EVALUATING NUTRITIONAL MANAGEMENT OF ADULT IN-PATIENTS REQUIRING ASSISTED FEEDING AT KENYATTA NATIONAL HOSPITAL MEDICAL WARDS

BY

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NOVEMBER, 2015
DECLARATION

I, Kiriba Lucy Njeri, hereby declare that this thesis is my original work and has not been submitted in any other institution for the purpose of obtaining a degree or any other academic award.

Signature………………………………………………………………………

Date………………………………………………………………………………
CERTIFICATE OF APPROVAL

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DEDICATION

I dedicate this work to my loving husband, Charles, whose support and encouragement has been continuously present. This is also to my son, Benjamin who made me happy when the going was tough and bearing long period of absence while pursuing this course.
ACKNOWLEDGEMENT

I wish to acknowledge my supervisors names Mr Ayieko and Mrs Omondi for their continuous guidance and critique during my research project. I also acknowledge all other school of nursing lecturers who taught me research methods and offered encouragement.

I also appreciate my classmates especially Paul, George, Dennis, Elizabeth, Lucy and Everyone who have in one way or another offered support during development of the proposal and the entire research project.

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I am also grateful for permission given by both KNH/UON Ethical Committee and Kenyatta National Hospital to collect data in the institution

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To all that have in one way or another participated in helping me go through the research, process, may God bless you.
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<th>Acronym</th>
<th>Description</th>
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<tbody>
<tr>
<td>ASPEN</td>
<td>American Society for Parenteral and Enteral Nutrition</td>
</tr>
<tr>
<td>BAPEN</td>
<td>British Association for Parenteral and Enteral Nutrition</td>
</tr>
<tr>
<td>BMI</td>
<td>Body mass index</td>
</tr>
<tr>
<td>BMR</td>
<td>Basal metabolic rate</td>
</tr>
<tr>
<td>KNH</td>
<td>Kenyatta National Hospital</td>
</tr>
<tr>
<td>MUST</td>
<td>Malnutrition universal screening tool</td>
</tr>
<tr>
<td>SPSS</td>
<td>Statistical Package for Social Sciences</td>
</tr>
</tbody>
</table>
OPERATIONAL DEFINITIONS

Assisted feeding- the process of guiding and teaching a person on feeds to take and/or providing physical help with oral feeding as need be

Malnutrition- an imbalance between energy intake and utilization leading to either under-nutrition or over-nutrition

Nutrition- the intake of food, considered in relation to the body’s dietary needs.

Nutrition assessment- An evaluation of anthropometric measures, dietary intake and laboratory data of an individual

Nutrition screening- the process of identifying an individual who is malnourished or who is at risk for malnutrition, and obtaining their baseline BMI for immediate intervention or future progress assessment

Nutritional management- the provision of satisfactory meals to patients and provision of necessary teachings or counselling and their screening of malnutrition risks
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ABSTRACT

Background: Malnutrition is among the leading conditions that lead to disease complications and prolonged hospital stay among the hospitalized. Patients that require assisted feeding will need partial compensatory or supportive educative medical interventions that will help improve patient outcome. Kenyatta National Hospital a teaching and referral hospital receives medical patients from other facilities as referral-in and neighbouring area, who may be seen at the medical outpatient clinic or be admitted to medical wards. Admissions can be from the accident and emergency department or from the various medical outpatient clinics.

Objectives: The broad objective was to evaluate the nutritional management of adult patients requiring assisted feeding at Kenyatta National Hospital (KNH) medical wards. The specific objectives were to determine their bio-demographic profile, to assess the nutritional status using anthropometric measures, to establish patients’ perception and nurses’ perspective on nutritional management of adult in-patients requiring assisted feeding.

Methods: This was a cross-sectional design study. The independent variables were Patients’ characteristics: age, gender, educational level, economic status, expectations and institutional factors: timing of meals, food presentation, and staff assistance. The dependent variables were patients’ nutritional management. The outcome was based on level of nutrition. The study was conducted at KNH medical wards among in-patients requiring assisted feeding. Systematic and random sampling methods were adopted and questionnaires were used for data collection. Out of a sample size of 187 patients and 89 nurses, 153 patients and 67 nurses were studied. Data was coded and analyzed using Statistical Package on Social Science (SPSS) software. Quantitative data was analyzed using descriptive statistics methods of percentiles, mean, mode and standard deviation while inferential statistics were Chi-square, Fishers exact test and t-test. The study was conducted according to the KNH/UON/ERC regulations upon being permitted.

Results and conclusion: The patients demographic profile revealed that patients requiring assisted feeding were more likely to be females, of low educational level, self employed with monthly income <Ksh5000. Formally employed patients were more likely to be malnourished. A majority of the patients were within normal ranges of BMI, with 24.2% being malnourished. Patients were partially satisfied with meals quality. Patients were rarely screened for
malnutrition. The most interrupted meal by medical procedures was breakfast (76.2%) and the most frequent feeding assistant was the nurses.

**Recommendation:** The researcher recommends that KNH administration to lay emphasis on initial assessment of patients’ nutritional status and during hospital stay as recommended by BAPEN. Since good nutrition is important in preventive medicine, the admission period should be used to educate all patients on nutrition. Regular surveys of customer satisfaction should be introduced. The researcher also recommend that an investigation be made on the factors associated with nutritional status of formally employed.
CHAPTER 1: INTRODUCTION

1.1 BACKGROUND INFORMATION

Nutritional status is the current body status of a person or population, related to their state of nourishment i.e. the consumption and utilization of nutrients. Adult nutritional assessment involves a good history and physical examination, laboratory assessment, anthropometrics, body composition, and functional data. An integration of several methods would give more viable result other than just one (Hood, 2013). Malnutrition is defined in medical dictionary as a condition resulting from the body not getting the required amount of vitamins, minerals, and other nutrients it needs to maintain healthy tissues and organ function. Malnutrition occurs in people who are either under nourished or over nourished.

The importance of nutritional assessment becomes apparent during acute illness, in which malnutrition has been associated with increased morbidity, mortality and health care costs (Corkins, Quinter, DiMaria-Ghalii et al 2014; Hood, 2013). Identification of malnourishment and appropriate intervention may improve outcomes (Corkins et al 2014).

Malnutrition is common among those hospitalized in USA and prevalence was reported to be rising (Corkins et al, 2014). Fifty two percent of patients were discharged home with malnutrition diagnosis. The world -wide hospitalized malnutrition averages at 40% (Barker, Gout and Crowe 2011). In 2001, a study was done in Brazilian public hospitals among patients above 18 years and revealed 48.1% malnutrition and 12.5% were severely malnourished (Weizberg, Caiaffa and Correia, 2001). Another study done in Germany in 2006 on hospital malnutrition showed that every 4th patient is malnourished (Perlish, Schutz, Norman et al, 2006). In Africa a study was done in Zululand, South Africa in 1983 during a drought and had a prevalence of 93% malnutrition among male and 72% of female (Okeefe, 1983).

In Kenya, several studies have been done assessing nutritional status at Kenyatta National Hospital in different departments. In critical care unit the incidence of hypoalbuminaemia was 63.5%, 85.5%, 86.4% during admission, 7th day and 14th respectively and slight decline in mean mid upper arm circumference that remained within normal ranges at 29.9 centimetres for females
and 27.5 centimetres for males (Chitibwi, 2010). In paediatric ward, 38.4% were diagnosed with hospital malnutrition (Okoth, 2011); while in plastic surgical unit, 32% paediatrics lost over 10% of baseline weight during the course of admission (Mutua, 2010). In another study at cancer centre on patients with nasopharyngeal carcinoma 35% had malnutrition (Irungu, 2012).

1.2 PROBLEM STATEMENT

Poor nutritional status has been known to have unfavourable effects on patient recovery (Hood, 2013; Corkins et al, 2014). Individuals with less than 80% expected total body protein levels have demonstrated increased morbidity, and 10% or greater unintentional weight loss has been associated with adverse outcomes and prolonged hospitalizations. In lean healthy subjects, weight loss over 35%, protein loss over 30%, and fat loss over 70% from baseline has been associated with death (Hood, 2013).

Despite studies having been done on patient’s nutritional status from 1970’s, the estimated prevalence (40%), of hospital malnutrition remains high across the world. More so, some patient factors may lower their appetite during illness to include: cytokines release, anxiety, depression and some medications. Some drugs could be nauseating or provoke vomiting. Identification of malnourishment and appropriate intervention may improve outcomes (Hood, 2013).

The purpose of this study was to evaluate the nutritional management of adult general medical in-patients requiring assisted feeding at Kenyatta National Hospital (KNH), Nairobi Kenya.

1.3 JUSTIFICATION

Kenyatta National Hospital serves as the largest referral and teaching hospital in Kenya making it have a good representation of highest standard of medical management. Studies on nutritional status of patients have been done in various KNH departments to include: burns unit, paediatrics’, cancer centre and critical care unit; with none having been done in the medical ward despite it serving the largest population of in patients. Furthermore, the findings from the other departments had hospital malnutrition preverences of over 30% which is high. The relation between nutrition status of patients and level of hospital involvement in diet management has not been done. According to the audit done to KNH in 2012, the hospital is faced with insufficient
resources to meet its specialized care role (Ouko, 2012). Since malnutrition affect prognosis and lengthen hospital stay of patient, this study will help evaluate how currently patient nutritional needs are met by the hospital and the level of satisfaction of the patients, and nurses view of it as the primary care providers; providing data that may inform on improving patient dietary management during hospitalization and thus lowering cost of health care provision.

1.4 OBJECTIVES

1.4.1 BROAD OBJECTIVE
To evaluate the nutritional management of adult in-patients requiring assisted feeding at Kenyatta National Hospital (KNH) medical wards.

1.4.2 SPECIFIC OBJECTIVES
1. To determine the bio-demographic profile of adult medical in-patients requiring assisted feeding at KNH general medical wards
2. To assess the nutritional status of adult medical in-patients requiring assisted feeding at KNH medical wards using anthropometric measures
3. To establish the perception of patients on nutritional management of adult medical in-patients requiring assisted feeding
4. To establish the perspective of nurses on nutritional management of adult medical in-patients requiring assisted feeding

1.5 RESEARCH QUESTIONS
1. What is the bio-demographic profile of adult medical patients requiring assisted feeding at KNH general medical wards?
2. What is the nutritional status of adult medical patients requiring assisted feeding at KNH general medical wards?
3. What is the patients’ perception on nutritional management of adult medical in-patients requiring assisted feeding?
4. What is the perspective of nurses on nutritional management of adult medical in-patients requiring assisted feeding?
1.6 RESEARCH HYPOTHESIS

1. Nutritional status of adult in-patients requiring assisted feeding is not affected by their bio-demographic data and their perception on nutritional management

2. The rating of nutritional management of adult in-patients requiring assisted feeding at KNH medical wards is perceived as dissimilar by both patients and nurses

1.7 RESEARCH VARIABLES

1.7.1 INDEPENDENT VARIABLE
Patients’ characteristics: age, gender, educational level, economic status, expectations
Institutional factors: timing of meals, food presentation, staff assistance

1.7.2 DEPENDENT VARIABLE
Patients’ nutritional management

1.7.3 CONFOUNDING VARIABLES
Patients’ comorbid disease, attitude and knowledge

1.7.4 OUTCOME VARIABLE
Overnutrition, normal nutrition, undernutrition

1.8 EXPECTED BENEFITS
Upon study completion, the obtained information may be used as a basis for teaching clients on good dietary habits both in sick and well condition. The results will provide insight on patients concern on meals provided by the hospital during hospitalization. The study findings will also benefit nursing profession to improve on current strategies on nutritional support of patients. Kenyatta National Hospital may use the obtained information to adjust and improve protocols on in-patient nutritional management.
CHAPTER 2: LITERATURE REVIEW

2.1 INTRODUCTION

According to the World health Organisation, nutrition is the intake of food considered in relation to body’s dietary needs. An optimal nutritional status among the sick, which can be achieved by appropriate nutritional management, is associated with numerous benefits that include avoidance of delayed recovery; impaired immunity leading to sepsis; impaired wound healing; impaired gastrointestinal tract function; muscle atrophy; impaired cardiac function; impaired respiratory function; reduced renal function; increased risk of falls; growth retardation; impaired reproductive function; apathy, depression; impaired psychosocial functioning; altered sleep patterns; impaired thermoregulation, increasing the risk of hypothermia and atrophic skin, leading to pressure ulcers (Shepherd, 2009; British Association of Parenteral and Enteral Nutrition, 2011)

Malnutrition is defined as an acute, sub acute or chronic state of nutrition, in which varying degrees of over-nutrition or under-nutrition with or without inflammatory activity have led to a change in body composition and diminished function. It is also defined as an imbalance between energy intake and utilization (Seres, 2003). American Society for Parenteral and Enteral Nutrition, suggested that malnutrition be classified as either starvation related malnutrition, chronic disease malnutrition, or as acute or injury-related malnutrition. This will factor in aetiology that considers involvement of the inflammatory processes in malnutrition development (American Society for Parenteral and Enteral Nutrition, 2011). For the purpose of this study, malnutrition is an imbalance between energy intake and utilization leading to undernutrition.

2.2 FACTORS INFLUENCING MALNUTRITION AMONG IN-PATIENTS

Social economic factors explain malnutrition that result from inadequate food availability, poor quality or presentation of food leading to reduced intake. Poverty and deprivation both are significant in development of malnutrition, particularly in older people (Shepherd, 2009; Barker, 2006). These factors explain what could lead to patient malnutrition state prior admission which could be worsened by disease state if appropriate intervention is not made. According to a study done on incidence and recognition of malnutrition in hospital, it showed that there was weight
reduction during discharge in 69% of patients who had overweight during admission, 39% of normal weight and 75% of undernourished patients (McWhirter and Pennington, 1994). This gives an insight on the significance of proper and adequate nutrition during hospitalization in order to reverse malnutrition or maintain normal nutrition.

Demographic factors were shown to have influence on malnutrition diagnosis according to a study done in USA by analysing patient information of 13 years. Increase in age was associated with a higher prevalence of malnutrition, while females 53.1% versus males 57.8% had malnutrition diagnosis. However, urban or rural residence did not have influence on malnutrition status of patients (Corkins et al, 2010).

Close attention should be paid to the presentation of food, making it look and taste more appetising. Attention also should be paid to making the eating environment pleasant, with opportunities for social interaction as eating alone diminishes food consumption. Disease related factors lead to reduced food intake despite its availability. Reduced food intake may be secondary to symptoms like nausea, vomiting, dysphagia and pain of the disease, while loss of appetite may also be attributed to anxiety and depression (Barker, 2006; Shepherd, 2009).

Patients on medications may experience unpleasant side-effects that can reduce their dietary intake. Use of analgesics, in particular opiates can cause reduced appetite while taking proton pump inhibitors on a long-term basis may have an increased risk of gastric infection (Shepherd, 2009). Diseases can alter or increase nutritional requirements and cachexia may result. Alterations in taste and smell contribute to loss of appetite. Increased loss of nutrients or impaired digestion and absorption are also causes of malnutrition. Patients placed on nil-by-mouth regimens, those without teeth, and poor oral hygiene are also risk factors of developing malnutrition.

According to Corkins (2010), the most common comorbid diagnosis for the malnourished patients was septicaemia, pneumonia, acute renal failure, aspiration pneumonitis and interstitial emphysema. Malnutrition was also associated with increased length of stay of 12.6 day versus
4.4 days. In another study done in Germany, the length of stay increased by 4 days for the malnourished patients (Pirlich, 2006).

Hospital catering limitations may put patients at risk of malnutrition (Shepherd, 2009). The prevalence of malnutrition diagnoses has been demonstrated not to differ by the number of hospital beds in a given institution, whether the hospital is located in a rural or urban location or whether it is a teaching hospital. However, the prevalence of patients with malnutrition diagnoses differed significantly across categories of hospital ownership, with malnourished patients being discharged more often from private for-profit hospitals. Patients were also more likely to have a malnutrition diagnosis if they were discharged from a facility that was part of a multi-hospital system i.e. 71.4 versus 66.5%, (Corkins et al, 2010). The trolley system of food service, as used in KNH, is more accepted than pre-plated delivery (Hartwell, Edward and Symonds, 2010). The patient is given opportunity to select amount of food to be served, especially in a buffer trolley system.

2.3 NUTRITIONAL ASSESSMENT OF IN-PATIENTS
2.3.1 MALNUTRITION SCREENING OF IN-PATIENTS

Nutrition screening should be a quick, simple, general procedure used by all healthcare professionals at the point of first contact. A.S.P.E.N (2011) suggested the flow to be assumed for all patients seeking medical services (Figure 1). There are more than 50 published nutrition screening tools (Shepherd, 2009).

For the purpose of this study, the malnutrition universal screening tool (MUST) screening tool was partially adopted. MUST was first published in 2003 by BAPEN with the most recent publication in 2011 (BAPEN, 2011). The tool was developed to assess under nutrition and obesity among adults in various setting like hospital and nursing homes (Baker et al, 2011).
Figure 1: Nutrition Care Algorithm (adopted from A.S.P.E.N, 2011)

According to BAPEN (2011), MUST is a five step tool. These steps are:
Step 1 Measure height and weight to get a body mass index (BMI) score using chart provided.
Step 2 Note percentage unplanned weight loss and score using tables provided.
Step 3 Establish acute disease effect and score.
Step 4 Add scores from steps 1, 2 and 3 together to obtain overall risk of malnutrition.
Step 5 Use management guidelines and/or local policy to develop care plan.

2.3.1 NUTRITION ASSESSMENT DATA
Nutrition assessment data can be can be anthropometric, biochemical, clinical or dietary.

**Anthropometric:** this is the objective measurements of body muscle and fat. They are used to assess weight loss or gain in the mature individual. Weight and height are the most frequently used anthropometric measurements, and skin-fold measurements of several areas of the body are also taken especially the triceps and sub-scapular. The mid upper arm circumference (MUAC) is another parameter that is commonly used. It assess’ muscle and fat of an individual and is not affected by oedema due to malnutrition.
Biochemical data: Laboratory tests based on blood and urine can be important indicators of nutritional status, but they are influenced by non-nutritional factors as well. Laboratory results can be altered by medications, hydration status, and disease states or other metabolic processes, such as stress making them unreliable while used alone.

Clinical data: this involves medical-surgical history of a client, giving details of all medications one is taking. It also involves physical assessment for signs of malnutrition

Dietary data: various ways can be used to assess diet to include observation, interview and checklist filling by clients of what they consume daily. Information about allergies, food intolerances, and food avoidances, as well as caffeine and alcohol use is obtained. Exercise frequency and occupation help to identify the need for increased or reduced calorie (Mackey, 2014).

2.11 THEORETICAL FRAMEWORK

The study was based on the Dorothea Orem’s model of self care (Parker, 2005). The main element of this theory is self care deficit. The theory consists of three related theories: self care; self care deficit and nursing systems.

In the self care theory, the theorist talks of self-care agency which is the ability of one to perform self care. To perform self care, there are self care needs that need to be met. There are three categories of self care needs that include universal needs (air, food elimination, balance between activity and rest, balance between solitude and social interaction, prevent hazards and desire to be normal); developmental and health deviation (resulting from illness, injury, disease or illness). Orem in the self care deficit theory, she explains how a self-care agency get assisted with self care needs by a nurse. A nurse can assist a patient by acting for, guiding, teaching, supporting, providing an environment to promote the patients’ ability to meet current or future need.

In the nursing system theory, Orem states that a nurse takes a series of action in assisting a patient meet his/her self-care needs. In this she discusses the support modalities to include wholly compensatory, partial compensatory or supportive educative.
The study was based on self care model as it identifies food as the second universal need. The model also recognises various levels at which a nurse intervene which would be necessary during health deviation. A patient requiring assisted feeding needs guidance on amount to eat and teaching on the appropriate content for his/her feeds. The nurse acts as patient advocate by collaborating with other hospital departments ensuring the patient get the best management.

2.12 CONCEPTUAL FRAMEWORK

![Conceptual Framework Diagram]

Figure 2: Conceptual Framework
CHAPTER 3: RESEARCH METHODOLOGY

3.1 INTRODUCTION

This chapter dealt with design and the methodologies that were applied by the researcher to conduct this study. It explains the various research procedures and techniques that were applied in data collection and analysis.

3.2 RESEARCH DESIGN

The study design was cross-sectional study design in which persons are studied at a point in time without follow up. The researcher observed the nutritional status of patients requiring assisted feeding and their management in the medical wards. Quantitative approach of data collection, analysis and presentation was adopted. Data was collected using questionnaires. The obtained information was presented in tables, graphs, pie charts and was analyzed using both descriptive and inferential statistics. Discussion was done in prose and conclusions and recommendations drawn.

3.4 STUDY AREA

The study was conducted at Kenyatta National Hospital (KNH). Kenyatta National Hospital is situated in the Kenyan capital city, Nairobi, and is the largest teaching and referral hospital and training institution for medical and nursing students of all levels in East and Central Africa. KNH is along hospital road in Dagoretti division, Nairobi County, near Kenya medical training college and University of Nairobi College of health sciences. The hospital was established in 1901 as the Native Civil Hospital for the European settlers in Kenya. It became a state corporation through a legal notice No. 109 of April 1987. The bed capacity initially was 41 but currently is 1800 with 209 being for private wing. The hospital provides specialized health care to include: burns management, renal services, radiotherapy, critical/ high dependency care, new born services, plastic and reconstructive surgery, orthopaedic surgery and general surgery. The hospital is on 45.7 hectares of land. The study was carried out at the general medical wards of Kenyatta National Hospital. The general medical wards admit all kinds of medical patients. The general medical wards are located on the 7th and 8th floors of the hospital tower. The general medical ward are given specific speciality as follows: ward 7A is a nephrology ward, 7B
neurology, 7C is a dermatology–chest ward, 7D is a gastroenterology ward, 8A is a cardiac ward, 8B is an endocrine ward, 8C is an oncology/haematology ward, while 8D is a rheumatoid/infectious ward. The seven general medical wards have a population of 139 nurses. Ward 7C will be purposefully excluded from the study as it chiefly admits persons with dermatological and chest conditions only.

3.5 STUDY POPULATION
The targeted population was all adult patients admitted to KNH general medical wards that needed assisted oral feeding and who consented as study participants.

3.6 SAMPLE SIZE DETERMINATION
3.6.1 PATIENT RESPONDENTS SAMPLE SIZE
For this study sample size was determined using Fischer’s formula (Mugenda and Mugenda 2003, p. 43-44). The target population is 364 patients (according to the senior assistant chief nurse medical ward KNH, the revised bed capacity per ward is 52 patients; thus 52*7=364 patients for the seven wards).

\[ n = \frac{z^2pq}{d^2} \]

Where,
\[ n = \text{the desired sample size (if the target population is greater than 10,000)} \]
\[ z = \text{the standard normal distribution at 95% confidence level (=1.96)} \]
\[ P = \text{the population in the target population estimated to have characteristic being measured} \]
\[ 50\% \text{ (large effect size) was used to determine the sample size as could not obtain the percentage of patients requiring assisted feeding.} \]
\[ q = 1-p \]
\[ d = \text{level of precision (set at +or -5% or 0.05)} \]

Substituting these figures in the above formula:
\[ N = \frac{(1.96)^2(0.5)(0.5)}{(0.05)^2} \]
\[ N = 384.16 \]
Since the target population was less that 10,000, the sample size is adjusted using the following formula:

\[ nf = \frac{n}{1 + \frac{n}{N}} \]

Where \( nf \) = the desired sample size when population is less than 10,000
\( n \) = the desired sample size when population is more than 10,000
\( N \) = the estimate of population size which is 364 per day.

Hence \( nf = \frac{384}{1 + \frac{384}{364}} \)  
\[ = \frac{384}{2.05} \]
\[ = 187 \]

3.6.2 NURSES RESPONDENTS SAMPLE

For this study sample size of nurses was determined using Fischer’s formula (Mugenda and Mugenda 2003, p. 43-44) since the target population is 139 minus 21 nurses (on average 2 nurses in each ward will be on annual leave and 1 on study leave)= 118 thus less than 10,000

\[ n = \frac{z^2pq}{d^2} \]

Where,
\( n = \) the desired sample size (if the target population is greater than 10,000)
\( z = \) the standard normal distribution at 95% confidence level (=1.96)
\( P = \) the population in the target population estimated to have characteristic being measured
50% (large effect size) was used to determine the sample size as could not obtain the percentage of patients requiring assisted feeding.
\( q = 1 - p \)
\( d = \) level of precision (set at ±5% or 0.05)

Substituting these figures in the above formula:

\[ N = \left(1.96\right)^2 \left(0.5\right) \left(0.5\right) \]
\[ \quad \left(0.05\right)^2 \]
\[ N = 384.16 \]
Since the target population was less than 10,000, the sample size is adjusted using the following formula:

\[ n_f = \frac{n}{1 + \frac{n}{N}} \]

Where \( n_f \) is the desired sample size when population is less than 10,000
\( n \) is the desired sample size when population is more than 10,000
\( N \) is the estimate of population size which is 139 nurses

Hence \( n_f = \frac{384}{1 + \frac{384}{118}} \)
\[ = \frac{384}{1 + 3.3} \]
\[ = \frac{384}{4.3} \]
\[ = 89.3 \]
89 nurses

**Table 1: Nurses sampling distribution**

<table>
<thead>
<tr>
<th>Wards</th>
<th>7A</th>
<th>7B</th>
<th>7D</th>
<th>8A</th>
<th>8B</th>
<th>8C</th>
<th>8D</th>
<th>total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of nurses</td>
<td>21</td>
<td>19</td>
<td>20</td>
<td>18</td>
<td>20</td>
<td>22</td>
<td>19</td>
<td>139</td>
</tr>
<tr>
<td></td>
<td>18</td>
<td>16</td>
<td>17</td>
<td>15</td>
<td>17</td>
<td>19</td>
<td>16</td>
<td>118</td>
</tr>
<tr>
<td>No of nurses to be sampled</td>
<td>14</td>
<td>12</td>
<td>13</td>
<td>11</td>
<td>13</td>
<td>14</td>
<td>12</td>
<td>89</td>
</tr>
</tbody>
</table>

**3.7 SAMPLING METHOD**

The study was conducted in the medical general wards, 7A, 7B, 7D, 8A, 8B, 8C and 8D, which were purposively selected. Each of these wards comprised of both male and female patients.

Systematic sampling method was adopted. The estimated ward occupancy for each ward was used as basis for the \( K \)th respondent to be recruited for the study by dividing the target population with the desired sample i.e.

\[ K = \frac{N}{n} \]
Thus every 2\textsuperscript{nd} patient requiring assisted feeding in the ward was recruited in the study if they consented. The first patient respondent was randomly selected by writing number 1 and 2 on two different papers, folded and then mixed, one paper was picked and the number appearing on it was used to pick the first participant then every 2\textsuperscript{nd} patient requiring assisted feeding that consented was recruited in the study.

Random sampling method was used to get nurse respondents for each ward. Depending on the number of nurses in each ward, papers written yes that corresponded with number of desired sample for that ward and no for the remaining number of nurses were written. The papers were then folded and nurses asked to pick one after proper mixing. Those who picked the ones with yes were recruited in the study after they consented.

3.8 INCLUSION CRITERIA

- An adult aged above 18 completed years (as KNH consider paediatrics to be below 13 years thus persons added 13-17 years are admitted in adult wards)
- Had a medical condition admitted at general medical ward at the time of the study and required oral assisted feeding
- A patient who consented as a participant
- A patient who fed on the meals served by the hospital
- Nurses working in medical wards who consent as participants

3.9 EXCLUSION CRITERIA

- Patients with physical challenge (amputees, paraplegic, quadriplegic, edematous) as they require different estimation of calorie needs
- Persons aged less than 18 years (as is considered a minor by Kenyan law thus requiring consent from guardian)
- Patients with medical conditions who failed to consent for the study
- Patients with advanced cancer, highly uncontrolled random blood sugar in diabetes, advanced stage of HIV as malnutrition may not be clearly differentiated from cachexia
- Confused medical patients as they may give improper responses to questions
• Nurses who failed to consent

3.11 STUDY TOOLS
A structured questionnaire was used to obtain patients bio-demographic data; patient perception on their nutritional management and their anthropometric measures for nutritional status determination. Another questionnaire was used to obtain nurses view on patients’ nutritional management.

3.12 PRETESTING AND PILOTING OF STUDY TOOL
Pretesting of the questionnaires was done in ward 8A medical ward of KNH. This helped the researcher to review the questions’ clarity and ensured they had the same meaning to respondents. These included the questionnaires, data collection techniques and research ethics. The time taken to administer the questionnaire was assessed.

3.13 STUDY PROCEDURE
The principal investigator introduced self to the ward in-charge of each of the medical wards and provided a copy of authentication from KNH-ERC and from the KNH research department. In each ward, the first room was the starting point for patient respondents. After obtaining randomly the first Kth respondent, the patients were approached and informed about the study. If they consented by signing the certificate of consent, then they were provided with a questionnaire to fill and then anthropometric measures, height, weight and left mid upper arm circumference (MUAC) were taken. The height was measured using a stadiometer, weight with a clinical scale and MUAC with a tape measure. Nurse respondents were randomly selected, provided with information sheet and those who consented were provided with a questionnaire to fill.

3.14 DATA MANAGEMENT
The questionnaires were checked for completeness. Any missing data was obtained and entered in the questionnaire before moving to the next patient or nurse respondents. The obtained data was coded and entered into SPSS for quantitative analysis. The results were presented in a descriptive form using tables, graphs and percentages.
A comprehensive report was written to include all conclusions and recommendations and disseminated to various stakeholders including University of Nairobi, KNH and Ministry of medical services. The obtained information will be shared in scientific conferences and published in medical journals.

3.15 ETHICAL CONSIDERATION

The proposal was developed with supervisors’ guidance and sent to Kenyatta National Hospital, University of Nairobi Research Ethics Committee for review and approval. Permission to carry out the study in KNH was sought from the Kenyatta National Hospital research department. During the study, rights of participants were respected. Informed consent was sort from the patients and nurses before recruiting them in the study. Coding of the data collection questionnaires was done and respondents were requested not to write their names for anonymity and confidentiality.

The study results and recommendations will be presented to the University of Nairobi and KNH. The raw data will be kept in a safe under key and lock and will be accessible to the authorized persons only. The documents will remain under safe custody for ten years before destruction according to research documents ethics.

3.16 LIMITATIONS

Due to scarce resources, biochemical data of patients’ nutritional values was not done. Owing to the limited data collection period, nurses were not observed assisting patients to feed.
CHAPTER FOUR: RESEARCH FINDINGS

4.1 INTRODUCTION
The study was based on the obtained results following evaluation of nutritional management of adult patients requiring assisted feeding at KNH medical wards. The data was collected in the month of July- August 2015. Participants response was 153(81%) out of 187 patients and 67(75.2%) nurses out of 89 sample sizes.

4.2 PATIENTS’ BIO-DEMOGRAPHIC PROFILE
More than half 52.3% (n= 80) of the patient respondents were females. The average age of the patients was 42.35 years. The modal classes of patients’ ages were 31-40 (n=48) and 41-50 (n=48) age groups which were 31.4% each while the age group 18-30 years (n=21) had 13.7%, 51-60 (n=24) years had 15.7% and the age group above 60 (n=12) had 7.8%. Most of the respondents 62.1% (n=95) were married, 19.6% (n =30) were single, 13.7% (n = 21) were either separated or divorced, while 4.7% (n=7) were widows or widowers.

The study comprised of patients of different educational level. 46.4% (n= 71) of patient respondents, had learnt up to primary level, 42.5% (n=65) secondary level, 5.2% (n=8) college level while 5.9% (n=9) had no formal education.

Nearly half of the patient respondents were self employed 42.5% (n=65). The others were not employed 21.6% (n=33), casual labourers 20.9% (n=32) and 15% (n=32) were formally employed (n=23).

Nearly half 46.4% (n = 71) of the respondents earn less than 5000 Ksh per month while only 10.5% (n = 16) earn more than 20000 KSh (Table 2).
### Table 2: Patient bio-demographic profile

<table>
<thead>
<tr>
<th>Demographic characteristic</th>
<th>n</th>
<th>percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Gender:</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td>80</td>
<td>52.3%</td>
</tr>
<tr>
<td>Male</td>
<td>73</td>
<td>47.7%</td>
</tr>
<tr>
<td><strong>Age:</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>18-30</td>
<td>21</td>
<td>13.7%</td>
</tr>
<tr>
<td>31-40</td>
<td>48</td>
<td>31.4%</td>
</tr>
<tr>
<td>41-50</td>
<td>48</td>
<td>31.4%</td>
</tr>
<tr>
<td>51-60</td>
<td>24</td>
<td>15.7%</td>
</tr>
<tr>
<td>61-65</td>
<td>12</td>
<td>7.8%</td>
</tr>
<tr>
<td><strong>Marital status:</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Single</td>
<td>30</td>
<td>19.6%</td>
</tr>
<tr>
<td>Married</td>
<td>95</td>
<td>62.1%</td>
</tr>
<tr>
<td>Separated</td>
<td>21</td>
<td>13.7%</td>
</tr>
<tr>
<td>Window/widower</td>
<td>7</td>
<td>4.6%</td>
</tr>
<tr>
<td><strong>Education level:</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>no formal education</td>
<td>9</td>
<td>5.9%</td>
</tr>
<tr>
<td>Primary</td>
<td>71</td>
<td>46.4%</td>
</tr>
<tr>
<td>Secondary</td>
<td>65</td>
<td>42.5%</td>
</tr>
<tr>
<td>College/ university</td>
<td>8</td>
<td>5.2%</td>
</tr>
<tr>
<td><strong>Occupation:</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>not employed</td>
<td>33</td>
<td>21.6%</td>
</tr>
<tr>
<td>Self employed</td>
<td>65</td>
<td>42.5%</td>
</tr>
<tr>
<td>Casual labourer</td>
<td>32</td>
<td>20.9%</td>
</tr>
<tr>
<td>Formally employed</td>
<td>23</td>
<td>15.0%</td>
</tr>
<tr>
<td><strong>Income:</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&lt;5000</td>
<td>7</td>
<td>46.4%</td>
</tr>
<tr>
<td>5000-10000</td>
<td>52</td>
<td>34%</td>
</tr>
<tr>
<td>10001-20000</td>
<td>14</td>
<td>9.2%</td>
</tr>
<tr>
<td>&gt;20000</td>
<td>16</td>
<td>10.5%</td>
</tr>
</tbody>
</table>

#### 4.3 ANTHROPOMETRIC MEASURES

The BMI was classified as below 18.5 as underweight, 18.5-24.9 as normal weight and over 25 as overweight. The mean BMI was 21.13 with a standard deviation of 2.84 (i.e. 18.29 - 23.97). The
The minimum BMI was 16.7 while the maximum was 32.0. Majority of the patient respondents 75.8% (116) were of normal weight while 14.4% (22) were underweight and 9.8% (15) were overweight (Figure 3). There was a slightly higher percentage of males 26.1% (37) with malnutrition than was in females 22.6% (n=18).

![Figure 3: Distribution of patient BMI](image)

**4.4 NUTRITIONAL MANAGEMENT OF ADULT PATIENTS REQUIRING ASSISTED FEEDING PATIENTS’ PERCEPTION**

**4.4.1 NUMBER OF MEALS SERVED**

Majority (73.2%; n=112) of the patient respondents reported to have received more than three meals daily served by the hospital.
Figure 4: A pie chart of number of meals served

4.4.2 SATISFACTION WITH TIMING OF MEALS, TEMPERATURE, AMOUNT AND TASTE

Most 62.7% (n=96) of the patient respondents were satisfied with meal temperature while majority 86.3% (n=132) were satisfied with meal amounts. However, more than a half were not satisfied with timing of meals 56.2% (n=86) and the taste 52.9% (n=81).

<table>
<thead>
<tr>
<th>Meal characteristic</th>
<th>Satisfied</th>
<th>Not satisfied</th>
</tr>
</thead>
<tbody>
<tr>
<td>Timing</td>
<td>43.8%(n=67)</td>
<td>56.2%(n=86)</td>
</tr>
<tr>
<td>Temperature</td>
<td>62.7%(n=96)</td>
<td>37.3%(n=57)</td>
</tr>
<tr>
<td>Amount</td>
<td>86.3%(n=132)</td>
<td>13.7%(n=21)</td>
</tr>
<tr>
<td>Taste</td>
<td>47.1%(n=72)</td>
<td>52.9%(n=81)</td>
</tr>
</tbody>
</table>
4.4.3 PATIENTS’ REPORTING ON FREQUENCY OF FINISHING SERVED FOOD
More than a half of the patient respondents 61.4% (n=94) reported to sometime finish the food served by the hospital while nearly a quarter 21.6% (n=33) are always able to finish while those who are never able to finish are the least 17% (n=26).

![Figure 5: Patients’ reporting on frequency of finishing served food](image)

4.4.4 PATIENTS’ REPORTING ON MOST FREQUENT FEEDING ASSISTANT
Above half 51.6% (n=79) of patient respondents reported that nurses mostly assist patients requiring assisted feeding while 42.5% (n=65) relatives and 5.9% (n=9) other patients.

Table 4: Patient view of most frequent feeding assistant

<table>
<thead>
<tr>
<th>Patient feeding assistant</th>
<th>Frequencies of assisting with feeding</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nurse</td>
<td>51.6% (n=79)</td>
</tr>
<tr>
<td>Relatives</td>
<td>42.5% (n=65)</td>
</tr>
<tr>
<td>Other patients</td>
<td>5.9% (n=9)</td>
</tr>
</tbody>
</table>
4.4.5 PATIENTS’ VIEW ON FOOD REACHABILITY

Majority of patient respondents 94.8% (n= 145) were satisfied with proximity of served meals.

Figure 6: Patient rating on food reachability

4.4.6 PATIENTS WHO REPORTED TO HAVE BEEN WEIGHED

Majority of patient 77.8% (n=119) had not been weighed since admission.

Most nurses 69.8% (n=44) rarely weighed patient during admission while 15.9% (10) reported to mostly weigh and 14.3% (9) never weighed patients during admission.
4.4.7 PATIENTS’ REPORTING ON RECEIVING NUTRITIONAL TEACHING

Most of the patient respondents 58.8% (n= 90) had not received any nutritional teaching or counselling while in the ward.
Figure 8: Percentages of patient who received nutritional teachings

4.4.8 PATIENTS’ PERCEPTION ON GENERAL NUTRITIONAL MANAGEMENT RATING

4.4.8.1 PATIENTS’ GENERAL NUTRITIONAL MANAGEMENT RATING

Generally, patients rated nutritional management as fair 61.4% (n=94) with 34.6% (n= 53) rating it as good and only 3.9% (6) rating it as bad.

Figure 9: Patients’ ratings of Nutritional Management
4.5 NUTRITIONAL MANAGEMENT OF ADULT PATIENTS REQUIRING ASSISTED FEEDING NURSES PERSPECTIVE

4.5.1 NURSES DEMOGRAPHIC DATA

Majority of nurse respondents were female and diploma holders. Most of the nurses had over ten years experience.

Table 5: nurses’ demographic data

<table>
<thead>
<tr>
<th>NURSES DEMOGRAPHIC DATA</th>
<th>n</th>
<th>percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>19</td>
<td>28.8%</td>
</tr>
<tr>
<td>Female</td>
<td>48</td>
<td>76.2%</td>
</tr>
<tr>
<td>Education level</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Certificate</td>
<td>2</td>
<td>3.2%</td>
</tr>
<tr>
<td>Diploma</td>
<td>53</td>
<td>84.1%</td>
</tr>
<tr>
<td>Degree</td>
<td>8</td>
<td>12.7%</td>
</tr>
<tr>
<td>Years of experience</td>
<td></td>
<td></td>
</tr>
<tr>
<td>&lt;5</td>
<td>10</td>
<td>15.9%</td>
</tr>
<tr>
<td>5-10</td>
<td>11</td>
<td>17.5%</td>
</tr>
<tr>
<td>&gt;10</td>
<td>42</td>
<td>66.7%</td>
</tr>
</tbody>
</table>

4.5.2 FREQUENCY OF MALNUTRITION IN MEDICAL WARDS

More than a half 69.8% (n=44) of nurses thought malnutrition not to be a common condition in the ward.
4.5.3 PERFORMANCE OF NUTRITIONAL SCREENING
The frequency of performing nutritional screening by nurses was rated 31.7% (n=20) as mostly, 39.7% (n=25 as rarely) and 28.6% (n=18) as never.

<table>
<thead>
<tr>
<th>Frequency of nutritional screening</th>
<th>Mostly N=20</th>
<th>Rarely N=25</th>
<th>Never N=18</th>
</tr>
</thead>
<tbody>
<tr>
<td>Most</td>
<td>31.7%</td>
<td>39.7%</td>
<td>28.6%</td>
</tr>
</tbody>
</table>

4.5.4 PATIENT WEIGHING
Most nurses 69.8% (n=44) rarely weighed patient during admission while 15.9% reported to mostly weigh and 14.3% never weighed patients during admission.
### Table 7: Frequency of weighing patients during admission

<table>
<thead>
<tr>
<th>Frequency of weighing patients</th>
<th>N</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mostly</td>
<td>10</td>
<td>15.9%</td>
</tr>
<tr>
<td>Rarely</td>
<td>44</td>
<td>69.8%</td>
</tr>
<tr>
<td>Never</td>
<td>9</td>
<td>14.3%</td>
</tr>
</tbody>
</table>

#### 4.5.5 NUTRITIONIST REVIEW REQUESTS

Slightly above half of nurses 54% (n=34) requested nutritionist to review patients requiring assisted feeding.

Figure 11: Frequency of requesting nutritionist review

#### 4.5.6 MOST FREQUENT FEEDING ASSISTANT

Nurses 69.8% (n=44), were the most frequent feeding assistants, followed by relatives 22.2% (n=14) and other patients 7.9% (n=9) least assisted with feeding.
4.5.7 MEAL MOST INTERRUPTED

Nurses reported that the most interrupted patient meal was breakfast 76.2% (n=48), followed by lunch 14.3% (9), none of the meals 7.9% (5) and supper 1.6% (n=1).
4.5.8 FREQUENCY OF RECEIVED PATIENT COMPLAINT

According to nurses, the most frequent food complain is meal temperature 71.4% (n=36) while the least complained about is meal amount 76.2% (n=48) (Table 8).

Table 8: Frequencies of various complains

<table>
<thead>
<tr>
<th>COMPLAIN</th>
<th>YES</th>
<th>NO</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>frequency</td>
<td>percentage</td>
</tr>
<tr>
<td>Meal timing</td>
<td>36</td>
<td>57.1%</td>
</tr>
<tr>
<td>Meal temperature</td>
<td>45</td>
<td>71.4%</td>
</tr>
<tr>
<td>Meal amount</td>
<td>15</td>
<td>23.8%</td>
</tr>
<tr>
<td>Taste of food</td>
<td>43</td>
<td>68.3%</td>
</tr>
</tbody>
</table>

4.5.9 NURSES GENERAL RATING OF NUTRITIONAL MANAGEMENT

Most nurse respondents 87.3% (n=55) rated nutritional management as fair with 6.3% (n=4) rating it as good or bad.
**4.6 HYPOTHESIS TESTING**

**4.6.1 ASSOCIATION BETWEEN PATIENTS’ DEMOGRAPHIC PROFILE AND NUTRITIONAL STATUS**

Age, gender, education level and monthly income did not yield any statistically significant associations (p>0.05). There was a significant relationship between patient occupation and nutritional status (p<0.05). The formally employed were more likely to be underweight or overweight compared to other occupations (Table 9).
### Table 9: association between demographic profile and nutritional status

<table>
<thead>
<tr>
<th>Independent variables</th>
<th>Dependent variable</th>
<th>Statistical test</th>
<th>P value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Patients:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Age</td>
<td>Nutritional status</td>
<td>Fisher’s exact=10.420</td>
<td>0.193</td>
</tr>
<tr>
<td>Gender</td>
<td></td>
<td>$\chi^2=0.299$ (df 2)</td>
<td>0.889</td>
</tr>
<tr>
<td>Education level</td>
<td></td>
<td>Fisher’s exact=7.337</td>
<td>0.217</td>
</tr>
<tr>
<td>Occupation</td>
<td></td>
<td>Fisher’s exact=11.852</td>
<td>0.050</td>
</tr>
<tr>
<td>Monthly income</td>
<td></td>
<td>Fisher’s exact=6.738</td>
<td>0.306</td>
</tr>
</tbody>
</table>

#### 4.6.2 ASSOCIATION BETWEEN PATIENTS’ NUTRITIONAL STATUS AND NUTRITIONAL MANAGEMENT FROM PATIENTS’ PERCEPTION

The patients who were not satisfied with the amount of meals served were more likely to be of normal nutritional status $p \leq 0.05$. The number of meals served to patients, patient satisfaction with meal timing, temperature and taste, the most frequent feeding assistant, food reachability, frequency of interruption during meal time, patient frequency of finishing food, patient weighing and patient teaching on nutrition did not have a significant statistical association with patients nutritional status ($p>0.05$).
Table 10: associations between patients’ nutritional status and nutritional management from patients’ perception

<table>
<thead>
<tr>
<th>Independent variables</th>
<th>Dependent variable</th>
<th>Statistical test</th>
<th>P value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of meals served</td>
<td>Nutritional status</td>
<td>$\chi^2=4.162$ (df 2)</td>
<td>0.129</td>
</tr>
<tr>
<td>Satisfaction with meal time</td>
<td></td>
<td>$\chi^2=3.719$ (df 2)</td>
<td>0.175</td>
</tr>
<tr>
<td>Satisfaction with meal</td>
<td></td>
<td>$\chi^2=1.809$ (df 2)</td>
<td>0.447</td>
</tr>
<tr>
<td>temperature</td>
<td></td>
<td>Fisher’s exact=7.675</td>
<td>0.018</td>
</tr>
<tr>
<td>Satisfaction with meal</td>
<td></td>
<td>$\chi^2=0.401$ (df 2)</td>
<td>0.824</td>
</tr>
<tr>
<td>amount</td>
<td></td>
<td>Fisher’s exact=4.293</td>
<td>0.359</td>
</tr>
<tr>
<td>Satisfaction with meal</td>
<td></td>
<td>Fisher’s exact=2.220</td>
<td>0.682</td>
</tr>
<tr>
<td>taste</td>
<td></td>
<td>Fisher’s exact=1.756</td>
<td>0.771</td>
</tr>
<tr>
<td>Frequency of pt finishing</td>
<td></td>
<td>Fisher’s exact=1.210</td>
<td>0.563</td>
</tr>
<tr>
<td>food</td>
<td></td>
<td>Fisher’s exact=0.864</td>
<td>0.711</td>
</tr>
<tr>
<td>Most frequent feeding</td>
<td></td>
<td>$\chi^2=4.529$ (df 2)</td>
<td>0.102</td>
</tr>
<tr>
<td>assistant</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Reachability of food</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Patient weighing</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pt teaching on nutrition</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
4.6.3 THE ASSOCIATION BETWEEN PATIENTS NUTRITIONAL STATUS AND NUTRITIONAL MANAGEMENT NURSES’ PERSPECTIVE

At 5% level of significance, 218 degree of freedom and critical value of ±1.960, the data provided sufficient evidence that nurses’ perspective on malnutrition frequency in the ward, nutrition screening, nutritionist review requests, frequency of meal interruption, the most frequent feeding assistant, patient complain on meal timing, temperature, amount and taste had effect on patients’ nutritional status (Table 11). However weighing of patients did not yield statistically significant evidence on having effect on patients’ nutritional status.

Table 11: association between nurses’ perspective and patients’ nutritional status

<table>
<thead>
<tr>
<th>INDEPENDENT VARIABLE: nurses’ perspective on:</th>
<th>Std dev ratio (Similar if 0.5-2)</th>
<th>DEPENDENT VARIABLE N2= 153</th>
<th>S_p T TEST (calculated)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Malnutrition frequency</td>
<td>n1=67; std dev= 1.70 1.06</td>
<td>Nutritional status of patients Std dev= 0.491</td>
<td>0.483 -3.497</td>
</tr>
<tr>
<td>Nutrition screening</td>
<td>1.97 0.628</td>
<td></td>
<td>0.354 0.385</td>
</tr>
<tr>
<td>Weighing of patients</td>
<td>1.98 0.888</td>
<td></td>
<td>0.261 0.769</td>
</tr>
<tr>
<td>Nutritionist review request</td>
<td>1.46 0.978</td>
<td></td>
<td>0.244 -4.017</td>
</tr>
<tr>
<td>Most interrupted meal</td>
<td>1.41 0.776</td>
<td></td>
<td>0.289 -13.256</td>
</tr>
</tbody>
</table>

34
### 4.6.4 ASSOCIATION BETWEEN NURSES’ NUTRITIONAL MANAGEMENT PERSPECTIVE AND PATIENTS’ NUTRITIONAL MANAGEMENT PERCEPTION

At 5% level of significance and a critical value of ±1.96, the data provided sufficient evidence that patients’ and nurses’ perception on nutritional management of patients requiring assisted feeding was similar (Table 12).

<p>| | | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Most frequent feeding assistant</td>
<td>1.38</td>
<td>0.562</td>
<td>0.399</td>
<td>-9.153</td>
</tr>
<tr>
<td>Patient complain on meal timing</td>
<td>1.43</td>
<td>0.984</td>
<td>0.243</td>
<td>-14.444</td>
</tr>
<tr>
<td>Patient complain on meal Temperature</td>
<td>1.29</td>
<td>1.079</td>
<td>0.231</td>
<td>-19.412</td>
</tr>
<tr>
<td>Patient complain on meal Amount</td>
<td>1.76</td>
<td>1.145</td>
<td>0.392</td>
<td>-3.276</td>
</tr>
<tr>
<td>Patient complain on meal taste</td>
<td>1.32</td>
<td>1.047</td>
<td>0.235</td>
<td>-18.000</td>
</tr>
</tbody>
</table>
Table 12: Association between nurses’ and patients’ perception on patients nutritional management

<table>
<thead>
<tr>
<th>Nurses and patient perception</th>
<th>Std dev</th>
<th>Mean</th>
<th>Calculated t</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N₁=67</td>
<td>N₂=153</td>
<td>Std dev ratio</td>
</tr>
<tr>
<td>Weighing</td>
<td>0.553</td>
<td>0.417</td>
<td>1.328</td>
</tr>
<tr>
<td>Feeding assistant</td>
<td>0.873</td>
<td>0.607</td>
<td>1.438</td>
</tr>
<tr>
<td>Meal timing</td>
<td>0.499</td>
<td>0.498</td>
<td>1.002</td>
</tr>
<tr>
<td>Meal temperature</td>
<td>0.455</td>
<td>0.485</td>
<td>0.938</td>
</tr>
<tr>
<td>Meal amount</td>
<td>0.429</td>
<td>0.345</td>
<td>1.243</td>
</tr>
<tr>
<td>Meal taste</td>
<td>0.469</td>
<td>0.501</td>
<td>0.936</td>
</tr>
</tbody>
</table>
CHAPTER 5: DISCUSSIONS

INTRODUCTION
The study aimed at evaluating the nutritional management of adult patients requiring assisted feeding in medical wards of KNH. To achieve this, data was collected from both patients and nurses and information is compared.

5.1 DISCUSSIONS

Most of the patients requiring assisted feeding in medical ward were aged between 31 and 50 years and though there was a small difference in gender distribution, females were slightly more. Most patients had either primary or secondary school education only. A majority of the patients were self employed with monthly income <5000 Kenya shillings which is absolute poverty as defined by World Bank to be <1US dollars per day (Harack, 2010).

Most of the patients had normal BMI. Although 24.4% of the patients were malnourished, the percentage was lower compared to previous studies in the various KNH wards which all had >30% hospital malnutrition (Chitibwi, 2010; Mutua, 2010; Okoth, 2011 & Irungu, 2012). Also, more than a quarter had BMI less than or equal to 20Kg/m² and this is on the lower margin of normal weight thus patients at an increased risk of developing under nutrition if appropriate interventions are not made.

Though a majority of the patients requiring assisted feeding did not complain about meals amount, or the reachability of the served food, most did not finish the served food. This could be attributed to interruption during meals to allow medical procedures and to low food quality as suggested by patient dissatisfaction with meal taste and temperature. This is in agreement with previous studies where it was noted that close attention should be paid to the presentation of food, making it look and taste more appetising (Barker, 2006; Shepherd, 2009). Both the patients and nurses agreed that nurses were the most frequent feeding assistants followed by visiting relatives.
Majority of the nurse respondents were females this can be attributed to historical development of the profession. Most nurses had many years of experience of >10 years in the medical wards and were diploma holders.

Although more than half of nurses admitted to often request for nutritionist to review patients requiring assisted feeding, nurses admitted to either rarely or never weigh patients and more than half of nurses did not perform nutritional screening. According to a study done on prevalence and documentation of malnutrition in hospitals, only 15% of patients had been referred to dietician (Lazarus and Hamlyn, 2005). This was supported by most of the patients who had not been weighed since admission. However, more than half of patient had received some form of nutritional teaching during hospitalization.

Based on the results, the researcher failed to reject the null hypothesis that nutritional status of patients’ requiring assisted feeding is not affected by their bio-demographic profile and their perception on nutritional management, thus the nutritional status of medical in-patients requiring assisted feeding is not affected by their bio-demographic data or their perception on nutritional management. The second null hypothesis was rejected as patients’ and nurses’ perception on nutritional management of adult in-patients requiring assisted feeding at KNH medical wards was perceived similarly by both patients and nurses.
CONCLUSIONS

It was evident that there was no significant relationship between patient demographic data, their nutritional management perception and their nutritional status. The patients’ perception and nurses’ perspective on nutritional management of medical in-patients requiring assisted feeding is similar. There is a gap in comprehensive initial assessment of patients and collaboration of nurses with nutritionist in patient management.
RECOMMENDATIONS

The researcher recommends that:

1. KNH administration to lay emphasis on initial assessment of patients nutritional status and during hospital stay as recommended by BAPEN, on every 3<sup>rd</sup>, 7<sup>th</sup>, 14<sup>th</sup> day then every two weeks till patient is discharged or during discharge.

2. Collaboration of nurses and other clinicians should be enhanced in order to improve on patients’ outcome.

3. Since good nutrition is important in preventive medicine, and that a high percentage of the patients have either no formal education or just primary school education and are of low economic status, the admission period should be used to educate on affordable balanced diet based on their medical diagnosis.

4. Regular surveys of customer satisfaction with the various hospital services should be introduced.

5. The researcher also recommend that an investigation be made on the factors associated with nutritional status of formally employed.
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APPENDICES

APPENDIX 1: INFORMED CONSENT FORM FOR KNH MEDICAL IN-PATIENT RESPONDENTS

TITLE: Evaluating nutritional management of adult patients at Kenyatta national hospital general medical ward

PRINCIPLE INVESTIGATOR: Kiriba Lucy Njeri

I. PURPOSE
I am Kiriba Lucy Njeri, a master of science nursing student at the University of Nairobi. I wish to invite you to participate in this study by filling in a structured questionnaire and consent for physical assessment. The purpose of this study is to gather information on nutritional management of clients in the course of admission.

You have been selected to participate because you require to be assisted with feeding and have been admitted at Kenyatta general medical ward at the time the research is being conducted.

II. RISKS
There are minimal risks to you for participating in this study. If you feel uncomfortable to answer any question, you are free to leave them unanswered.

III. PROCEDURES
During data collection, you will be provided with a questionnaire to fill first. Your body weight, height and mid upper arm circumference will then be taken and the measurements be used by the investigator to compare them with normal ranges. Personal information will not be filled on the questionnaire to assure anonymity and confidentiality.

IV. BENEFITS
There will be no direct benefit to you but the information gathered will go a long way in helping improve nutritional management of in-patients.

V. VOLUNTARY PARTICIPATION AND WITHDRAWAL
Your participation is entirely voluntary. Should you change your mind, you have the right to drop out at any time and your care shall not be compromised.
VI. CONFIDENTIALITY
Once the data is obtained from you, the questionnaire and checklist will be kept under lock and key and only the researcher will access them. The questionnaire and checklist will be coded and your name shall not be written on it.

VII. CONTACT PERSON
If you have any question now or latter you are free to ask. My mobile phone number is 0729147020. The postal address of Kenyatta National Hospital/Nairobi University Ethical committee is 00202-20723 Nairobi.
CERTIFICATE OF CONSENT FOR KNH MEDICAL IN-PATIENT RESPONDENTS

I have read the foregoing information and understood. I have had the opportunity to ask questions about it and any questions that I have asked have been answered to my satisfaction. I consent voluntarily to participate as a participant in this research.

Print Name of Participant__________________
Signature of Participant ___________________
Date ___________________________
APPENDIX 2: INFORMED CONSENT FORM FOR KNH MEDICAL WARD NURSING STAFF

TITLE: Evaluating nutritional management of adult patients at Kenyatta national hospital general medical ward
PRINCIPAL INVESTIGATOR: Kiriba Lucy Njeri

I. PURPOSE
I am Kiriba Lucy Njeri, a master of science nursing student at University of Nairobi. I wish to invite you to participate in this study by filling in an observation checklist. The purpose of this study is to gather information on regular nutritional management of clients in the course of admission.
You have been selected to participate because you are on duty at the time the study is being conducted and is a member of this ward’s nursing staff involved in direct care of patients.

II. RISKS
There are minimal risks to you for participating in this study. If you feel uncomfortable to answer any question, you are free to leave them unanswered.

III. PROCEDURES
During data collection, you will be provided with a questionnaire to fill first. Personal information will not be filled on the questionnaire to assure anonymity and confidentiality.

IV. BENEFITS
There will be no direct benefit to you but the information gathered will go a long way in helping improve nutritional management of in-patients.

V. VOLUNTARY PARTICIPATION AND WITHDRAWAL
Your participation is entirely voluntary. Should you change your mind, you have the right to drop out at any time and your care shall not be compromised.

VI. CONFIDENTIALITY
Once the data is obtained from you, the checklist will be kept under lock and key and only the researcher will access them. The checklist will be coded and your name shall not be written on it.
VII. CONTACT PERSON

If you have any question now or latter you are free to ask. My mobile phone number is 0729147020. The postal address of Kenyatta National Hospital/Nairobi University Ethical committee is 00202-20723 Nairobi.
CERTIFICATE OF CONSENT FOR KNH MEDICAL WARD NURSING STAFF

I have read the foregoing information and understood. I have had the opportunity to ask questions about it and any questions that I have asked have been answered to my satisfaction. I consent voluntarily to participate as a participant in this research.

Print Name of Participant__________________
Signature of Participant__________________
Date______________________________
APPENDIX 3A: QUESTIONNAIRE FOR PATIENT RESPONDENTS

CODE NUMBER……………………………………………………

STUDY TITLE: Evaluating nutritional management of adult in-patients requiring assisted feeding at Kenyatta National Hospital medical ward.

This study aims at assessing the nutritional management of adult patients requiring assisted feeding admitted at Kenyatta National Hospital general medical wards. The study will be used for academic purpose and the information you shall provide will be treated with privacy and confidentiality. Your name as a respondent is not required. Your cooperation will be highly appreciated.

INSTRUCTIONS

1. The questionnaire has three sections; please only respond to section 1 and 2 only

2. Read all the questions carefully and answer by ticking or as appropriate.

SECTION 1: Demographic data [to be filled by respondent]

1. Gender: Female [ ] Male [ ]

2. Age in completed years

18-30 [ ] 31-40 [ ] 41-50 [ ] 51-60 [ ] 61-65 [ ]

3. Marital status

Single [ ] Married [ ] Separated [ ] Divorced [ ] Widow/ widower [ ]

4. Highest level of education

No formal education [ ] Primary school [ ] Secondary school [ ]

College/ university [ ]

5. What is your current occupation?

Not employed [ ] Self employed [ ] Casual labourer [ ] Formally employed [ ]
6. **Approximate monthly income**
   
   < 5000 [   ]  5000-10000 [   ]  10001-20000 [   ]  >20000 [   ]

**SECTION 2** [to be filled by respondent]

**DIET INFORMATION**

7. **How many meals are you served by the hospital per day?**
   
   One [   ]  Two [   ]  Three [   ]  More than three [   ]

8. **Regarding the meals served by the hospital, are you satisfied with?**

<table>
<thead>
<tr>
<th></th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>The time meals are served</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Temperature of feeds</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Amount of portions served</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Taste of the food</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

9. **How often do you finish the food served by the hospital?**

   Always[   ]  Sometimes[   ]  Never[   ]

10. **Who assists patients with feeding, when they are unable to feed themselves?**

   Nurse [   ]  relative [   ]  other patients [   ]

11. **When the food is served, is it kept within your reach?** Yes [   ]  No [   ]

12. **How often do medical staffs interrupt or cause delay while you take meals**

   Very often[   ]  often[   ]  rarely[   ]  never[   ]

13. **Have you been weighed since admission?** Yes[   ]  No[   ]

14. **Have you received any teaching or counselling on nutrition during this admission?**

   Yes [   ]  No [   ]
15. How do you rate nutritional management of adult patients requiring assisted feeding at KNH medical wards? Very bad[ ] bad[ ] fair[ ] good[ ] excellent[ ]

SECTION 3: Patient anthropometric measures [To be completed by researcher/ research assistant]

<table>
<thead>
<tr>
<th></th>
<th>WGT 1/ MUAC</th>
<th>WGR 2/MUAC</th>
<th>AVERAGE WGT/MUAC</th>
</tr>
</thead>
<tbody>
<tr>
<td>WEIGHT IN KGS</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MID UPPER ARM CIRCUMFRENCE [Left arm]</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Height in metres.................................

BMI......................................................

a. Underweight [BMI <18.5; MUAC < 23.5cm]........................

b. Normal weight [BMI 18.5-24.99].................................

c. Overweight [BMI >25]..........................................

d. Obese [BMI >30, MUAC>32.0 cm]...............................
APPENDIX 3B: QUESTIONNAIRE FOR KNH MEDICAL WARDS NURSING STAFF

CODE NUMBER......................................

STUDY TITLE: Evaluating nutritional management of adult in-patients at Kenyatta National Hospital general medical ward requiring assisted feeding.

This study aims at assessing the nutritional management of adult in-patients admitted at Kenyatta National Hospital general medical wards. The study will be used for academic purpose and the information you shall provide will be treated with privacy and confidentiality. Your name as a respondent is not required. Your cooperation will be highly appreciated.

INSTRUCTIONS
1. The questionnaire has two sections; please respond to both section 1 and 2
2. Read all the questions carefully and answer by ticking or as appropriate.

SECTION 1: Bio-demographic data

1. Gender : male [ ] female [ ]

2. Highest level of education
   Certificate [ ] diploma [ ] higher diploma [ ] bachelors degree [ ]
   Masters degree [ ]

3. Years of experience
   <1 year [ ] 1-5 years [ ] 5-10 years [ ] >10yrs [ ]
SECTION 2: PATIENT NUTRITIONAL MANAGEMENT

4. Is malnutrition a common problem in your ward? Yes [ ] No [ ]

5. How often do you perform nutritional screening of patients during admission?  
   All the time [ ] Most of the time [ ] rarely [ ] Never [ ]

6. How often do you weigh patients while in the ward?  
   All the time [ ] Most of the time [ ] Rarely [ ] Never [ ]

7. How often do you request nutritionist to review patients requiring oral assisted feeding? Very often [ ] Often [ ] Rarely [ ] Very rarely [ ] Never [ ]

8. Who mostly assist patients requiring assisted feeding with feeding?  
   Nurses [ ] Visiting relatives[ ] other patients[ ]

9. Which patient meal is most interrupted by nursing or medical procedures?  
   Breakfast [ ] Lunch [ ] Supper [ ] None [ ]

10. Do patients complain about:

<table>
<thead>
<tr>
<th></th>
<th>YES</th>
<th>NO</th>
</tr>
</thead>
<tbody>
<tr>
<td>Time of meal serving</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Temperature of feeds</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Amount of portions served</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Taste of food</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

11. How do you rate nutritional management of adult patients requiring assisted feeding at KNH medical wards?  
   Very bad [ ] bad [ ] fair[ ] good[ ] excellent[ ]
APPENDIX 4: LETTERS OF AUTHORITY

a) UON/KNH-ERC APPROVAL LETTER  b) KNH APPROVAL DOCUMENT
Yours sincerely,

PROF. M. L. CHINDIA
SECRETARY, KNUON-ERC

Cc: The Principal, College of Health Sciences, UoN
    The Deputy Director CS, KNH
    The Chair, KNH/UoN-ERC
    The Assistant Director, Health Information, KNH
    The Director, School of Nursing Sciences, UoN
    Supervisors: Mr. Antony Ayako Onyango, Mrs. Lilian A. Omondi

Protect to discover
Study Registration Certificate

1. Name of the Principal Investigator/Researcher
   KIRARA L.J. M.JOY

2. Email address: kenycharles@gmail.com Tel No.: 0729-167030

3. Contact person (if different from PI)

4. Email address: Tel No.

5. Study Title
   Evaluating nutritional management of adult patients requiring artificial feeding at Kenyatta National Hospital Medical Ward

6. Department where the study will be conducted
   Nutrition
   (Please attach copy of Abstract)

7. Endorsed by Research Coordinator of the Department where the study will be conducted.
   Name: Edna K. Warenthe Signature: Edna K. Warenthe Date: 27/07/2015

8. Endorsed by Head of Department where study will be conducted.
   Name: Edna K. Warenthe Signature: Edna K. Warenthe Date: 27/07/2015

9. KNH JCN Ethics Research Committee approval number
   KNH-ERC/1A1319
   (Please attach copy of ERC approval)

10. Vriko Lucy P. commit to submit a report of my study findings to the Department where the study will be conducted and to the Department of Research and Programs.
    Signature: Vriko Lucy P. Date: 27/07/2015

11. Study Registration number (Dept/Number/Year)
    Nutrition/03/2015
    (To be completed by Research and Programs Department)

12. Research and Program Stamp:

All studies conducted at Kenyatta National Hospital must be registered with the Department of Research and Programs and investigators must commit to share results with the hospital.

Version 2: August, 2014