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Research Article

Establishing Malnutrition Prevalence in Adult In-Patients in Female and Male Medical Wards at University Teaching Hospital: A Case Study of Lusaka Province

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Abstract

Nutrition is an all-time important element of health for everyone, more so in-patients. Owing to rapid increase in the number of in-patients, partly due to increased caseload and increased hospital stay, maintaining their positive nutritional status is becoming a challenge. Apart from compromised health status, in-patients are potentially most vulnerable to malnutrition. The study aimed to determine prevalence of malnutrition in adult in-patients in medical wards at the University Teaching Hospital in Lusaka, Zambia. Specific objectives involved determining nutritional status of adult in-patients at admission in the medical ward and food quality given to in-patients, establish nutritional status of adults in patients after two weeks and any kind of deliberate health service given to malnourished adults.

A prospective cohort study was carried out involving 161 adult in-patients comprising 81 males and 80 females. Anthropometric data constituting Mid-Upper-Arm Circumference (MUAC) was collected to determine initial nutritional status of in-patients on admission and again two week later for those that were still in the facility in addition to waist circumference. Data was analyzed using Statistical Package for Social Sciences (SPSS) version 22.0. The study revealed significant proportion of in-patients (39.1%) were malnourished on admission with more males being malnourished (21.7%) than females (17.4%) (P value = 0.001, CI = 0.721-0.861). Numbers of both male and female malnourished in-patients after two weeks significantly increased, 39.1% males and 30.4% females respectively. These findings can be attributed to poor food consumption patterns experienced. Respondent waist circumference indicated 3.07% females and 6.21% males were at risk of developing central obesity (P value = 0.001, CI = 0.280-0.515). Clearly there was no set protocol by the hospital staff to address in-patients' nutritional needs.

Keywords: Malnutrition; Adult In-Patients; Anthropometric Measurements

Introduction

Haddad., *et al.* [1] assent that public health is faced with many challenges in various countries. Malnutrition in all forms is one of most critical threats besetting many people with devastating outcomes [2]. Malnutrition is defined as unbalanced or inadequate nutrition (Dictionary.com) which may consist of either over or under nutrition. Australia reported acute malnutrition prevalence as high as 83% in hospital setting in older patients [3]. Malnutrition in adults leads to adverse weight loss, elevated infections, delay in recovery from illnesses such as malaria or Acquired Immune Deficiency Syndrome (AIDS) or indeed excess weight gain. Wilson [4] affirms that increased hospital stay is a factor contributing to malnutrition where it is an underlying factor in many diseases affecting both children and adults; contributing greatly to disability-adjusted life year's worldwide. A study conducted on causal impact of malnutrition on mortality among adults hospitalized for different medical illnesses in sub-Saharan Africa showed high mortality rate among patients admitted not necessarily as a result of disease but because they were malnourished [5].

Beghetto., *et al.* (2010) state that malnutrition is prevalent in many hospital settings contributing to morbidity and mortality. They add that malnutrition prevalence in adults on admission is at increased rate while additional cases develop in in-patients. Malnutrition in children has been given attention to extent that wards are designated but not the case for adults. FAO, (2014) study comparing overall malnutrition levels in Zambia and Kenya showed undernourished Zambians ranging between 30% and 60% from 1990, twice that of Kenya which ranged between 14.5% and 24.5%. Another study documented 20% and 50% malnutrition prevalence respectively in hospital (acute) setting, highly dependent on patient population, definition and criteria used for diagnosis *[6].* In a Kenyan study, investigators showed that malnutrition at admission was associated with high mortality in adults hospitalized for medical illnesses (Asiimwe., *et al.* 2015). Another study carried out in United Kingdom (UK), indicated malnutrition as key issue affecting adults' health. Wilson [4] in agreement with NICE (2012) affirm that malnutrition in adults remains under-detected, under-treated,

under-resourced and often over looked by those working with and for adults.

Generally, malnutrition problem in adults has not been given much attention. Stakeholders involved in reducing malnutrition prevalence have primarily focused on children and breastfeeding mothers, neglecting adults in the general population. In as much as adults visit various health institutions, the main focus is to treat their presenting primary sickness with little or no attention paid to nutritional status. Common illnesses presenting include malaria, severe headaches, thrush, diarrhea, hypertension and common colds. Global malnutrition statistics status is definite, but published research evidence given by Zambia Demographic Health Survey (ZDHS) data is limiting and does not contain any information on prevalence of hospitalized adult malnutrition. This state of affairs has denied the nation actual picture of what situation is like in hospitals and therefore warrant special attention for readdress. Musukwa and Ian (2014) add that poor nutrition has a direct link to malnutrition in that it tends to weaken immune system there by predisposing victims to other opportunistic diseases and infections. This indicates that malnutrition should be given attention just as much as other health conditions.

Definition of malnutrition

Malnutrition is defined as nutritional sub-acute or chronic state encompassing combination of varying degrees of either over or under-nutrition and inflammatory activity leading to changes in body composition and diminished function (Soeters., *et al.* 2008). Other definitions of malnutrition focus on energy, protein and micronutrient intake imbalance in relation to required amounts as the main cause [7]. Primary focus for this study is undernutrition in adult in-patients. Definition adopted is one clarified by European Society of Parenteral and Enteral Nutrition (ESPEN) delineating differences between cachexia and sarcopenia malnutrition [8]. According to Dorland's Medical Dictionary (2011) malnutrition is a condition resulting from taking an unbalanced diet in which certain nutrients are lacking, taken in excess or in wrong proportions. Cachexia and sarcopenia are most common manifestations of severe malnutrition in in-patients. Cachexia is defined as multifactorial syndrome characterized by severe body weight, fat and muscle loss with increased protein catabolism due to underlying disease whereas sarcopenia is defined as loss of muscle mass and function. Malnutrition seen in in-patients is often a combination of cachexia (disease-related) and malnutrition (inadequate nutrient consumption) as opposed to malnutrition alone [8]. Malnutrition term include over or under nutrition which shows two distinct categories (Soeters., *et al*. 2008). World Health Organization (2010) defines malnutrition as undernourishment or over nourishment caused by unbalanced micro or macronutrient intake.

Anthropometric measurements

Anthropometric measurements are used widely as significant indicators for different populations groups. These measure general nutritional status of individuals or population groups to identify nutritional status and individuals at risk of certain diet related diseases. Based on Govender (2011) provisions, four variables considered were age, gender, height and weight.

Middle upper arm circumference (MUAC)

According to Jeyakumar A [9], mid-upper arm circumference (MUAC) is highly recommended for malnutrition diagnosis in determining body fat distribution. Powell-Tuck, J [10] add that MUAC is measured in adults for diagnosing malnutrition and is highly correlated with body mass index while predicting outcomes better. While highly specific (up to 96%), caution is given that it can be poorly sensitive depending on accuracy. MUAC is also suitable in that some patients may not be able to stand and their measurements can still be taken while laying on their hospital beds. A non-stretchable MUAC tape is used to obtain readings as patient's arm circumference at midpoint between olecranon and acromion, while seated or lying supine with arm rested or flexed at 900 at the elbow. Alice M, Tang., *et al*. (2017) provide MUAC cutoffs to be in range of < 23.0 cm to < 25.5cm, potentially serving as appropriate indicator for low body mass index (< 18.5).

Waist circumference

Waist circumference is a simple cost effective way of understanding a person's cardio-metabolic risks (WHO, 2007). It is an indicator of health risk associated with excess fat around waist, giving an association of health problems such as Type 2 diabetes, heart disease and high blood pressure [11]. Cut-offs used in establishing individuals at risk and those falling within normal range of waist circumference are shown in table 1.

Indicator	Cut-off points	Risk of metabolic Complications
Waist circumference	>94 cm (Men); > 80 cm (Women)	Increased
Waist circumference	>102 cm (Men); > 88 cm (Women)	Substantially increased

Table 1: WHO cut off points of risk of metabolic complications.

Source (WHO, 2008)

Causes of malnutrition

Malnutrition and promoting optimal nutritional status is a significant challenge when caring for hospitalized adult patients (Chamblee, 2017). In fact, reported incidence of malnutrition can be traced back to Florence Nightingale (2012), who described hos-

pitalized adults as "skeleton in the closet". This is because it requires in-depth understanding and probing to determine main causes besides reduction in food intake. Other causes may include increased susceptibility and presence of debilitating diseases, social isolation, altered health status, economic limitations and multiple hospital admissions [12]. Malnutrition develops as a result of insufficient dietary intake, increased nutrient requirements associated with disease state, as an underlying illness leading to complications such as poor absorption and excessive nutrient losses or from a combination of all aforementioned factor [13]. In adults, it is generally caused by social illnesses as well as physical, immunological, mental retardation and loss of income by retirement or unemployment (Call, 2014). Research indicates that malnourished individuals experience increased ill health, long stay hospital after admission, increased risk of other infections and greater antibiotic use, longer recovery time from surgery and illness and increased risk of mortality (Elia., *et al.* 2005; Heismayr., *et al.* 2009).

A study carried out by Andrews [14] in sub-Saharan Africa (SSA) to determine mortality among adults hospitalized with medical illness showed alarming high mortality at 60% in in-patients admitted with severe sepsis. Dorland medical dictionary (2011) explain that sepsis is a condition that comes about as a result of body's response to fight infection by releasing chemicals into blood stream triggering inflammation throughout the body resulting in change cascade in multiple organ systems tissues causing them to fail. Common signs include fever, increased heart rate and breathing, making affected individuals to be susceptible to malnutrition as all symptoms lead to increased energy demand but in absence of supply [15].

Factors affecting nutrient intake and nutritional status in in-patients

Drug-nutrient interaction

Studies show increase in nutrient requirements due to presence of acute infection or chronic inflammatory state. Banks [3] explains that many malnutrition cases are caused by increased nutrient losses and impaired nutrient utilization with resultant loss of muscle and fat mass. Dunne (2008) adds that patients on medications may experience unpleasant side-effects that ultimately reduce dietary intake.

Food choices and appetite

Inadequate nutrient consumption is related to illnesses, increased nutrient needs or inability to ingest nutrients at levels commensurate with nutritional requirements. Appetite and food choices play a very important role in in-patients due to fact that these individuals have high nutrient demand. Donini., *et al.* (2008) explain that poor appetite accounts for large proportions of malnutrition in in- patients occurring for a variety of reasons including anxiety and depression. Lipschitz [16] add that regardless of patient's nutritional status, duration, severity and illness type, all factors directly influence malnutrition development. Acute sustained illness unable to be treated effectively can also cause malnutrition. Luma (2017) reiterates that specific organ system dysfunctions such as renal, hepatic, cardiac, or pulmonary failure also impend nutritional statuses of patients.

Indicators of adult malnutrition

According to WHO (2010), four indicators are used in identifying adult malnutrition including moderate and severe thinness (wasting), underweight, overweight, obesity. Holyday [17] mentions that cut-offs may differ especially in hospitalized cases taking into account history of weight loss over a postulated periods of time.

Study design and population

A descriptive cohort prospective study was conducted among male and female adult in-patients aged 18-65years at UTH in medical wards. This age group attracted special interest because it constitutes a neglected population segment with regard to nutritional screening, diagnosis and management. Study was confined to a two-time period; MUAC collected at initial stage, after two weeks including waist circumference and obtain responses to questions contained in accompanying questionnaire.

Sampling procedure

Purposive convenient sampling was used to identify respondents for inclusion. Eligible patients were identified by checking through medical report books as they came on first come basis. Patients that had been admitted 2 days or less were recruited as respondents. Those unable to talk but in company of care givers and not severely sick were also eligible. Individuals less than 18 years or had been admitted for more than two days, severely sick and without care givers were not included.

Sample size determination

Minimum sample size was (N=161) determined at 95% confidence level and an infinite population correction factor at 5% significance level [6].

Ethical considerations

Ethical approval was sought from University of Zambia Research Ethics Committee (UNZAREC). Letter seeking permission was addressed to hospital Medical Superintendent through Head Clinical Care Specialist. At admission, patients were asked to sign consent or put a thumb print for those unable to sign. Respondents were informed that they were free to opt out at any time should they feel uncomfortable. In order to ensure authenticity, data collection tool was pretested among 8 respondents accessed from Levy General Hospital with similar characteristics to allow validation.

Methods and data collection

A semi-structured questionnaire consisting socio-demographic data, dietary intake and food frequency, health data (physical activity) and anthropometric (MUAC and waist circumference). Caution was exercised not to temper with cannula where applicable. None stretchable MAUC tape and measuring tape were used. MUAC measurements were obtained in such a way that patients

were comfortable, either laying or seated upright. For obtaining waist circumference, patients were made to lie down, ensuring that measurements were obtained at belly center by passing tape below from back and readings recorded. Rest of questions were answered after two weeks when final MUAC reading and waist circumference were obtained. For those discharged or died before two weeks elapsed, their information was discarded and replaced. For those unable to talk, care givers answered on their behalf. Additionally, questionnaires were administered to twelve (12) professional health care providers.

Data analysis

Statistical package for social sciences (SPSS) 16.0 was used. Dietary data was entered in Excel and later transferred to SPSS version 16.0. Descriptive statistics was used to obtain overall malnutrition levels across gender, age, food provided by hospital and medical diagnosis. Inferential statistical analysis was used to test for correlation, association and a paired T- test for the difference in sample means between variables.

Results and Discussion

Demographic socio-economic characteristics

Gender and age distribution

Mean age of 39.2 years, equally divided between gender differentiation; males 50.31% (n = 81) and females 49.69% (n = 80). Ages were categorized in 15years intervals, showing majority falling in 35-50 (41.49%) age range, followed by 18-34 (39.00%) and least 50-65 (19.50%).

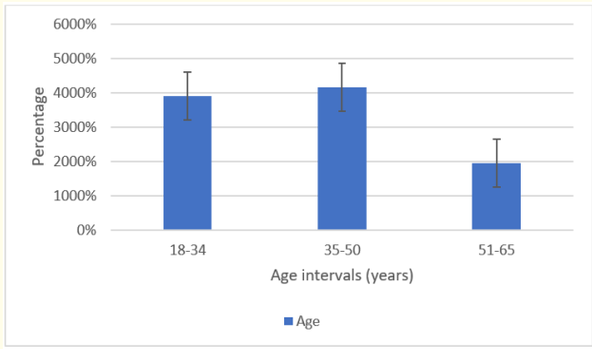

Figure 1: Respondent age distribution.

Marital status and occupation

Majority (54.7%) were married, 29.88% single, 2.90% widowed, 5.39% divorced and 7.05% separated as reflected in figure 2 below.

Occupation was divided into three categories, namely informal, formal and unemployed. There was equal distribution between those in formal and informal employment at 37.34% while those not involved in any employment stood at 25.31%.

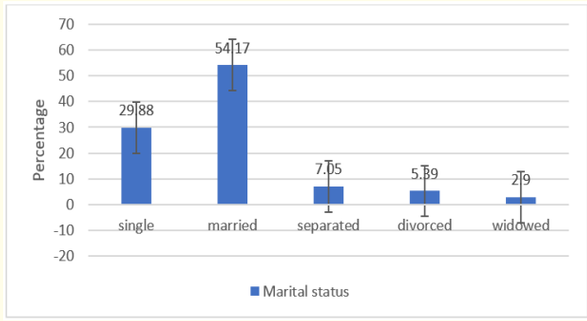

Figure 2: Respondent marital status distribution.

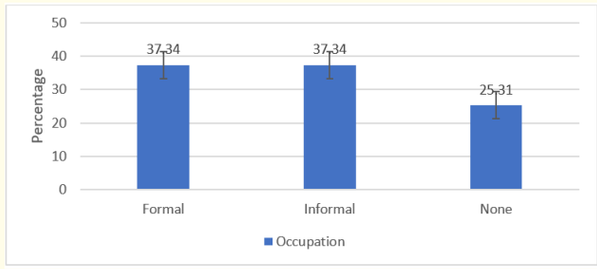

Figure 3: Respondents occupation distribution.

In agreement with Weiss., *et al.* (2016) in study on Healthcare Cost and Utilization Project (HCUP), findings were that individuals impacted by malnutrition during hospitalization frequently included adults with lower socioeconomic status with no income source. Seemingly, occupation had impact on nutritional outcome where respondents with no access to salaries were more affected; either laid off or un able to run small businesses to provide income source.

Education level of the respondents

Majority (42.32%) attained primary while 24.48% reached secondary level education. Very few had not attained any education (17.01%) followed by ones with tertiary education (16.18%). However, education levels did not seem to have any significant effect on malnutrition.

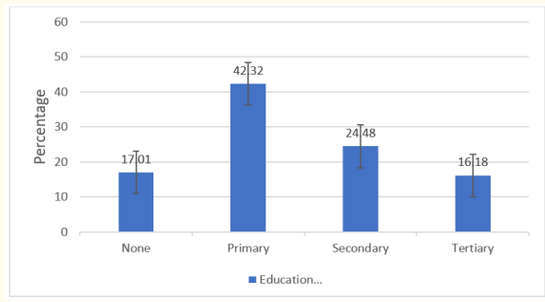

Figure 4: Respondent education level distribution.

Money spent on food while in hospital

Inquiry on money spent per day on food while in hospital indicated 36.93% spent between K20- K50.00 (Zambian currency), 15.77% spent K50-K100 and 1.24% above K100. Majority (46.06%) reported spending less than K20 per week.

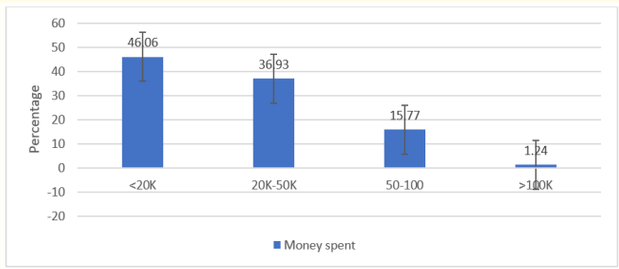

Figure 5: Money spent on food per day.

Food varieties bought included cold beverages such as supper shake and maheu, carbonated drinks, fruits included bananas, oranges, apples and lemons. Others reported buying relish especially in cases where they were unhappy with food provided by hospital on a particular day.

Main source of food

Majority (63.90%) consumed food provided by hospital and 29.88% from home. Respondents reporting purchasing food represented 5.39% and gifts 0.83%.

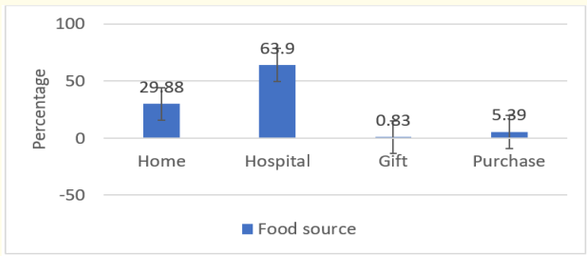

Figure 6: Respondents' food sources distribution.

Kalliopi (2017) concluded on importance for patients right to safe and nutritious food in a study conducted on hospital diets and oral nutritional supplements; emphasizing that 80-100% depended on meals provided by hospital in disagreement with current study where 63.9% reported consuming food provided by hospital. Further understanding can be derived in reference to a study carried out on in-patients' experiences accessing food impact of hospital meals on malnutrition by Smriti, (2008) who intimated that patients tended to have increased food demand, continuously felt hungry but experiencing difficulties accessing meal variety thereby resulting in malnutrition. He pointed out barriers that contributed to malnutrition being organizational such as unsuitable serving times and not being in comfortable position to eat. Other barriers identified were environmental factors including staff interrupting meals to administer medicines or drip running out needing refill in between meals affecting appetite negatively.

Determination of nutritional status

Mid upper arm circumference

At admission 28.57% males fell in normal range while 21.74% were malnourished; 32.30% females were normal and 17.39% malnourished.

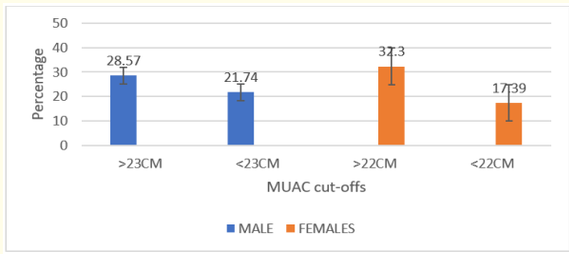

Figure 7: MAUC percentages of in-patients at admission.

MUAC measured after two weeks indicated 11.18% male and 19.25% female were normal. Malnourished males were 39.13% and females 30.43% respectively indicating progressive increase. More males were malnourished than females both at admission and after two weeks, partly attributed to fact that more males (21%) were suffering from infectious diseases compared to females (16%). When asked about measures put in place for malnourished respondents, health care providers' response indicted that no deliberate interventions were instituted; in agreement with a study carried out on patients admitted to medical wards of Douala General Hospital [17]. If untreated, Luma (2017) profess that two in three malnourished patients at admission experience further decline in nutritional status during hospital stay in agreement with estimates by Kirkland., *et al.* (2013) stating that 20 to 50 percent hospitalized adult patients become malnourished.

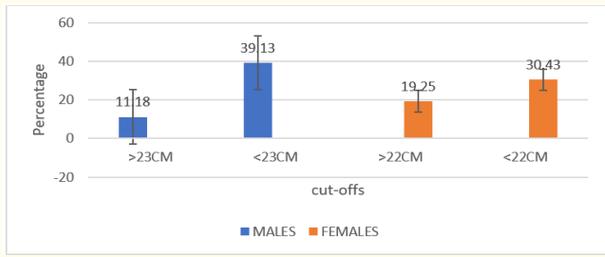

Figure 8: MUAC percentages of in-patients after two weeks.

Note however that study did not classify malnutrition in terms of mild, moderate and severe status. As long as males measured MUAC >23cm and females > 22cm were considered malnourished. Males that measured <23cm and females < 22cm respectively were considered normal without seeking upper limit. However, it was unlikely that any patients would gain weight significantly to exceed 25cm upper limit during their hospital stay. Express assumption was taken that no patients were either overweight or obese. It is

important to note that malnutrition grade had a bearing on illness management contributing to mortality although not actively taken into account. Patients that were critically malnourished tended to die easily, increasing mortality rate especially if their medical conditions were not properly managed.

Waist circumference

Waist circumference evaluates distribution of abdominal fat content in adults (Charlton and Du Plessis, 2008). Indication of body fat content is a predictor of cardiovascular risk, diabetes and other endocrine abnormalities. Ashwell., *et al.* (2012) further asserts that waist circumference gives better indication of adiposity and sarcopenic obesity. WHO (2001) provides waist circumference criteria for women as <88cm and men <102cm for lower range respectively. Respondent waist circumference was determined indicating 3.07% females and 6.21% males were at risk of developing central obesity (P value = 0.001, CI = 0.280-0515). Males in normal range were 44.10% and females 41.6%.

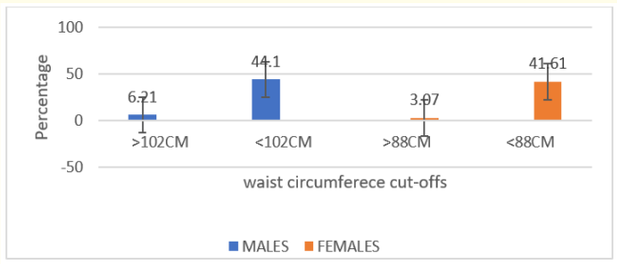

Figure 9: Respondent waist circumference distribution.

Dietary data

Food frequency questionnaire

Respondents were asked about foods commonly consumed. All respondents (100%) reported consuming vegetables on a daily basis, 98.8% reported consuming cereal and cereal products. Cereals products constituted rice (7.2%), cornflakes (10.5%) or maize-soy mix (82.3%). Only 3.4% reported consuming meat and poultry on daily basis. Less than 1% consumed milk, milk products and fish while 67.4% consumed fruits on a daily basis constituting apples (12.4%), oranges (20.2%) and bananas (67.8%). Beverages on a daily basis represented 80.5% constituting super shake (70.9%) and maheu (23.4%) (light mealie meal gruel) and a small percentage (5.7%) taking pure fruit juices. Majority (80.5%) reported none consumption of roots or tubers (sweet and Irish potatoes) over past 7 days. More than half (59.2%) had consumed eggs in past 7 days. Verbal discussions revealed that most respondents' diet was not meeting recommended nutrient intake. Specific nutrient analysis by way of quantities and frequency in conformity with Recommended Daily Allowance (RDA) was not conducted as this was outside study objectives scope. However, inference was made on face value that most foods consumed in quantities were not nutrient dense to meet high nutrient demand required in illness. This agrees with Chamblee (2017) who asserts that malnutrition occurs when nutrient intake does not provide adequate calories, protein and other micronutrients needed for tissue maintenance and function or that nutrients are not fully utilized due to illness contributing to respondents' poor nutritional outcomes.

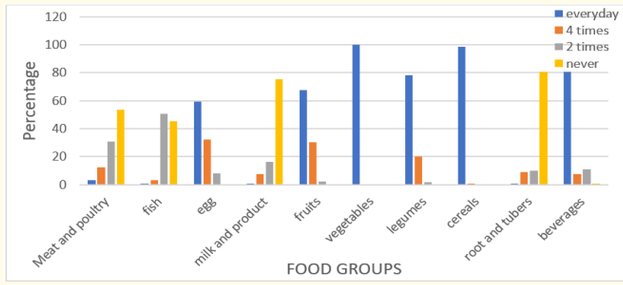

Figure 10: Foods groups frequently consumed.

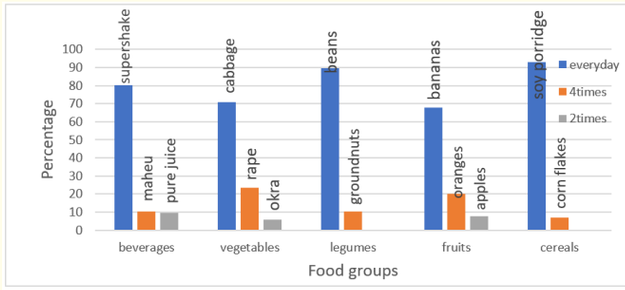

Figure 11: Commonly consumed food distribution.

Food frequently provided by hospital

Inquiry on foods provided by hospital on daily basis revealed that most respondents (80.4%) indicated consuming soy porridge, 10.2% at least four times per week and 9.4% twice per week. When asked on how regularly they consumed soy pieces, 60.9% of respondents reported consumed it on a daily basis, 25.1% consumed it at least four times per week while 12% consumed it twice in a week. Inquiry on cabbage consumption provided by hospital, 50.2% indicated daily, 40.7% at least four times per week and 9.1% twice per week.

Daily beans consumption represented 40.7% while 20.8% had it at least four times and 38.5% at least twice per week. Nshima (thick porridge) accompanied by different relishes was provided on daily basis by hospital but consumption stood at 53.2% while 16.5% ate it at least 4 times per week and 30.3% ate it twice per week.

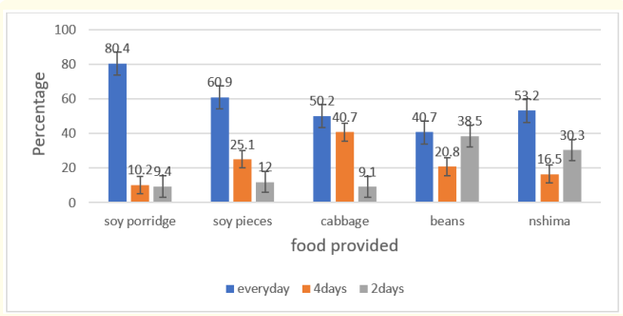

Figure 12: Hospital provided food.

Appetite

Majority (53.3%) affirmed having poor appetite while 46.47% refuted having good appetite.

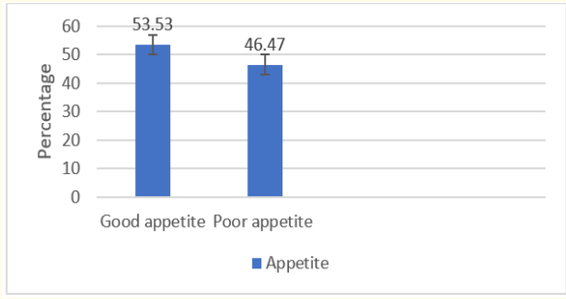

Figure 13: Appetite distribution for in in-patients.

Young (2016) affirms that appetite has a direct link with nutritional status; widely used to predict nutritional status in many in-patients. He states that poor appetite plays a key role determining one's ability to develop malnutrition as a contributing factor. He adds that anorexia as a sign of poor appetite is a key risk factor contributing to malnutrition. Young concluded that 62% had poor appetite (anorexia), more or less in agreement with 53.53% of respondents who had poor appetite in current study.

Medical diagnosis

Inquiry on medical diagnosis revealed heart failure (2.07%), CHD (4.56%), Anemia (10.79%), tuberculosis (6.22%), tuberculosis in RVD (12.45%), high blood pressure (10.79%), meningitis (5.81), and kidney failure (8.71%). Other diseases representing combined proportion (31.12%) included pneumonia, diabetes, sepsis and burns. Most malnourished respondents were suffering from infectious diseases in agreement with a study by Cole (2007) who add that infectious diseases compromise appetite and nutrient absorption making body immune system more susceptible to infections and subsequent malnutrition.

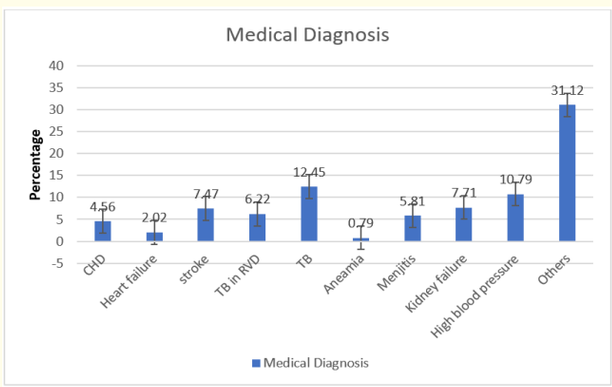

Figure 14: Medical diagnosis distribution.

Bachmann., *et al.* (2008) reports that any disease can alter or increase nutritional requirements; adding that cachexia characterized by dramatic weight loss typical in diseases such as cancer, chronic heart failure and kidney disease. This partly agrees with observation that some malnourished respondents suffered from heart failure (2.02%) and kidney failure (7.71%) respectively.

Oedema

Majority (68.88%) had no oedema while 31.12% had oedema indicating significant positive relationship between medical diagnosis and oedema (Chi=2.151, P=0.542). The body uses different mechanisms to facilitate certain nutrients intake for normal fluid balance and electrolytes to maintain proper body functionality. Absence of these nutrients may lead to fluid retention; a condition called oedema characterized by fluid accumulation in body tissues especially extremities (Rachel, 2017). Oedema may be termed as clinical sign of acute malnutrition. She adds that oedema may also be caused by dysfunctional body organs such as kidney, liver and heart failure as they are responsible for filtering body toxins. However, information obtained was not sufficient to conclude that oedema found in respondents was malnutrition related. Additionally, some malnourished patients had dysfunctional body organs which could have contributed to the presenting oedema.

Health professional respondents

Twelve (12) nurses working eight (8) hour shifts were assigned to the six (6) medical wards as health professionals. When asked to fill in the questionnaire, most avoided while others openly said they were too busy for such an exercise. However, questionnaires were administered to 2 nurses from each ward and 6 intern medical doctors. All the 12 nurses were specialized in general medicine. Of the two intern doctors; one was from surgical while the other general medicine. Revelation indicated that the nurses had been working in general medicine for a period of 2-15years, while intern doctors had only clocked 4months. With regard to malnutrition training, nurses reported having attended seminars where they trained in Community Integrated Management of Acute Malnutrition (CIMAM) and Integrated Management of Acute Malnutrition (IMAM) in children. Intern doctors reported partially learning it as a course during training. These responses were in consonant with the fact that no special malnutrition assessment and monitoring was being conducted both at admission and routinely in wards. Furthermore, no special diets were offered except to patients with diabetes who were given special diets comprising roller meal nshima and brown rice with same relish given to the rest of patients. Nutritional counselling to diabetic patients was offered mainly on foods to be eaten in moderation, foods to be avoided completely and those to be eaten without restrictions. However, no routine checkup was being done on patients.

A complaint was registered from health care professionals stating limited workforce. Whole hospital adult wards had only three nutritionists, limiting effectiveness and efficiency of nutrition re-

lated routine care delivery. Additionally, no deliberate malnutrition management services were offered and fewer reported attending conferences on management of adult malnutrition and confessed incompetence.

Dependent and independent variables;

Relationship of MUAC at admission and after two weeks

To determine the mean difference between MUAC at admission and after two weeks, a Paired T-test used revealed a significant association (P value = 0.001; CI = 0.721-0.861). This agrees with a study carried out by Branschewgn and Gomez Sheenam (2000) among patients who were not malnourished at admission, where results showed that as many as one in three patients may become malnourished during their hospital stay; in agreement with what was reported. Some patients that were not malnourished at admission became malnourished during the hospital stay.

Sex	Malnorished		Normal	
	At admission	After two weeks	At admission	After two weeks
Males	21.74%	39.13%	28.57%	11.18%
Females	17.39%	30.43%	32.30%	19.25%

Table 2: Relationship of MUAC at admission and after two weeks.

Relationship of MUAC after two weeks to Edema

There was a significant negative relationship between MUAC after two weeks and Oedema (Chi=14.974, P=0.03), meaning that there was no significant relationship between MUAC after two weeks and food sources.

Relationship of MUAC after two weeks to appetite

There was a significant positive relationship between poor appetite and MUAC after two weeks (Chi = 2.151, P = 0.542). Most (53.53%) had a poor appetite while 46.47% reported having fairly good appetite. There was significant negative relationship between food source and MUAC after two weeks (Chi = 14.974, P = 0.00). Most patients (63.90%) depended on hospital meals while almost half depended on food brought from home (29.88%) and yet a small proportion (5.39%) purchased and 0.83% depended on gifts [18-20].

Conclusion

Study showed 69.56% of malnutrition existing among in-patients in medical wards, on admission increased significantly (P value = 0.00, CI = 0.357-0.568) with more males (39.13%) being malnourished than females (30.43%) after 2 weeks. Many respondents reported dependence on food provided mainly by hospital, which is nutritionally inadequate to meet high nutrient demands of in-patients. Other factors that could have contributed to many patients getting more malnourished is fact that no nutritional screening was done both at admission as well as through hospital stay. Therefore, no preventive measures were taken including for those coming in malnourished in need of nutritional assistance.

Findings of study also revealed that a considerable number of respondents had oedema though it was related to other presenting complications. Female (3.07%) and male (6.21%) respondents were at risk of acquiring central obesity (P value = 0.000, CI = 0.280-0.516). Recommendations are made that nutrition screening of patients should be done on admission as mandatory health care service provision protocols. In addition, a clear nutrition care pathway should be put in place to indicate action required based on screening results and assign specific wards dealing with adult malnutrition for deliberate resource allocation and focused management.

Bibliography

1. Haddad L., *et al*. Global Nutrition Report Action and Accountability To Advance Nutrition and Sustainable Development., Washington DC.: International Food Policy Research Institute (2015).

2. Skolnik R. "Global Health: Challenges and Responses". *Nutrition in Zambia* (2014): 3-4.

3. Banks A. "Prevalence of malnutrition in adults in Queensland public hospitals and residential aged care facilities". *Nutrition and Dietetics* 64 (2007): 172-178.

4. Wilson L. "A review and summary of impact of malnutrition in older people and reported costs of intervention". U.K: International Longevity Centre (2013).

5. Kinosian B and Jeejeebhoy KN. "What is malnutrition? Does it matter?". *Journal of Nutrition* (1995): 196-197.

6. Timothy LABS. "Hospital Malnutrition; prevelence, identification and impact on Patients and the Healthcare System". *International Journal of Environmental Research and Public Health* 8 (2011): 514-527.

7. Norman K. "Impact of disease related malnutrition". *Clinical Nutrition* 27.1 (2008): 5-15.

8. Muscaritoli M., *et al*. "Pre-cachexia: Joint document elaborated by Special Interest Groups (SIG) —cachexia-anorexia in Consensus definition of sarcopenia, cachexia and chronic wasting diseases and —nutrition in geriatrics". *Clinical Nutrition* 29 (2010): 154-159.

9. Jeyakumar A. "Mid-Upper-Arm Circumference (MUAC) as a Simple measure to assess the nutritional status of adolescent girls as compared with BMI". *Childhood Obesity and Nutrition* (2013).

10. Powell-Tuck J. "A comparison of mid upper arm circumference, body mass index and weight loss as indices of undernutrition in acutely hospitalized patients". *Clinical Nutrition* (2003): 307-312.

11. WHO. "Waist Circumference and Waist-Hip Ratio". Geneva: Report of WHO expert consultation (2008).

12. Valerie DE. "Associations between malnutrition poor general health and oral dryness in hospitalized elderly patients". Geneva, Switzerland: University Institute of Geriatrics (1998).

13. Naber T. *et al*. "Prevalence of malnutrition in nonsurgical hospitalized patients and its association with disease complications". *American Journal of Clinical Nutrition* (1997): 1232-1239.

14. Andrews M. "Simplified severe sepsis protocol: a randomized controlled trial of modified early goal-directed therapy in Zambia". *Critical Care Medicine* 42.11 (2014): 2315-2324.

15. Muzoora SB. "Causal impact of malnutrition on mortality among adults hospitalized for medical illness in sub-Saharan Africa: what is the role of severe sepsis?". *BMC Nutrition* (2015).

16. Lipschitz D. "Nutrition and ageing". In: Oxford Textbook of Geriatric Medicine. Oxford: Oxford University Press (1992): 119-127.

17. Holyday S. "Malnutrition screening and early nutrition intervention in hospitalised patients in acute aged care". *Journal of Nutrition, Health and Aging* 16 (2012).

18. Ferro-Luzzi A. "Adult malnutrition: simple assessment techniques for use in emergencies". *British Journal of Nutrition* 75.1 (1996): 3-10.

19. Glewwe J. Malnutrition and poverty, Lusaka: Zambian times (2005).

20. Todorovic Russell and ELIA. A Standing Committee of the British Association for Parenteral and Enteral Nutrition (BAPEN) The MUST Explanitory Booklet. A guide to the Malnutrition Universal Screening Tool (MUST). UK: British Association of Parenteral Enteral Nutrition (2011).

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