prescribed recommended 10% dextrose. In contrast, prescription of recommended antibiotics (penicillin and gentamicin or ceftriaxone) on admission day and documentation of axillary temperature at the point of admission had good performance across hospitals with median proportions of 88.9%, 92% and 99.4%) respectively. Complementarily, management steps including prescription of Rehydration olution Malnutrition for management of eligible diarrhoea cases, blood transfusion in patients with severe pallor, and prescription of F75 presented fair performance, with medians of 31% (439/1266, range 3.0±56.7%), 41.7% (68/191, 6.3±77.8%) and 51.5% (2027/3892, 19.1±76.2%) respectively. Among SAM patients eligible for F75 in all the hospitals, only a quarter (946/3892, 10.6±8.0%) had their F75 prescribed in the right dose (volume and frequency in 24 hours adjusted for the severity of oedema). Performance of all indicators varied substantially with the level of expertise among the staffs.

3.2. Facilities at ITC

A score list based on the Hospital Facilities Standing Order by (MoH, Ministry of Health., 2022) essential facilities/ accessories on health

unit were summarized and remarks attached as shown in Table 1

3.3. *Facilities at ITC*

A score list based on the Hospital Facilities Standing Order by (MoH, Ministry of Health., 2022) essential facilities/ accessories on health unit were summarized and remarks attached as shown in Table 1.

Whereas, by bed capacity, ITC could accommodate 8 patients with one caretaker for each patient. It was reported that the unit would be overwhelmed during case overloads, resorting to patients sharing beds. It was also established that alternatively some bed space would be thought from other units. This would reduce congestion on ward, but this was contrary to the IMAM guidelines which stipulate that malnourished patients require special environment without mixing with nourished sick individuals.This was the same situation in the immigrant camps of Switzerland (Schuetz & Stanga, 2020) which reported multiple fatalities as a result of cross spread of infections among inpatients due to congestion inside treatment centers.

The unit lacked resustating equipment including oxygen. Fortunately, the unit referred patients to Paediatric or neonatal units for resustation. However, this was ineffective especially during nights when no staff would be monitoring the patients. Same factors of influence were found across Uganda in all health centers (Bachou, 2018). The unit lacked safe water point. ITC depended on tap water which was unsafe, unfortunately, sometimes given to the patients. This put patients at a risk of contracting diarrhea and flue. Fortunately, some safe water would be got from feeding room if there was a reminder of the water that would be boiled to make feeds. This was a cross cutting issue, observed in the study at Mulago, National Referral Hospital (Rytter et al., 2017). Another study in Mali (Lazzerini & Tickell, 2011) showed the country's ITC lacked safe water and nutrition protocols for acutely critically ill adult patients in the wards. This kept recovchimeery rates at about 54%.

3.4. *Responses from the staff.*

Staffs had varying responses to the questions asked (figure 2).

Most of the staff members had worked in the ITC for more than 1 year (50%). This meant that 50% of staff members had acquired experience in the management of malnutrition, an essential component because children with SAM had precarious physiology, and therefore required complex management that formed the Most of the staff members had worked in the ITC for more than 1 year (50%). This meant that 50% of staff members had acquired experience in management of malnutrition, an essential component because children with SAM had precarious physiology, and therefore required complex management that formed the basis of the globally recommended 10 management steps as described by Marx et al., (2014).

While, results showed that few 30% of the staff members had never received any training in nutrition management. Most of these were interns and student nurses who had come for placement. 50% of the staffs had received on job training from their seniors. This could be explained by the fact that no special training was offered prior to placement in ITC. These results were not different from the causes of long stay in hospitals, a case study by Amuna & Zotor, (2008).

The average duties per person were 12 days (with more than 6 hours per day) per month with an exception of the nurse in-charge who worked every day. This was so because she had additional duties including requisitions and unit reports. This was extra to the recommended 56 hours of work (MoH, 2021). Furthermore, results showed that ITC was averagely coordinated with sister units. There were no follow-ups seen for referrals from other units. This led to miss coordination with other units as it was reported by of nursing report.(HRRH, 2022). This was attributed to low man power in the sister units.

Most respondents (80%) reported that the unit had all the utensils and formula feeds. This was credited to UNICEF for the routine supplies offered to the unit. However, all respondents reported that the unit lacked adequate stationary

Table 1: **Essential facilities at the Nutrition Unit.**

ITEM	QUANTITY	REMARKS
Beds	8	All beds had 1 meter space with storage boards. Ward well ventilated. No mosquito nets
Store	1	Store was well ventilated, enough to store 1000 boxes of formula feeds, still with enough space to store stationary and other items.
Oxygen cylinders	0	The unit did not have any oxygen equipment. Therefore, ITC depends on Paediatric ward for such service.
Waste bins	2	Outside disposal bins. Fully functional.
Hand washing point	1	Had one public hand washing point. Fully functioning.
Water source points	1	Open tap water. Boiled water was sometimes given on request from feeds room.

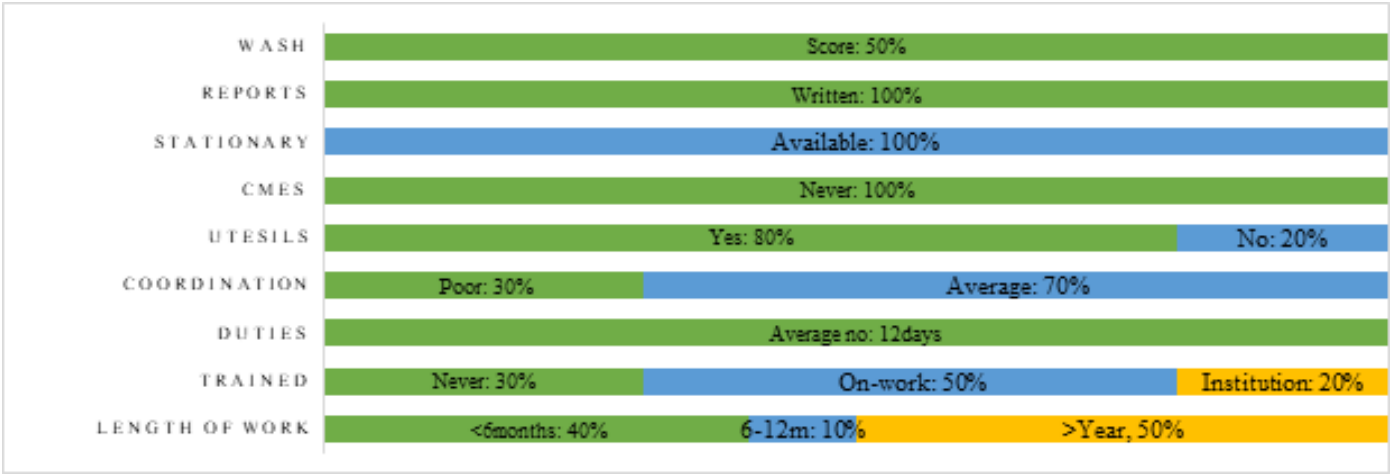

Figure 2: Data from staffs: CME: Continuous Monitoring and Evaluation.

for record keeping, and did not conduct Continuous Monitoring and Evaluation. This was because UNICEF rarely supplied stationary. These results were similar to the report from Fortportal Regional Referral Hospital by Kiiza, (2019).

Furthermore, sanitation was taken key at the facility (score of 3:5 average). The unit had two (2) cleaners who ensured proper sanitation around and with-in the facility. This performance could be attributed to the daily check list for sanitation generated to assess sanitation by the medical staffs. This associated relevance of sanitation was highlighted by (Bachou, 2008) & (Kigaru et al., 2016) to have significantly determined the severity of comorbidities (95CI%, P = 0.02 & 0.021 respectively), length of hospital stay as well as fatality rates.

3.5. Responses from the Caretakers.

It was observed that 93% of the caretakers were females and the majority of them (71%) were aged 19-30 years. Most of the caretakers (93%) were peasants and (64%) were single and (57%) had attended primary school only (Table 3).

Results showed that most patients (93%) were taken care of by their peasant single mothers. This explained their reports of inability to properly take care of children leading to malnutrition. This further explained the constraints they went through to sustain hospital costs of food and medication.

It was observed that (64%) were male patients and majority (57%) aged 6-24months. As

Table 2: Caretakers' demographic characteristics

CARETAKERS		
Demographic characteristic	**Class of variable**	**N =16 n=14(%)**
Gender	Female	13 (93%)
	Male	1 (7%)
Age	<19 years	1 (7%)
	19-30 years	10 (71%)
	31-45 years	2 (14%)
	>45 years	1 (7%)
Level of education	No formal education	0 (0%)
	Primary	8 (57%)
	Secondary	5 (38%)
	Tertiary	1 (7%)
Marital status	Single	9 (64%)
	Married	5 (36%)
Economic activity	Peasant	13 (93%)
	Business	1 (7%)

Table 3: **Demographic characteristics of Patients**

PATIENTS		
Demographic characteristic	**Class of variable**	**N=15 n=14(%)**
Gender	Female	5 (36%)
	Male	9 (64%)
Age	0-6 months	2 (14%)
	6-24 months	8 (57%)
	24-59 months	3 (22%)
	>5 years	1 (7%)

(79%) had marasmus, (21%) had kwashiorkor. This could be explained by exclusive breastfeeding transition to complementary feeding as recommended by the infant and young child feeding practices guidelines by ministry of health. These results were not different from those in the study by Mwaikambo et al., (2015) which indicated that malnutrition rose among 6-24 months because of the transition between exclusive breastfeeding to complementary feeding without the right food choices –(less amount of vegetable foods given and a delayed giving of children family foods). Mohammed et al., (2016) reported that children of such age could not obtain food for themselves and they had small gastric capacities, meaning they were incapable of ingesting large amounts of sufficient food, while other mothers did not practice child spacing.

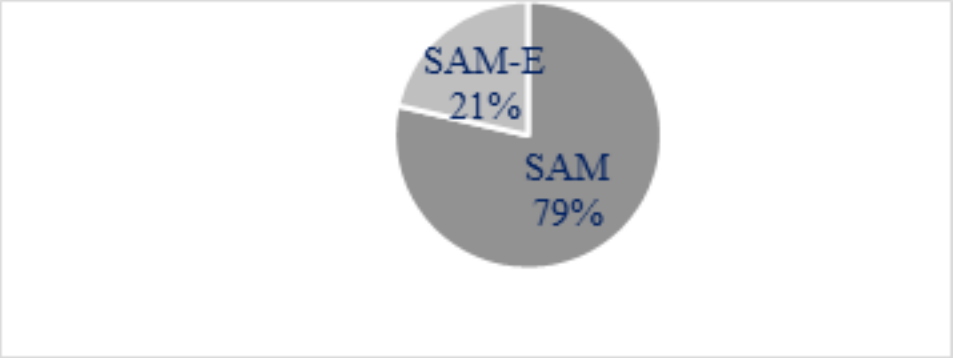

Figure 3: Nutrition Diagnosis

Whereas observed results (14%) in 0-6 months could have been due to nutrient deficiencies and low energy and protein intakes seen in children fed on diluted cow's milk in substitution to breast milk or otherwise babies were weaned too early. In addition, some mothers were unable to "let down" breastmilk, a common complication after birth (Berti .A, 2008).

In addition, 24-59 months and >5 years were the least (22% & 7% respectively) partly explained by the ability of children to gather food for themselves as reported by a study titled "*Factors associated with malnutrition among school going children"* (Acham, 2012).

Fortunately, the nutrition unit had implored nutrition education session to tackle appropriate feeding to caretakers as patients were being discharged out of ITC to prevent relapses. While some caretakers were sent for counselling in family planning with emphasis on child spacing.

3.6. Co-morbidities associated with patients

Results showed that most (93%) patients had fevers, (64%) had cough while (48%) reported diarrhoea as (42%) complained about vomiting. Flue was the least (23%) reported (Figure 4).

It should be understood that some patients could have multiple conditions. These conditions were sometimes signs and symptoms of comorbidities or otherwise independently existing.

While results showed that patients had multiple co-morbidities. The most (93%) existing comorbidity was pneumonia, (57%) had malaria while (38%) were HIV positive. There were only (7%) who had in-born errors (Figure 5).

Pneumonia was the most (80%) common co-morbidity. This was in line with research reports (MoH, 2022) & (Nyeko, 2016). Similar to other studies (Derseh et al., 2018). Lazzerini & Tickell, (2011), it was observed that malaria, HIV, and anaemia co-existed with malnutrition which made fevers, cough, diarrhea and vomiting reported from the caretakers. Meanwhile Id et al., (2020) reported that diarrhea and vomiting were the commonest infections presenting with SAM among treatment centres Kamba district, South Western Ethiopia. This was the basic reason for administering antibiotics, antifungals and anti-malarials to the patients as stated in the Integrated Management of Acute Malnutrition (IMAM) guidelines.

Whereas, according to Rytter et al., (2017) study at Mulago, it highlighted that other comorbidities included measles and TB, which lengthened the hospital stay. The same study indicated that these comorbidities were costly to manage as well as delayed recovery from SAM. This could be explained in terms of the synergistic relationship between co-morbidities and malnutrition, which has been well recognized by Lassen et al., (2006). In addition, the presence of co-morbid conditions characterized inadequate formula feed intake which led to fast depletion of nutrients and delayed nutritional recovery. These children harboured parasites that directly consumed nutrients and prevent nutrient absorption. This alternatively explained the decrease in nutritional recov-

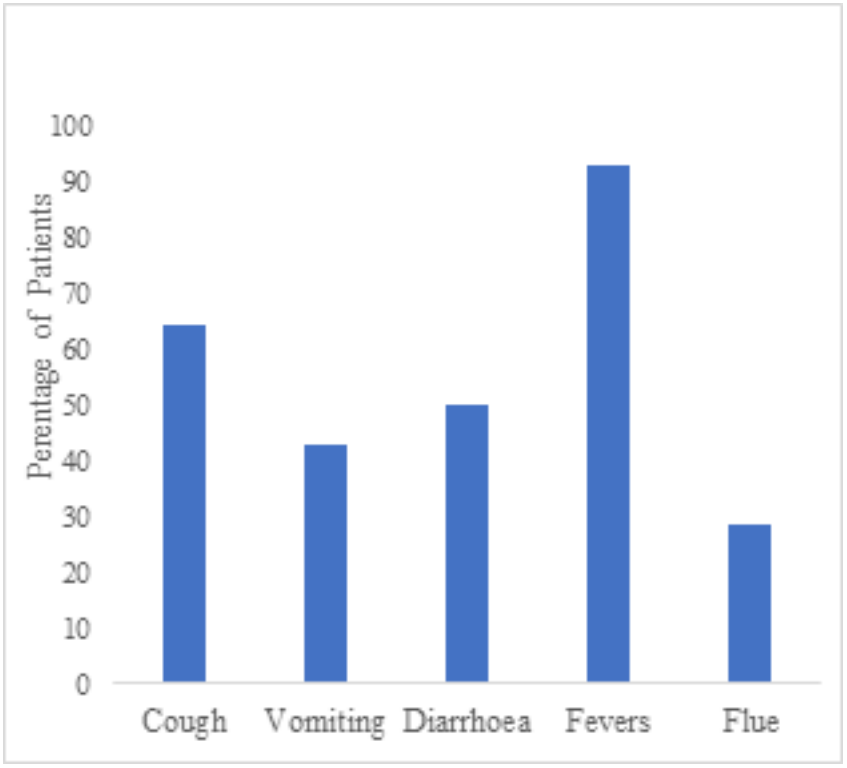

Figure 4: Major conditions reported

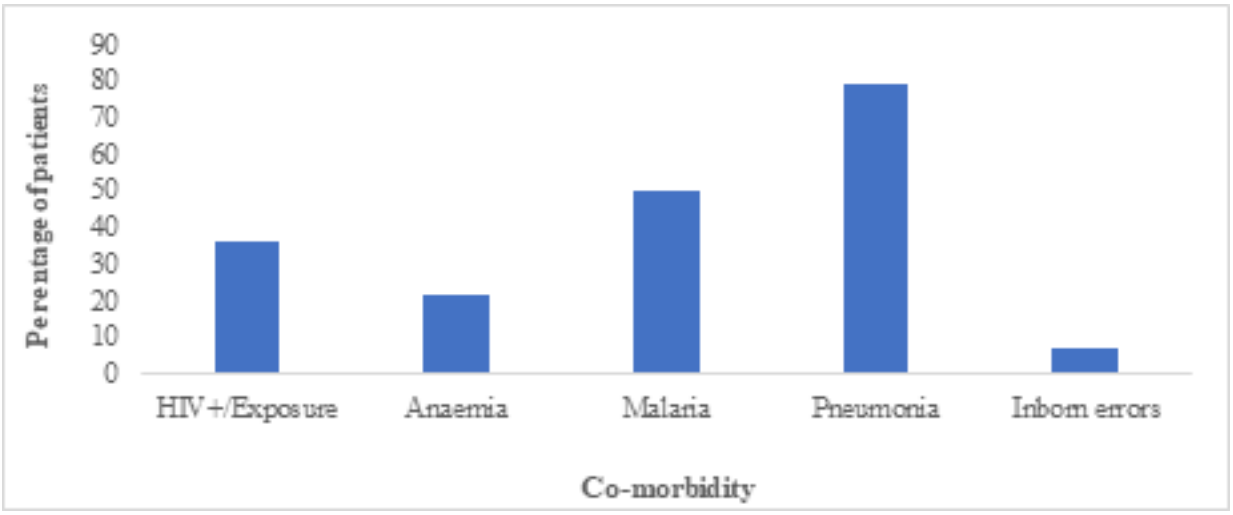

Figure 5: Comorbidities in ITC

ery rate in the present study. Patients with inborne errors (5%) included cerebral palsy. Inability to request for food and drink, swallow, hyperactive gag reflex, and inability to control feeding led to increased risk of SAM. However, this study reviewed all admission clinical findings and derived independent diagnoses of kwashiorkor and marasmus using the WHO classification to reduce the study bias for misclassification of the patients.

3.7. Knowledge, Attitudes and Practices (KAPs):

Knowledge, Attitudes and Practices remained determinants of human behaviour. Adebisi et al., (2019) realized that people practiced what they had knowledge and positive attitude.

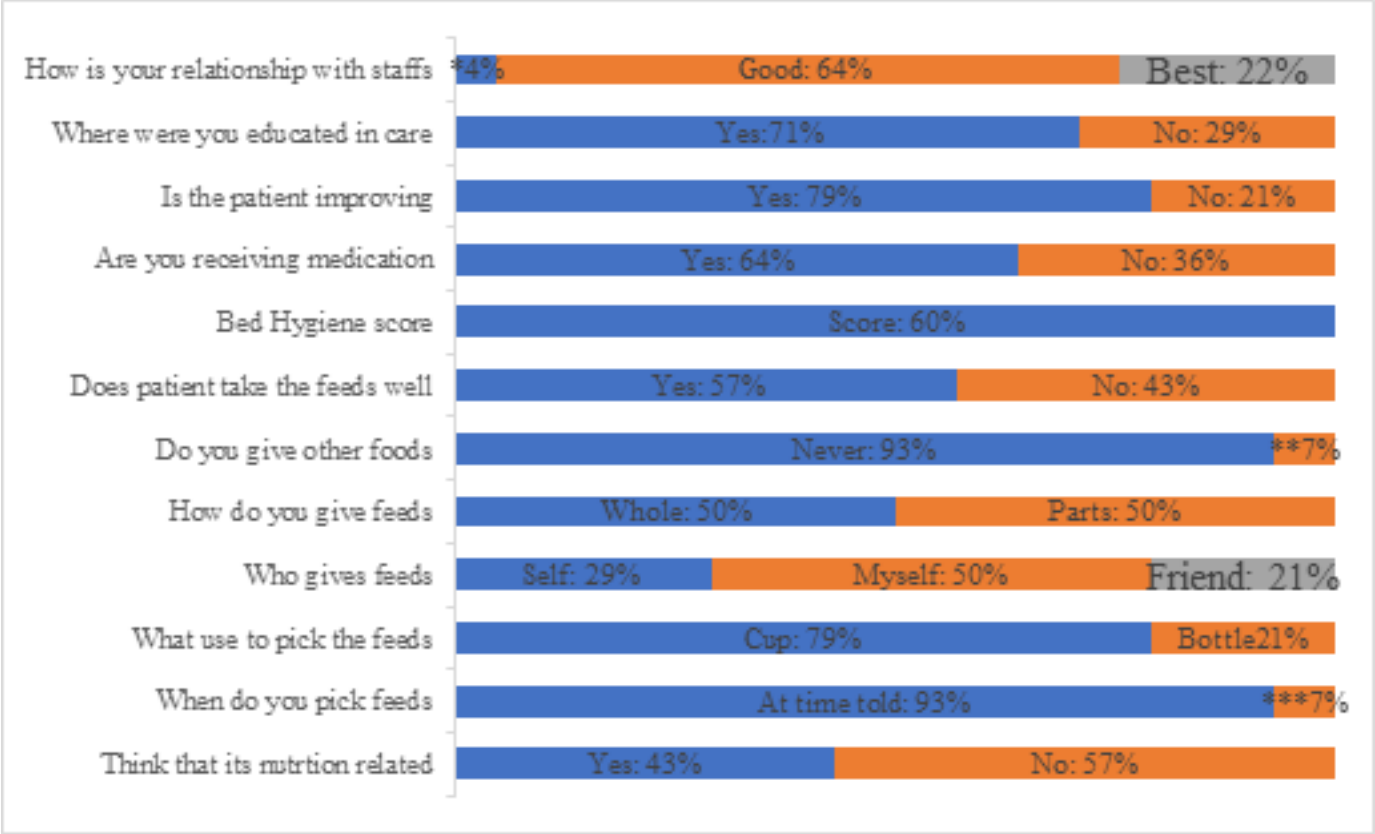

Figure 6: Knowledge, attitudes and practices of caretakers * Poor, ** Yes ***When I recall or reminded

3.7.1. Knowledge:

It was observed that (43%) of the caretakers knew that patients were malnourished. This could be partly justified by the fact that these were the exact people (45%) who had attended at least upper primary education. Meanwhile 89% of the caretakers showed timely picking of feeds and never gave other food. This could be as a result of the nutrition education they receive at the admission. This success could also be attributed to caretaker-caretaker interactions.

Most caretakers (97%) showed they knew how to care for their respective patients. However, it was observed that longer a caretaker stayed ITC the better they would care for their patients. This was attributed to the fact that they had gained much more experience in nutrition care.

The above results did not differ from the study about the significance of nutrition knowledge by Kigaru et al., (2016), who stated that having nutrition knowledge is the first step to understanding implications of nutrition. Whereas, reports by Mekuria et al., (2017) showed that caretakers in malnutrition treatment centers needed to be equipped with nutrition information in order to trap adherence to the services hence adaption of community engagement teams. A study showed that caretakers' care given to the patient depended on what implications were attached for poor caring. (Derseh et al., 2018).

3.7.2. Attitude:

Attitude was scored on the willingness to abide to the instructions. Results showed a good (64%) staff-caretaker relationship while most (89%) caretakers showed a positive attitude towards adherence nutrition care. Whereas, this could be attributed to the nutrition education given to the caretakers prior to entry, caretaker wanted their patients to get healed, this was an inner driving force. These results were similar to what was observed by Habib-Mourad (2014) in Lebanon that caretakers who had a positive attitude had absolute adherence to nutrition care.

3.7.3. Practices:

It was observed that most (93%) of the caretakers picked feeds at the time they were told, (50%) gave feeds by themselves and (79%) attended to the patients while taking feeds whereas (86%) did not give other food. Therefore, most (93%) caretakers practiced the recommended nutrition care. This was attributed to the fact that they had adequate knowledge and positive attitude towards appropriate nutrition care. However, were minors (14%) who sometimes gave other foods which is contrary to the recommendations of exclusive feeds and 36% who were not receiving all prescribed medications. This was attributed to language barrier and poverty respectively.

These study results correlated with other studies on human behaviour which stated that man's attitude and practices depends on his depth of knowledge (Kigaru et al., 2016). Similar to a study titled "*Management of SAM children"* in Bahel, Afghanistan, nutrition care practice with positive attitude showed increased rate of improvement of the patients hence caretakers who adhered to the instructions from the medical workers had less days in ITC.

Therefore, the above results show a positive impact of nutrition care knowledge, attitudes and practices in ITC.

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Therefore, the above results show a positive impact of nutrition care knowledge, attitudes, and practices in ITC.

4. Conclusion

In-patient therapeutic unit of Hoima Regional Referral Hospital delivered appropriate nutrition rehabilitation. However, this service had shortfalls attributable to limited human resources, equipment, and medicines. Caretakers' approach to nutrition care depended on knowledge, attitude, and practices about the recommendations.

5. Conflict of Interest:

Research bared no conflicts of interest.

6. List of Abbreviation:

AIDS- Acquired Immune Deficiency Syndrome,
CFR-Case Fatality Rate,
HIV- Human Immune Deficiency Virus,
HRRH- Hoima Regional Referral Hospital,
IMAM- Integrated Management of Malnutrition,
ITC- In-Patient Therapeutic Care, MoH- Ministry of Health,
NGOs- Non-Government Organizations.

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