QUALITY OF TRACHEOSTOMY CARE: A CASE OF KENYATTA NATIONAL HOSPITAL, NAIROBI COUNTY.

A DISSERTATION PRESENTED IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR AWARD OF THE DEGREE OF MASTER OF SCIENCE (MEDICAL SURGICAL NURSING) OF THE UNIVERSITY OF NAIROBI.

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DECLARATION

I ELVIS ONCHIRI NYANSIKERA declare that this dissertation is my original work and has not been presented for a degree at any other University.

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DEDICATION

I dedicate this work to my late father Franklin Nyansikera Moninda for urging me on, right from the beginning of the program, and also for inspiring me to hit great heights when it comes to education, my wife Julia and daughter Bosibori for their support and encouragement. It is also dedicated to my mother Jeanette Nyansikera without whom, I wouldn't have been where I am now. God bless you all.

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LIST OF ABREVIATIONS AND ACRONYMS

ENT	-	Ear Nose and Throat
FEES	-	Fiber optic Endoscopic Evaluation of Swallowing
ICU	-	Intensive Care Unit
KNH	-	Kenyatta National Hospital
MRI	-	Magnetic Resonance Imaging
SPSS	-	Statistical Package for the Social Sciences

OPERATIONAL DEFINITIONS

Airway - those parts of the respiratory system through which air flows, conceptually beginning (on inhalation from the external environment) at the nose and mouth, and terminating in the alveoli

Challenges – Things that are imbued with a sense of difficulty and victory.

Decannulation - This is the permanent removal of a cannula (extubation), especially of a tracheostomy cannula, once it is no longer needed for breathing.

Granuloma – This is a tiny collection of immune cells known as macrophages which forms when the immune system attempts to wall off substances that it perceives as foreign but is unable to eliminate.

Standard of care - A diagnostic and treatment process that a clinician should follow for a certain type of patient, illness, or clinical circumstance.

Stenosis - This is an abnormal narrowing in a blood vessel or other tubular organ or structure.

Suctioning – removal of material through the use of negative pressure, e.g. removal of operative wound exudates during and after surgery, and also removal of respiratory secretions from the respiratory passages that the patient cannot remove by coughing.

Tracheostomy - This consists of making an incision on the anterior aspect of the neck and opening a direct airway through an incision in the trachea. The resulting stoma can serve independently as an airway or as a site for a tracheostomy tube to be inserted.

ABSTRACT

Tracheostomy is a medical procedure usually done in patients who have upper airway obstruction due to neoplastic conditions or traumatic causes to ease air flow. This procedure is prone to complications and is associated with a lot of discomfort among clients. The discomfort is compounded by the prolonged period under which a patient remains on tracheostomy. (Engoren and Engoren 2004) This study was designed to explore and document the tracheostomy patients' experiences as a way of understanding the needs as well as a means of designing specific interventions

Kenyatta National Hospital (KNH) is a leading facility in the country and other facilities benchmark care based on its level of operations. This study was conducted among consenting adult tracheostomy patients admitted at the Kenyatta National Hospital (KNH) surgical wards and those attending Ear Nose and Throat (ENT) clinic. It was a descriptive cross-sectional study with both qualitative and quantitative methods of data collection.

Analysis of data was done using Statistical Package for Social Sciences (SPSS) version 18.0 and Nvivo program. Descriptive statistics were presented in frequency distribution tables, graphs and charts. The t-test and chi squares were used to determine associations between challenges for tracheostomy care and patient characteristics. Odds ratios and 95% confidence intervals were calculated for challenges and characteristics. Statistical significance was determined using a cut off value of 0.05.

Results

The study found out that respondents had various challenges and all of them (100% n=66) had challenges in communication, 80% (n=66) had had tube blockage and 77.3% (n=66) had no information of how long they would stay with the tube and had not been counseled on this. Tracheostomy self-care training was associated with the level of formal education and not age. Odds of care training were 13 fold greater among respondents with secondary and tertiary education compared with primary or no formal education OR=13.3(95% CI 1.2-6559). The hospital was found not to have enough trained nurses on tracheostomy care and only 3 nurses are trained on this. The ENT ward and A&E were found not to have adequate equipment and

supplies. The ENT clinic and ENT ward were found to be understaffed with nurse to patient ratios of 1:15 and 1:17 respectively.

Conclusion and Recommendation

The study concludes that there is a low quality of tracheostomy care in KNH owing to the challenges undergone by patients. This is also evidenced by lack of trained nurses in tracheostomy care and also inadequate supplies and equipment for the procedures. It is therefore recommended that the hospital invests in training of personnel in tracheostomy care and also provide enough supplies and equipment for the procedures.

CHAPTER 1: INTRODUCTION

1.1.Background Information

Tracheostomy is a surgical creation of a stoma at the skin surface which leads to the trachea. It is indicated for upper airway obstruction which may be caused by swelling resulting from inhalation burns, anaphylaxis, trauma or infection. It is also indicated for prolonged ventilation, provision of pulmonary toilet and/or to protect the airway in conditions with excessive tracheobronchial secretions that require regular suction and used as part of another procedure e.g. head and neck surgery. Bhandary and Niranjan (2011)

According to Gilyoma et al (2011), upper airway obstruction secondary to trauma and laryngeal tumors still remains the most common indication for tracheostomy and that tracheostomy is still a lifesaving procedure in the surgical management of airway despite complications which are seen more commonly in pediatric patients. Most of tracheostomy related complications can be avoided by meticulous attention to the details of the technique and postoperative tracheostomy care by skilled and trained staff.

Gratrix et al. (2008) in their study said that tracheostomy is the most commonly conducted procedure in critically ill patients. The results of their study suggested that although progress in complication alleviation is being made, practice relating to tracheostomy varies considerably as do the governance arrangements that underpin it. They discovered that in the absence of national guidance, clinicians need to review their operational policies relating to patients with tracheostomy, including choice of tracheostomy tube, education and training of relevant staff and governance arrangements underpinning patient care in all clinical areas caring for patients with tracheostomy.

1.2 **Problem Statement**

Patients admitted at the ENT ward in KNH, having been done tracheostomy, undergo various challenges which range from having complications of the procedure with the most common being having a mucous plug which blocks the tube. On being done a tracheostomy, communication becomes a problem because they are unable to talk and so some challenges could go unnoticed.

Complications experienced by majority of the tracheostomy patients are either intraoperative or post-operative. Excessive bleeding during the operation is the most common complication intraoperatively while pneumonia is the most common complication post operatively. Overall, up to 42% of the patients experience complications post operatively while 23% of the patients experience complications intra operatively. (Wanjeri 2011). Eighteen percent of tracheostomized patients have swallowing problems and therefore end up not having a good quality of life especially where nutrition comes in. (Fikkers et al. 2011). There is thus a need for the institutions to address the various preventable challenges that face the patients and to address the institutional factors that contribute to poor quality of care which could be a contributing factor to the various complications.

1.3. Justification of the Study

Tracheostomy and especially on long-term basis, is associated with significant morbidity. Majority of patients experience tracheostomy related problems during cannulation and /or after decannulation. A large proportion of these problems are however preventable or may be minimized through effective tracheostomy care practices and individualized clinical monitoring of patients. (Eber and Oberwaldner 2006)

Studies have been done on tracheostomy care practices in other countries but in Kenya, the available study is on risks for early complications of tracheostomy. Since a large number of tracheostomy patients experience problems with the procedure, it was therefore prudent that a study is done on quality of tracheostomy care so as to establish any shortcomings. This will facilitate establishment of better tracheostomy care practices which will go a long way in dealing with the challenges faced by the patients and also the institutional contributions towards any shortcomings in the quality of care.

1.4 Research Questions

- What is the standard of tracheostomy care offered at the Kenyatta National Hospital?
- What are the characteristics of patients on tracheostomy care at Kenyatta National Hospital?
- What are challenges faced by the patients once tracheostomy has been done on them?
- What are the factors that influence the care offered to tracheostomy patients at KNH?

1.5. Objectives

1.5.1. Main Objective

To evaluate tracheostomy care offered to clients at KNH.

1.5.2. Specific Objectives.

i. To determine the characteristics of patients on tracheotomy care at KNH.
ii. To assess the standard of tracheostomy care offered to tracheostomy care clients at KNH.
iii. To describe the challenges faced by patients on tracheostomy in the hospital.
iv. To identify the factors that influence the care offered to tracheostomy clients at KNH.

1.6. Theoretical Framework

The Donabedian model of quality health care, which focuses on outcome research, is the theoretical framework that was used as a guide for the study because it focuses on the end results of patient care. To use this model, one has, first of all to be conversant with the processes used in provision of patient care.

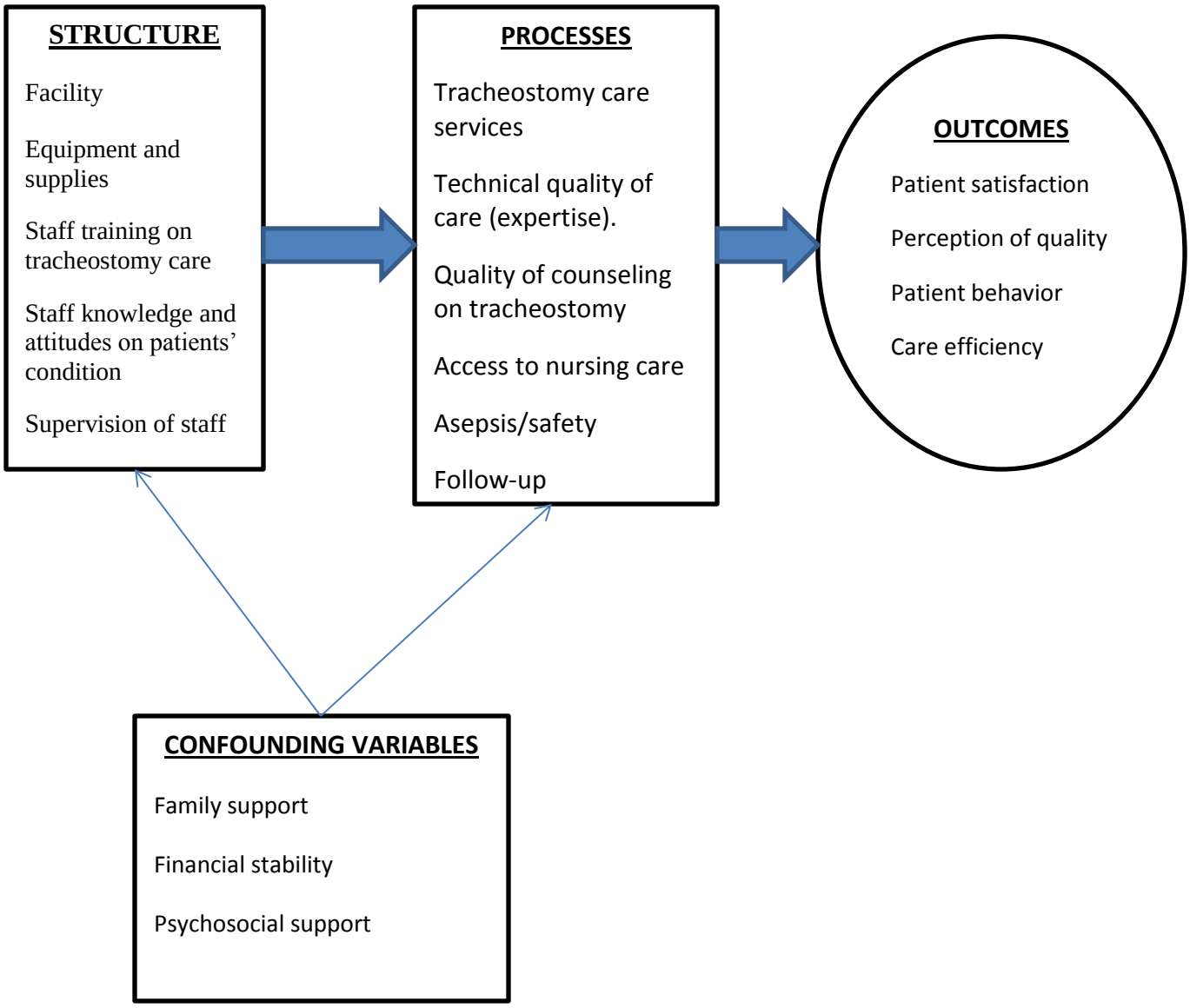
According to McQuestion (2006), this model focuses on three areas which are;

Structure – These are attributes of settings where care is delivered.

Processes – this is whether or not good medical practices are followed.

Outcome – the impact of the care on the health status. This indicates the combined effect of structure and process which are actually measured. On measurement of outcomes, the system redesigns, and other inputs correct deficiencies thus improving quality of care. Continued performance monitoring keeps quality of care high.

1.8. Conceptual Framework



In the above theoretical framework our independent variables are the structures and processes whereas the dependent variables are the outcomes. The confounding factors affect both the structures and the processes but ultimately, the whole process leads to the outcomes.

1.9. Purpose of the Study

The purpose of this study was to evaluate tracheostomy care from the patients' perspective at KNH and to identify the factors that influence the care both in the wards, theatre and clinic.

1.10. Expected Benefits

This study was to elicit from tracheostomy patients, their experiences in terms of challenges and would also evaluate the quality of tracheostomy care given to the patients. The findings are to provide motivation to produce evidence based policy document to guide the care of tracheostomy patients, to be used by the Ministry of Health to streamline management of tracheostomy patients in all the hospitals and to highlight areas of further research in tracheostomy care.

CHAPTER 2: LITERATURE REVIEW.

2.1. Characteristics of Tracheostomy patients

Binyamin et al (2010) did a study where they found that 63.5% of most tracheostomies are done on men and their average age is 59.8 years. In this study, patients who survived for 30 days after the procedure had a lower burden of background morbidity as reflected by their Charlson Score. Mortality in one year was 56.6% of which 70% died in the first month following the procedure. Survival rate here was high among the group of patients who underwent tracheostomy during the first 10 days after initiation of mechanical ventilation. Bhandary and Niranjan (2011) in a related study did a cohort analysis which included nearly 11,000 critically ill patients. They sought to evaluate the impact of tracheostomy timing on mortality. They concurred with Binyamin et al (2010) that there was a slight improvement in survival in patients who underwent tracheostomy within the first 10 days of intubation.

The above studies are however opposed by a tracheostomy management study which was cited by Bhandary and Niranjan (2011), where patients were randomized to early and late tracheostomy. The patient characteristics were similar across both groups and it was found out that there was no significant difference in mortality between the early and late tracheostomy groups at 30 days or even at 2 years post randomization with a 74% follow up rate.

We therefore find that majority of patients are usually males possibly due to malignancies like cancer of the larynx and the ages are above 50 years of age when cancer is thought to start in a majority of the patients.

In a different study, Engoren and Engoren (2004) found out that overall survival and functional status are poor in patients with tracheostomy for respiratory failure. Patients who are liberated from mechanical ventilation and have their tracheostomy tubes removed have the best survival; however, it comes at a higher hospital cost and longer length of stay. It then seen that in this particular characteristic, tracheostomy is not very successful in patients with respiratory failure but would succeed in a longer length of stay in hospital which of course comes with more costs.

2.2. Complications of Tracheostomy

Hickley et al (2002) classified them into early and late complications; The early complications include apnea due to reduction of dead space that diminishes respiratory drive, surgical

emphysema, accidental decannulation which occurs 2-3 days after insertion, airway obstruction due to dried blood and mucous and also as a result of the tube pressing against the wall, hemorrhage, and recurrent laryngeal nerve damage.

Late complications include accidental decannulation, airway obstruction due to mucous plug, hemorrhage, infection, tracheal stenosis and granuloma formation

Of the above complications, there are some that can be avoided by performing quality care of the patient. Suctioning needs to be done on a tracheostomy patient to clear secretions but only when the patient needs it. This is because frequent suctioning irritates the bronchial mucosa which will in turn cause production of mucus which in itself is a complication.

Mackenzie et al (2008) stated that routine care of an established tracheostomy is a basic ward skill, but unfamiliarity with tracheostomy and the simple rules governing their routine care often leads to anxiety for both patient and carer. They then came up with tracheostomy complications which come up as a result of poor care which included blockage and displacement which presents with respiratory difficulty. In this, they said that every hospital must have a procedure for managing patients whose tracheostomy is blocked or displaced and even use of preventive measures like adequate humidification of inspired gas, use of tubes with inner cannulas and regular cleaning of the cannula to prevent blockage. The other preventable complication is infection which according to Gotman and Whitsby (2011) would come up as a result of hospital acquired pathogens which can be spread by cross infection of the tracheostomized patients. This calls for isolation of particular patients who are infected. Hygiene is also a factor to consider in that the use of aseptic technique in tracheostomy care if not employed, would cause tracheostoma infection.

2.3. Challenges Faced By Tracheostomy Patients

In regard to tracheostomy patients, Yu (2010) states that there are multiple variables that may impact clinical outcome, complications, length of stay or all three. Some of these considerations include; early versus late timing of tracheostomy, surgical technique used i.e. percutaneous versus open surgery, choice of size and type of tube: double versus single cannula and size of tube in relation to the patient to provide the best function with least airway injury, the best practical method to assess swallowing and prevent aspiration, the optimum steps leading to safe

decannulation, methods of tracheostomy handling to prevent pulmonary infection, provision of pulse oximetry monitoring for high risk patients in a step-down unit, preventive measures to avoid tube obstruction such as hydration, humidification of airway and suctioning of secretions, factors leading to inadvertent decannulation (such as underlying mental status) and the best way of securing tracheostomy tubes (suturing versus tie), psychosocial well-being of patients with earlier speech therapy and effective swallowing leading to better communication, less isolation and improved nutritional support, availability of ethics team for end-of-life issues for futile care. These factors usually affect the patient in one way or another and are the same ones that contribute to the challenges faced by the patient.

Foster (2009) did a study on the lived experience of tracheostomy patients whereby he had a sample of 3 patients and was seeking to find out the challenges that these patients underwent. This was a retrospective study and concluded that among the challenges they underwent, were; necessity of communication, retaining normality, psychosocial discomfort, painful procedures, fear of the unknown and relationship with staff. The patients would not have these challenges without the above variables that were discovered by Yu (2010)

2.4. Factors influencing tracheostomy care.

Mondrup et al (2012) did a study in Denmark where they used electronic questionnaires to interview the heads of departments on follow up after tracheostomy. In the study, a total of 34 out of 43 ICUs responded. 56% of the ICUs did not document individual plans for decannulation in the patients chart, 95% did not perform daily follow up of tracheostomy patients in the wards, no guidelines for decannulation were found in the ward and only 6% had guidelines for accidental decannulation. Furthermore, as little as 47% of the ICUs, reported any formalized education or training of staff nurses in management of tracheostomy patients. They concluded that guidelines relevant to patients discharged from Danish ICUs with tracheal cannula in situ are scarce; Few ICUs employ individualized plans for tracheostomy management and decannulation; there is largely no daily intensivist-led post ICU follow-up, and formal staff education in tracheostomy management in the ward is scarce. The study further said that possibly, individualized plans for tracheostomized patients as well as intensivist led follow up on the ward can improve patient outcome and safety. This study however did not include the patients' views so as to come up with individualized plans. Gratrix

et al. (2008) further found out that 90% of ICUs discharge patients to the wards so as not to exhaust their bed capacities. Transfer responsibility for patient care from one environment to another is crucial in risk generation. It is vital therefore that processes are introduced to prevent the translation of risk into error and adverse incident. Such processes include staff training programs and operational policies that clearly define roles and responsibilities of the different clinical teams that might be involved in the care of a cannulated patient.

In a related study, Gilyoma et al (2011) did a retrospective study on 10 year experiences with tracheostomy in a university teaching hospital in Tanzania. They found out that the post tracheostomy complication rate was significantly higher in emergency tracheostomy than in elective tracheostomy 73.9% versus 26.1% P (<0.001). Complication rate was also significantly higher in children aged 10 years and below than in adult patients. In the whole sample of 214 patients, complications were seen in 46 patients which is 21.5% which makes it higher as compared to a study that was done in Nigeria by Ayotude et al 2011 that came with a rate of 10.9%. The overall duration of hospital stay in the study done in Tanzania by Gilyoma et al (2011) was 26 days which is significantly higher than the 15 days that were in the Nigerian study by Ayotude et al (2011).

The high rate of complications in patients who had emergency tracheostomy could be attributed to the fact that the majority presented late to the Accident and Emergency (A&E) department in severe respiratory obstruction and so emergency tracheostomy was the solution. This ended up not being done by otolaryngologists but by general practitioners manning the A&E at the time. The high rate of complications in children aged below 10 years is attributed to the fact that tracheostomy in children is challenging and technically more difficult due to the small caliber of their larynx and trachea and therefore carries higher post-operative complications than in adults. Gilyoma et al (2011). Many critical care services continue to contribute to tracheostomy management following ICU discharge, but it is alarming that up to a third of institutions in a study done in Denmark do not have guidelines for management of the complications of a temporary tracheostomy. Similarly, whilst over three quarters of the responding institutions in the Danish study had training programs in place for the nursing staff, less than half provide similar educational support for medical staff. (Gratrix et al 2008)

CHAPTER 3: RESEARCH METHODS

3.1 Study Site

This study was conducted in KNH ENT clinic, ward 5C, A&E and ICU. Kenyatta National Hospital is the largest referral hospital in East and Central Africa with a bed capacity of 1800. It is located along hospital road off Ngong road and is approximately 3 kilometers from the central business district. The wards where the study was conducted had a bed capacity of 35 patients ideally but this number at times doubles or triples depending on the admissions. The ENT clinic is for new patients and for follow up whereby tracheostomy patients are seen once a month for follow up. Tracheostomies are done in the emergency theatre most of the time and this theatre functions 24 hours a day. There is also an ENT theatre which is mostly used when tracheostomies are done as part of head and neck surgeries.

3.2 Study Design.

This was a cross-sectional descriptive study which was aimed at evaluating the quality of tracheostomy care in KNH. Both quantitative and qualitative methods of data collection were used.

3.3. Study Population

The population was adult patients and children under 18years of age on tracheostomy. Key informants were Nurse in-charges of the clinic, wards and ICU.

3.4. Inclusion Criteria

1. Patients on tracheostomy care.
2. Patients above 18 years of age.
3. Patients aged below 18 years whose parents or guardians gave consent.
4. Nurse in-charges of wards that had patients with tracheostomy.

3.5. Exclusion criteria

1. Patients on tracheostomy but didn't give consent.
2. Patients who were below 18 years of age whose parents or guardians did not give consent.

3. Patients with a language barrier.

3.6 Sample Size Determination

For this study sample size was determined using **n** factored Fischer's formula (Mugenda and Mugenda, 2003). The target population was 80 and this was because at a given time there were up to 50 patients in the wards in a month and 30 were seen at the ENT clinic in a month which is the amount of time the research was scheduled to take. The respondents were then interviewed as they came. Since the target population is 80 patients and thus less than 10,000,

$n=Z^2pq/d^2$

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 expected population correlation coefficient (population effect size)
(Since no studies had been done on these subjects, 50% (large effect size) was used to determine the sample size)
Q=1-p
D=level of precision (set at + or -5% or 0.05)
Substituting these figures in the above formula:

$$N= \frac{(1.96)^2(0.5)\ (0.5)}{(0.05)^2}$$

Since the target population is less than 10,000, the sample size is adjusted using the following formula:

$nf=n/1+ (n/N)$

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
Hence NF=384/1+384/80
=384/5.8
=66.21

The calculated minimum sample size is 66 participants.

3.7. Sampling Procedures

Purposive sampling was used in this study. This method was also applied when selecting the key informants who were the nurse in-charges of the various units where the study was done. The method was also useful in selection of clients who were respondents due to the fact that the in-depth interview was done in written form and as such, the requirement was that the respondents be able to read and write.

3.8. Study Instrument

A structured questionnaire was used to elicit responses from the clients. The questionnaire was used to characterize the clients and get responses from them in terms of successes and challenges. An in-depth interview was also conducted with the clients in written form and this is because tracheostomized patients were not able to talk and so the interview was in written form. Key informant interviews were also done with the in-charges of the various areas where the study was be done.

3.9. Research Assistants

Two research assistants were trained for 1 week on the contents of the study tools, variables of the study and the process of recruitment of the clients. They were also trained on how to handle respondents and uphold ethical issues.

3.10. Pretesting Of the Questionnaires

Pretesting of questionnaires was done at Mbagathi District Hospital surgical ward so as to test for validity and reliability. Any ambiguity and spelling mistakes were identified and corrected before the actual study.

3.11. Data Collection

Both qualitative and quantitative methods were used in collection of data. The research assistants administered the questionnaires after the respondents had signed consent forms. Purposive sampling method was used both for the clients on tracheostomy and for the nurse in-charges that were to participate in the key informant interview. Purposive sampling method was useful in selection of respondents who were able to read and write or were good in sign language due to the fact that patients on tracheostomy are not able to talk.

3.12. Data Cleaning and Entry

The questionnaires were checked for completeness because an incomplete questionnaire would not have been accepted in the study. They were then analyzed using SPSS and the in-depth interviews were transcribed and analyzed using the Nvivo 9 program for interpretation and analysis.

3.13. Data Analysis and Presentation

Analysis of data was done using Statistical Package for Social Sciences (SPSS) version 18.0 and Nvivo program. Descriptive statistics were presented in frequency distribution tables, graphs and charts. The t-test and chi squares were used to determine associations between challenges for tracheostomy care and patient characteristics. Odds ratios and 95% confidence intervals were calculated for challenges and characteristics. Statistical significance was determined using a cut off value of 0.05.

3.14. Ethical Consideration

1. Ethical approval was sought from the University of Nairobi And Kenyatta National Hospital Ethics and research committee (KNH-ERC) as well as the Ministry of Education Science and Technology.

2. Only tracheostomy patients who gave an informed consent and those under 18 years of age whose guardian's consent were involved in the study.

3. Participants were free to voluntarily withdraw from the study any time they wished to do so.

4. Assurance of participants on confidentiality. This was done by use of participant codes to label data instead of using names. In interviews, the first name was used or an alias when recording or publishing data. This was especially important in the key informant interview. Information to be published will not identify the participant. Data collected was also be kept under lock and key and whatever was saved in the computer, had a password that was accessed by the principal investigator and research assistants.

3.15. Study Limitation

Some legible persons declined to participate and this was minimized by explaining to them before asking for their consent. There was a challenge in communication with the patients especially during the in-depth interview and this was dealt with by use of written communication during the interview. With written communication, it would be difficult if we didn't get literate participants but this was managed by use of purposive sampling so as to choose participants that were literate. There was also language barrier especially in elderly patients but was handled by seeking help of translators.

CHAPTER FOUR: RESULTS

There were 66 tracheostomy patients recruited in the study from among the patients admitted for tracheostomy surgical procedure at KNH during the study period. In addition, key informant interview data were collected from 13 patients and 4 nurse managers in-charge of tracheostomy care units.

4.1 Challenges of tracheostomy care at KNH.

Table 1 shows the challenges faced by patients on tracheostomy care at KNH and compares the percentage of patients reporting each challenge against the percentage reporting the most common challenge namely communication problems (n = 66, 100%). Tests on the equality of proportions showed that the occurrence of each of the remaining challenges presented in Table 1 was significantly less common compared to occurrence of communication problems.

Table 1: Self-reported challenges among tracheostomy patients at KNH

	Number	**%**	**P value**
Type of challenge			
Communication problem	66	100	
Patients not taught on tracheostomy care	7	10.6	< 0.001
Patients not aware how long they were scheduled to stay with the tracheostomy tube	53	80.3	< 0.001
Adequate counseling on tracheostomy	10	15.2	< 0.001
Poor patient-health worker relationship	18	27.3	< 0.001
Unable to swallow food	17	25.8	< 0.001
Patient taught on swallowing technique (n = 17)	13	76.5	< 0.001
Ever experienced a blockage of the tracheostomy tube	53	80.3	< 0.001

Strained and poor relationships between patients and health workers emerged as a challenge to tracheostomy patients in the key informant interviews. Relationships with health workers were particularly strained in patients with chronic illnesses compared to acute conditions like airway obstruction secondary to road accident. Reasons for poor patient-health provider relationships included perception that health providers despised patients, were rude, and unwilling to help.

"It [patient-health provider relationship] is not so good because others are not willing to help" (respondent 8, cancer diagnosis)

4.2 Patients' age and tracheostomy care

The average age of the tracheostomy patients at KNH was 49.5 years (SD 14.3), with a range from 10 months to 74 years. As shown in Figure 2, most participants were aged 40 years and above with similar percentage distribution in the age groups 40-49 years (25.8%), 50-59 years (25.8%) and 60 years and above (28.8%).

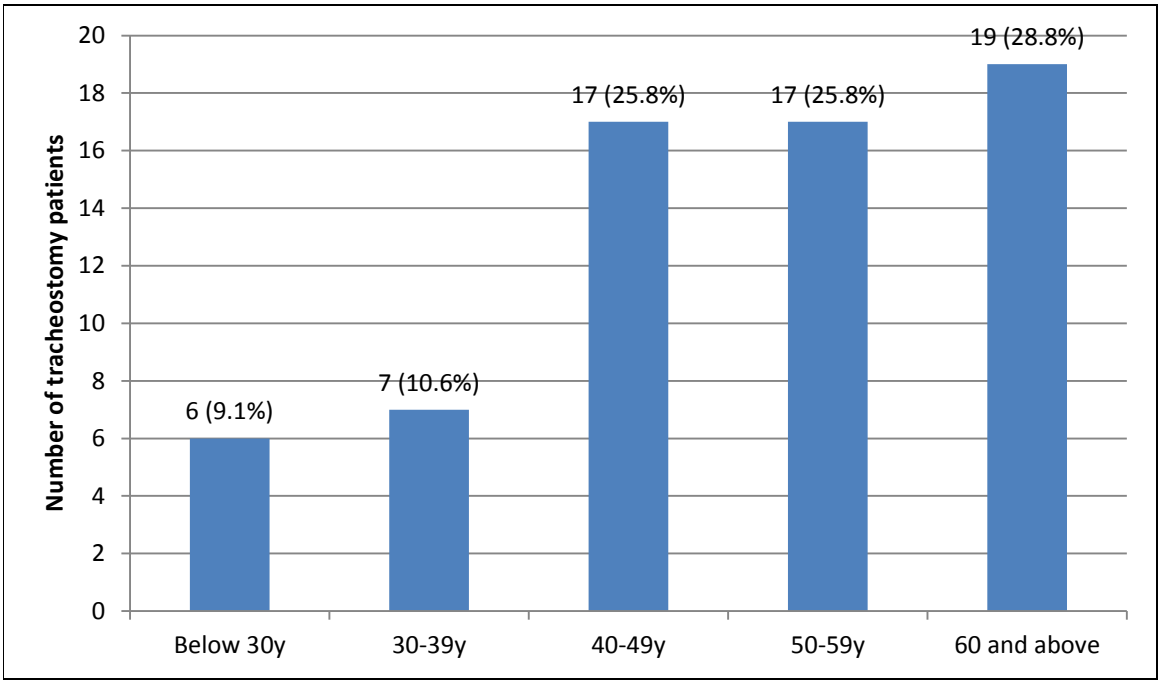


Figure 1: Percentage distribution of tracheostomy patients at KNH

Table 2 shows that patients rated tracheostomy pain management practices moderately (mean = 5 to 5.8 out of 10). The rating of pain management practices did not differ significantly by patient age (p = 0.78). Family relationship were rated highly (mean = 8.3 to 9.7 out of 10) in all age groups and this rating was not significantly associated with age (p = 0.10). Patients had moderate

levels of self-esteem (mean = 5.4 to 7 out of 10) and this was not significantly associated with age (p = 0.08).

Table 2: Tracheostomy patient rating of pain management, self-esteem and family relationships according to age

	Tracheostomy patient age				P value
	≤ 39 years	40-49 years	50-59 years	≥ 60 years	
Mean score (range 1-10)					
Pain management	5.8	5.6	5	5.5	0.79
Self esteem	7	5.4	6.4	6.1	0.08
Family relationships	8.3	9.1	9.1	9.7	0.10

In the patient key informant interviews, family relationships were also widely described as intact and indeed some participants reported that their families were very supportive and empathetic after the tracheostomy procedure. There were however, few instances where the procedure impacted negatively on family ties such that patients described a feeling of isolation, stigmatization and even estrangement or abandonment.

> *"I don't have a good relationship with my family. My children don't even come to see me" (respondent 3, cancer diagnosis)*

All the patients interviewed during key informant interviews reported that they were on pharmacological pain management and most were satisfied with pain management practices at KNH. The Key informants reported that nurses provided emergency pain medication promptly. No patients indicated using any alternative pain management strategies. This was despite the finding that a few patients thought that nurses delayed in administering the pharmacological pain management.

The challenges in Table 3 including training on tracheostomy care (p = 0.61), poor patient-health worker relationship (p = 0.10), and blockage of tracheostomy tube (p = 0.56) were not significantly associated with patient age.

Table 3: Challenges reported by tracheostomy patients at KNH according to age

	≤ 39 years	40-49 years	50-59 years	≥ 60 years	P value
Type of challenge					
Patients not taught on tracheostomy care	0	2	2	3	0.61
Patients not aware how long they were scheduled to stay with the tracheostomy tube	9	13	13	17	0.54
Poor patient-health worker relationship	0	6	5	7	0.10
Unable to swallow food	6	3	2	6	0.15
Ever experienced a blockage of the tracheostomy tube	12	12	14	15	0.56

4.3 Patient gender and tracheostomy care

Out of the 66 tracheostomy patients, 57 (86.4%) patients were male yielding a male-to-female ratio of 6:1.

Tracheostomy related pain management, patient self-esteem and family relations were not significantly associated with patient gender as shown in table 4.

Table 4: Tracheostomy patient rating of pain management, self-esteem and family relationships according to sex

	Gender		
	Male	Female	P value
Mean score (range 1-10)			
Pain management	5.4	5.7	0.78
Self esteem	6.3	5.3	0.12
Family relationships	9.2	9.1	0.93

There were no significant associations between patient gender and the various types of tracheostomy care challenges reported in table 5.

Table 5: Tracheostomy challenges according to patient's sex

	Male	Female	P value
Type of challenge			
Patients not taught on tracheostomy care	5	2	0.24
Patients not aware how long they were scheduled to stay with the tracheostomy tube	45	7	0.86
Poor patient-health worker relationship	16	2	> 0.99
Unable to swallow food	14	3	0.68
Ever experienced a blockage of the tracheostomy tube	46	7	0.84

4.4 Level of education and tracheostomy care

The percentage distribution of participants according to level of formal education is shown in figure 2. Most participants had attended some level of formal education with a similar percentage of participants attaining secondary (39.1% n=66) or college (39.1% n=66) level education.

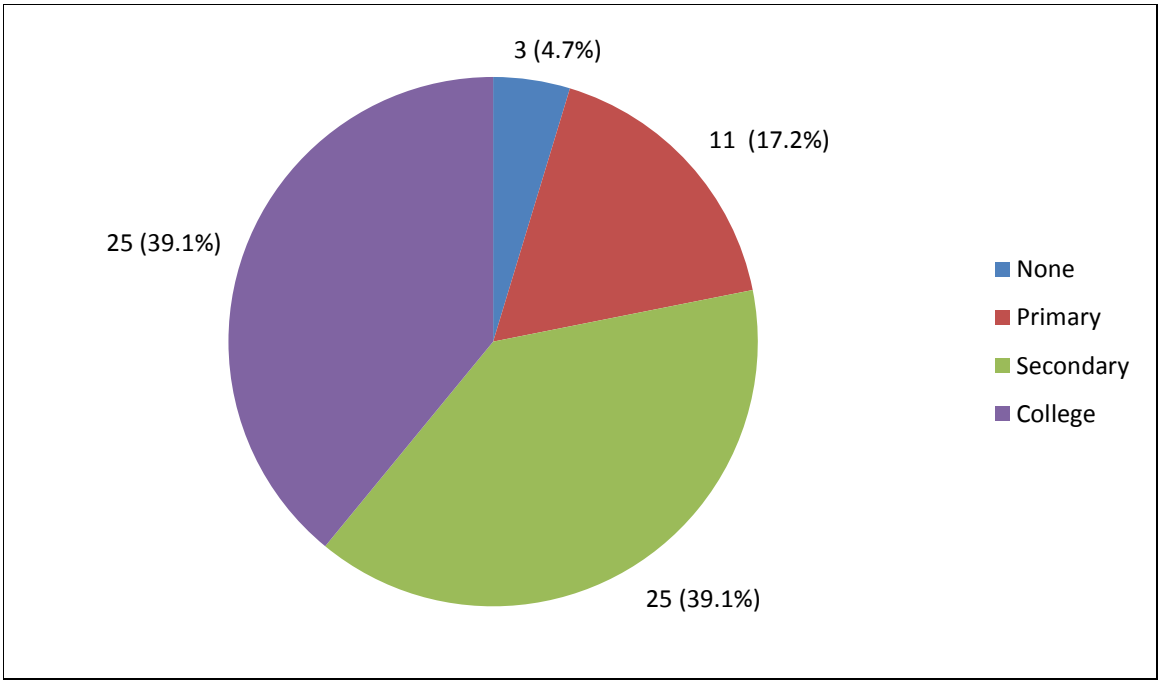


Figure 2: Distribution of level of formal education for tracheostomy patients at KNH

Tracheostomy care training was significantly associated with level of formal education but not patient age (table 6). The odds of tracheostomy care training was 13-fold greater among patient with secondary and tertiary education compared to patient with primary or no formal education OR = 13.3 (95% CI 1.2-655.9).

The odds of knowledge related to tracheostomy schedule was significantly higher [OR = 13.3(1.2-655.9)] among patients with secondary compared to primary education, (table 6).

Table 6: Odds ratios and confidence intervals for tracheostomy care training and knowledge of scheduled duration according to education

	Training on tracheostomy care				OR (95% CI)	P value
	Yes		No			
	N	%	N	%		
Education						
Primary or below	9	15.8	5	71.4	1.0	
Secondary	24	42.1	1	14.3	13.3(1.2-655.9)	0.001
College	24	42.1	1	14.3	13.3(1.2-655.9)	0.001
	Knowledge of schedule				OR (95% CI)	P value
	Yes		No			
Education	N	%	N	%		
Primary or below	9	18	5	38.5	1.0	
Secondary	24	48	1	7.7	13.3(1.2-655.9)	0.001
College	17	34	7	53.9	1.3(0.3-6.7)	0.68

Key informants demonstrated an understanding of the tracheostomy procedure indicating that tracheostomy insertion involved incision of the throat with insertion of the tube in theatre. The responses to the remaining knowledge items showed highly contextualized understanding of tracheostomy procedure and care practices. This context-specific knowledge was exemplified by the way patients responded when asked for indications of tracheostomy.

> *"... has cerebral palsy...It [tracheostomy] is done when a patient has...weak nerves of the voice box" (respondent 6, parent to cerebral palsy patient)*

> *"It [tracheostomy] is done in a patient who has undergone operation for cancer to aid in breathing" (respondent 12, cancer diagnosis)*

With the exception of a limited number of patients who did not know the about the rationale and clinical indication for tracheostomy the participants gave responses that applied to their specific cases.

> *"It [tracheostomy] was inserted because something is growing in my mouth.... I don't really know its definition ... I can't use my mouth to breathe now I guess it [tracheostomy] makes breathing easier" (respondent 10, cancer diagnosis)*

4.5 Marital status and tracheostomy care

Majority (84.1% n=66) of the respondents were married as shown in table 1. Single never-married participants comprised 11.1% (n=66) of the sample and each of the remaining categories: widowed, divorced or separated were each represented by a single participant.

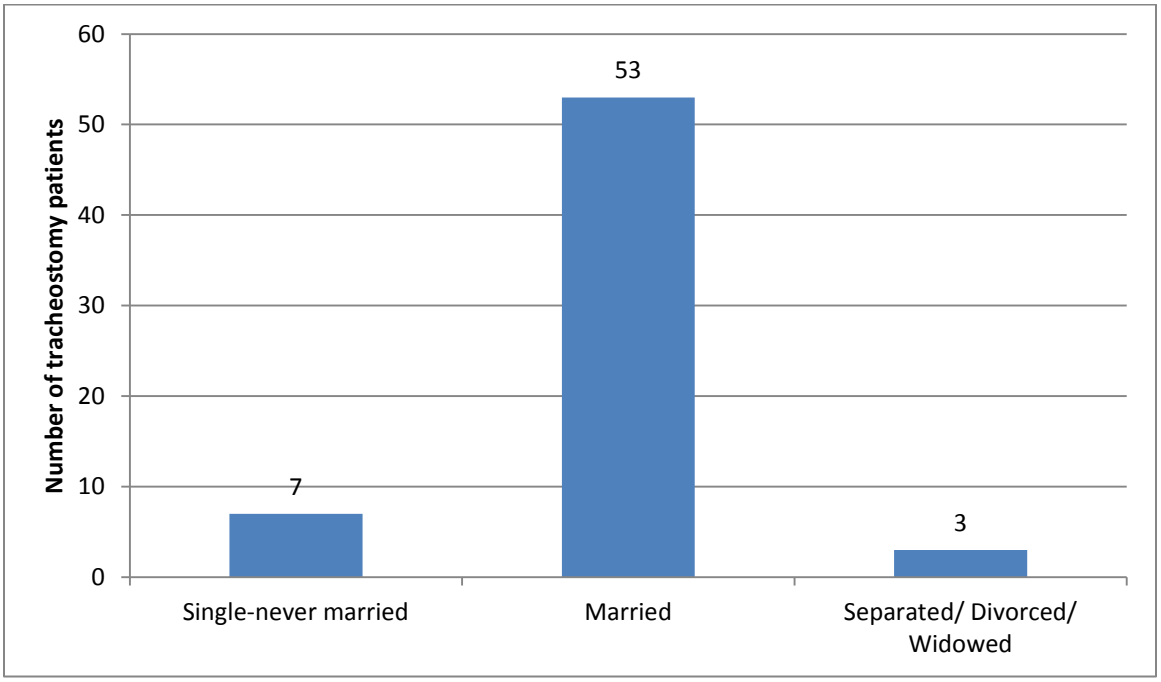


Figure 3: Marital status of tracheostomy patients at KNH

The patients in the qualitative interview commonly reported straining of relationships with their families including spouses. These strained relations were commonly linked to communication

problems. However, patients reported having adopted new strategies to enhance their communication including use of signs, writing and occlusion of the tube to amplify their voice.

> *"Communication is a big problem because I at times have to use sign language" (respondent 8, cancer diagnosis)*

Marital status showed a statistically significant association with patient rating of family relationships ($p < 0.001$). Married patients rated family relationships higher compared to single and separated/ divorced or widowed patients (table 7).

Table 7: Tracheostomy patient rating of pain management, self-esteem and family relationships according to patient marital status

	Marital status			
	Single	Married	Separated /divorced/ widowed	P value
Mean score (range 1-10)				
Pain management	6	5.4	6.7	0.54
Self esteem	6.1	6.1	6.3	0.97
Family relationships	7.7	9.4	7	<0.001

4.6 Employment status and tracheostomy care

Figure 4 shows that the majority of respondents were engaged in informal type of employment which range from business, farming and self-employment and these stand at 30 (45%), followed by unemployed, employed and casual workers in that order at 18(27%), 11(27%) and 7 (11%) respectively.

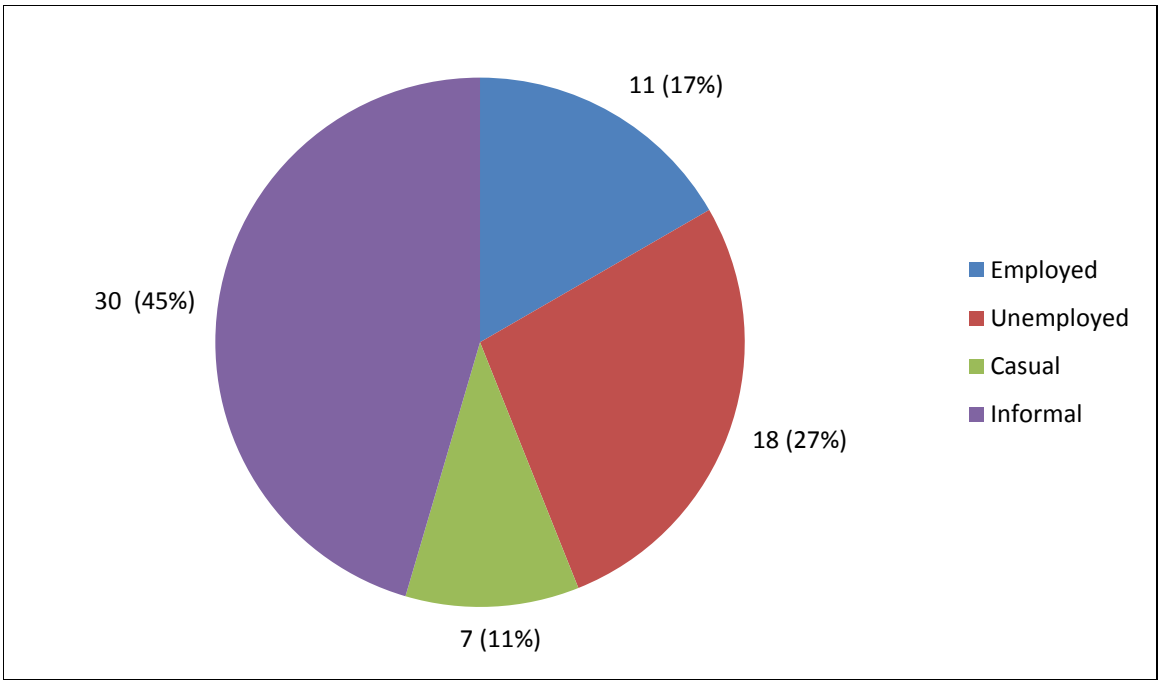


Figure 4: Employment status of tracheostomy patients at KNH

Employment status did not show significant association with the type of challenge reported by tracheostomy patients as shown in table 8.

Table 8: Challenges reported by tracheostomy patients at KNH according to employment status

	Employed	Unemployed	Casual	P value
Type of challenge				
Patients not taught on tracheostomy care (n = 36)	10	17	7	0.71
Patients not aware how long they were scheduled to stay with the tracheostomy tube	9	13	5	0.87
Poor patient-health worker relationship	4	4	0	0.20
Unable to swallow food	2	6	2	0.68
Ever experienced a blockage of the tracheostomy tube	2	4	2	0.88

4.7 Number of dependants and tracheostomy care

The majority of the patients have four dependents at 18 (27.3%), with 14 (21.2%) participants having three dependants and a similar percentage did not have any dependants (figure 5).

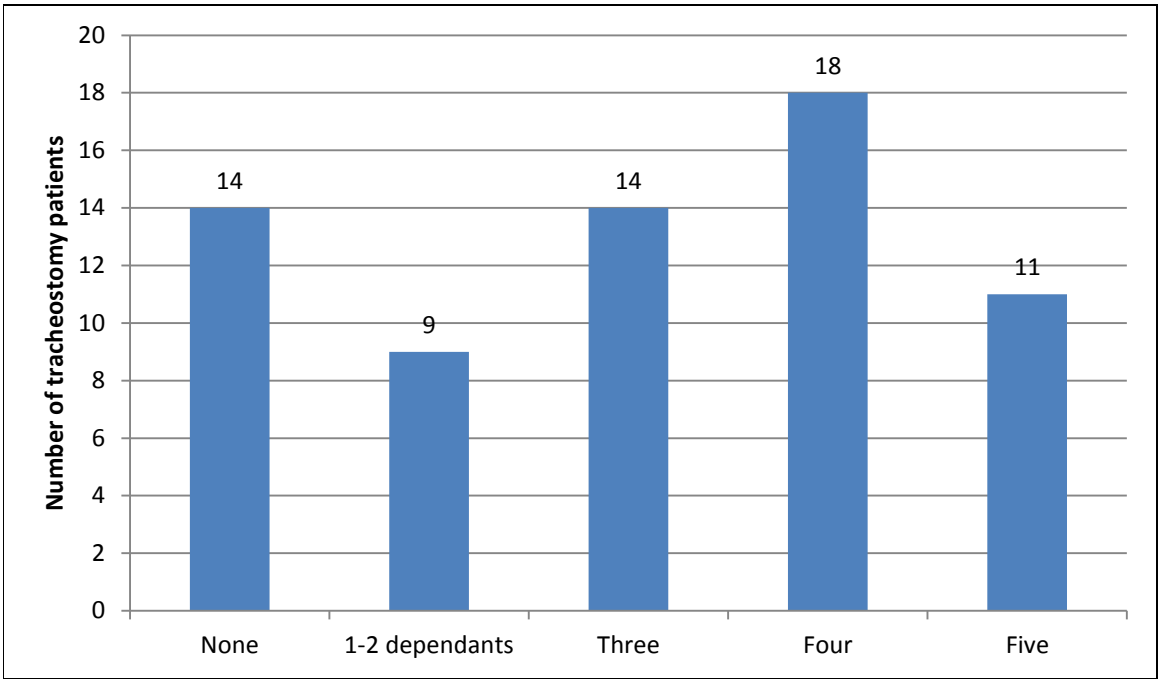


Figure 5: Number of dependants of tracheostomy patients at KNH

There was a significant association between number of dependants and reported training on tracheostomy care ($p = 0.04$). The remaining aspects of tracheostomy care were not significantly associated with number of patient dependants (table 9).

Table 9: Challenges reported by tracheostomy patients at KNH according to number of dependents.

	None	1-2	Three	Four	Five	P value
Type of challenge						
Patients not taught on tracheostomy care	1	0	0	2	4	0.04
Patients not aware how long they were scheduled to stay with the tracheostomy tube	11	6	11	14	10	0.72
Poor patient-health worker relationship	3	3	3	5	4	0.89
Unable to swallow food	4	2	3	2	6	0.13
Ever experienced a blockage of the tracheostomy tube	11	7	12	13	10	0.76

4.8 Residence

Figure 6 shows residences of patients undergoing tracheostomy procedure at KNH. Most (65.2%, n = 43) participants resided in Nairobi followed by Central (15.2%, n = 10) reflecting the proximity of these locations to KNH and not prevalence of tracheostomy.

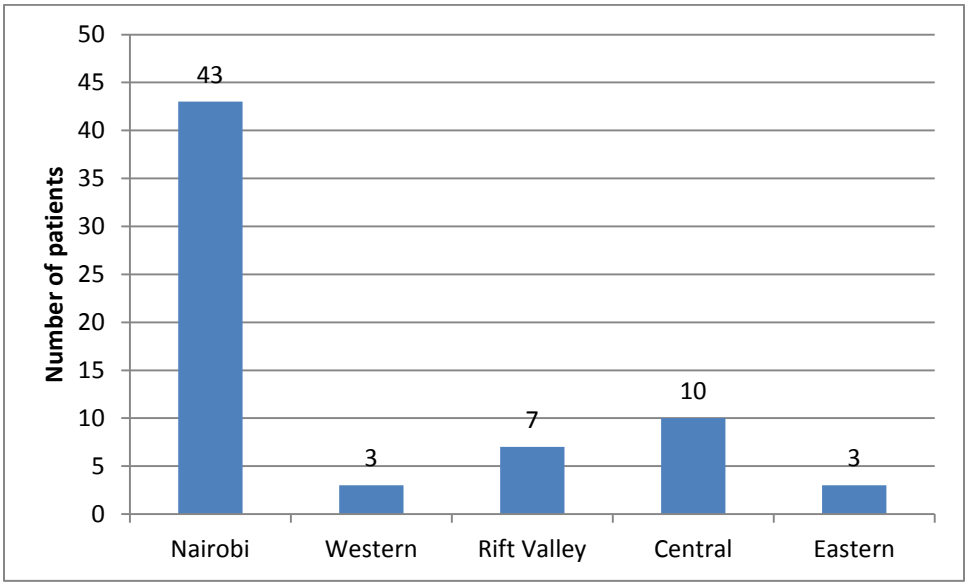


Figure 6: Residence of tracheostomy patients at KNH

4.9 Standard of tracheostomy care offered to tracheostomy care clients at KNH

The standard of care for tracheostomy patients was assessed in 2 inpatient settings and 2 outpatient settings (ICU, ENT ward, Outpatient Department and ENT clinic). Key informant interviews were conducted with nurses in charge of each unit with durations of service ranging from 3 to 15 years (Table). There was considerable variation in tracheostomy workload within the units with ENT ward having the largest workload of between 10 and 20 tracheostomy patients per day. The remaining factors related to the standards of tracheostomy care are summarized in table 3.

Table 10: Characteristics of key informants and details of staffing, workload and equipment for tracheostomy care at KNH.

	ICU	ENT WARD	ENT CLINIC	A&E DEPARTMENT
RESPONDENT	Critical Care Nurse Manager	Senior Nurse Manager (ACN)	Nurse Manager	Critical Care Nurse Manager
Duration of Service	15 years	3 years	4 years	6 years
Standards of Care				
Nurses Per shift	14 -17	3	8	4
Average number of Tracheostomy Patients seen per day	5 -7	10 - 20	5	6
Staffing				
Minimum nursing qualifications	Registered Critical care Nurse	Enrolled Nurse	Enrolled Nurse	Registered Critical care Nurse
Nurse trained on tracheostomy care	Nil	3	Nil	Nil
Nurse Patient ratio	1:2	1:17	1:15	2:3
Consultant review	Daily	Daily	N/A	N/A
Equipment and Supplies	Adequate	Inadequate	Adequate	Inadequate

Staffing

The ICU and A&E departments were staffed with nurses holding registered nursing qualification while the ENT department had both enrolled and registered nurses. The nurse to patient ratios in ICU and A&E department were significantly lower compared to those in the ENT departments.

Equipment and supplies

The ICU and ENT clinic both of which are specialized areas had adequate equipment and supplies to provide tracheostomy care. The general ward and A&E department were reported to have inadequate equipment for tracheostomy care (Table 10).

Tracheostomy care training

The key informants noted that health providers especially nurses within the various units except the ENT ward were not specifically trained in care of tracheostomy patients. The medical staff on the other hand had specialist training in ENT surgery and thus were adequately prepared to manage tracheostomy patients.

Overall assessment of tracheostomy care

Further analysis of key informant data showed that patients were not fully satisfied with tracheostomy care at KNH. Among areas of concern were duration taken between patient admission and insertion of tracheostomy tube in theatre. While emergency cases reported insertion was done as soon as feasible some patient especially chronically ill patients reported staying in the ward for long durations (up to 3 weeks) awaiting tracheostomy procedure to be conducted.

Overall, tracheostomy complications were a major problem for tracheostomy patients. Tracheostomy blockage, difficulty in swallowing, cough and pain were commonly reported. However, the respondents indicated that these complications were often minor and they commonly resolved without requiring hospital visits.

More importantly patients reported that among the main health education messages that they had received regarding tracheostomy care were cleaning of the tracheotomy to prevent infections and also ensure its patency and changing of the tube. Conversely, a few respondent especially recently operated patients did not know of the possible complications and reported not having experienced complications.

Finally, patients commonly reported deteriorations in overall quality of life associated with significant emotional instability manifesting variously including through reported loss of self-esteem.

> *"I just feel very bad now that I can't function the way I used to" (respondent 9, Road traffic accident)*

There were wide variation in patient coping with illness and its resulting management including the tracheostomy procedure. The effectiveness of patient adjustment depended on underlying causes with better adaptation among patients with acute illnesses compared to those with chronic illnesses which were commonly characterized by desperation, giving up and hopelessness.

> *"My self-esteem is low because I am not what I used to be and this disease might finish me soon" (Respondent 3, cancer diagnosis)*

CHAPTER 5: DISCUSSION, CONCLUSION AND RECOMMENDATIONS.

This study was carried out in four facilities within the Kenyatta National Hospital and those are Accident and Emergency department, ENT clinic, Ward 5C and ICU. The main objective was to evaluate the quality of tracheostomy care offered to clients at Kenyatta National Hospital.

5.1. Characteristics of Patients on tracheostomy care at KNH

The study revealed that the average age of tracheostomy patients at KNH was 49.5 (SD 14.3) with a range of 10 months to 74 years. Those aged 60 years and above accounted for the majority (28.8% n=66). This shows that the malignancies which were the main reason for tracheostomy, mostly affect the patients that are above 60 years of age. Participants of the male gender were the majority (57% n=66) with a male to female ratio of 6.1. This concurs with findings of a study done by Binyamin et al in 2010 in which 63.5% of the tracheostomized patients were men with an average age of 59.8 years. The findings in this study could be explained by the fact that more elderly males are affected by cancer of the larynx in which among the risk factors are patients who smoke cigarettes or drink alcohol in which the male gender are the majority. (Brunner and Suddarth 2007). The other reason for the male gender being the majority is the fact that apart from cancer of the larynx, majority of the younger men who are below 50 years are tracheostomized because of trauma due to road traffic accidents which mostly affect men often because of sociocultural reasons, as well as a greater propensity to take risks as compared to females. (WHO 2008).

Seventy eight point two percent (n=66) of the respondents had secondary education and above meaning they had the ability to read and write and were decisive enough to seek a modern health care facility. There is no data or research done on the educational statuses of patients on tracheostomy. Majority (84.1% n=66) of the respondents were married and a majority (56% n=66) had 3 dependents and below. The reason for this being that the majority of the patients are 60 years old and above and don't have many dependents at this age. This means that majority of the patients on tracheostomy have no much strain on finances since they have few dependents and are therefore able to access health care services. Forty percent (n=66) of the respondents were not formally employed. However, they were engaged in other income generating activities

e.g. farming and business and could therefore be able to cater for their health needs as compared to those who are unemployed.

Fourty three percent (n=66) of the respondents were from Nairobi followed by the central area of the country (10% n=66). This could be explained by their proximity to KNH and does not reflect prevalence of underlying causes. It also explains the fact that KNH is a tertiary institution with lower cost as compared to the rest of the hospitals in the Nairobi area.

5.2 Standard of tracheostomy care offered to tracheostomy care clients at KNH

5.2.1. Structure factors in standards of tracheostomy care.

Nurses working in ICU and A&E had a minimum qualification of registered nursing while nurses at the ENT ward and ENT clinic had a minimum qualification of enrolled nursing. This means that the standard of care in the areas having enrolled nurses was low as compared to the areas that had registered nurses as minimum qualification. The findings of this study also showed that the medical staff had specialist training on ENT while only 3 nurses, who work at the ENT ward had undergone tracheostomy care training with the other study areas reporting that they had no nurses trained in tracheostomy care. The other nurses that provided care to the patients underwent an on job training on tracheostomy care. This is in agreement with a study done by Mondrup et al (2012) where 47% of the 43 ICUs studied in Denmark, reported any formalized education or training of staff nurses in management of tracheostomy patients. They further stated that there was largely no daily intensivist-led post ICU follow-up, and formal staff education in tracheostomy management in the ward was scarce Abraham (2013) states that the care for tracheostomy patients is challenging for the nurses in the ward where knowledge and skill is tested and often lacking resulting in emergency shift of these patients to ICU. He further states that often chronic tracheostomy patients tend to be over-looked in infection control practices aspect. This leads to increased health care associated infections along with increased morbidity & mortality. This means that lack of enough training in tracheostomy care, is a huge contributor to morbidity and mortality of the patients. This in essence impacts negatively on the standards of tracheostomy care reason being that training in tracheostomy is essential and according to Lewis and Oliver (2005) it is important because there is a lack of knowledge and skills and confidence among ward nursing staff in caring for patients with a tracheostomy. These lead to confusion and lack of parity of care. Floyd (2011) disagreed with nurses being allowed to

care for tracheostomy patients without relevant training but with experience saying experienced nurses may overestimate their own tracheostomy care competence. This is what could be happening in the study setting where nurses continue providing care without the necessary qualifications. The ENT ward and ENT clinic were found to be understaffed with nurse to patient rations of 1:17 and 1:15 respectively and here care could be compromised as cited by Patterson (2011) that with increasing shortfalls in staff there is little hope of achieving excellence in standards of care. The difficulty in providing adequate care is becoming apparent, and the likelihood of patients experiencing adverse outcomes will increase as staffing is continually compromised. The study findings indicate that in the ICU and ENT ward, consultants reviewed the tracheostomy patients on a daily basis whereas in the ENT clinic and A&E, the patients were reviewed when they came. This means that the patients were well covered medically. Even though the patients are well covered medically, some instructions may not be followed well by the nurses due to lack of enough training and also lack of enough equipment and supplies and staff. This means that the medical coverage alone does not translate to quality care.

The ICU and ENT clinic both of which are specialized areas had adequate equipment and supplies to provide tracheostomy care while the general ward and A&E department were reported to have inadequate equipment for tracheostomy care. This compromises on the quality of care in terms of urgency since time is wasted trying to borrow or improvise. Because of this disparity, patients in ICU and ENT clinic receive quality care but on transfer to the wards, they get poor care and this may be a contributing factor to the complications.

5.2.2 Process factors in standards of tracheostomy care at KNH

The study findings showed that in the four clinical areas where the study was conducted, only one area (ENT ward) had nurses trained in tracheostomy care and these are only three. This showed that the technical quality of nursing care in tracheostomy is compromised since the percentage of nurses trained in tracheostomy is too small.

There was also inadequate counseling on tracheostomy care and lack of awareness of scheduled duration for tracheostomy tube to remain *in-situ* among 77.3% (n=66) of the respondents. This could be attributed to the fact that despite the nurses being committed to counseling the patients, their low ratios, especially in settings that deal with most patients, make it difficult for them to give individualized care. This means that participants just had the tracheostomy and had

inadequate information about it. This suggests that patients, who underwent challenges such as impaired communication, retaining of normal activity, psychosocial discomfort, painful procedures and fear of the unknown as discovered by Foster (2009), may not benefit from this setting. The setting is not informing the clients adequately so that they are part and parcel of the decision making process. This is especially felt when patients have inadequate discharge planning.

5.3 Challenges faced by patients on tracheostomy in KNH

All the respondents (100% n=66) had challenges in communication. Participants commonly blamed the straining of relationships with their associates and significant relations to communication problems but they reported having adopted new strategies to enhance their communication including use of signs, writing and occlusion of the tube to amplify the voice. This is in agreement by a study done by Foster 2009 that stated that communication was among the main challenges that patients on tracheostomy have. Good communication including the use of speaking valves, pen / paper or picture cards are vital to prevent the patient feeling frightened and isolated. Majority of the respondents (89.4% n=66) had experienced blockage of the tracheostomy tube. These findings are in agreement with Hickley et al (2002) who classified blockage of the tracheostomy tube in both the early and late complications. In the early complications stage, blockage is as a result of dried blood and mucus and also as result of the tube pressing against the wall. In the late complications stage, Hickley et al (2002) state that airway obstruction is due to mucous plug, hemorrhage, infection, tracheal stenosis and granuloma formation.

Majority of the respondents (89.4% n=66) had been taught on tracheostomy self-care. This means they did not have challenges in caring for the tracheostomy. Even though the majority had been trained, it is not enough because 100% should have been trained on self-care. There are however no studies on percentages of patients taught on tracheostomy self-care. The other challenge found out during the study was that majority of the respondents (77.3% n=66) did not know for how long they were scheduled to stay with the tracheostomy *in situ*. This shows poor counseling priorities on the part of the healthcare personnel handling the patients. This is supported by the fact that only 13 respondents knew the duration of time they were to stay with the tracheostomy and of these, 10 had been counseled on this. This means the health care

personnel only counseled the respondents that they had informed on the duration of time they were to stay with the tracheostomy tube. There are however no studies that have been done in relation to counseling of tracheostomy patients on the duration of time they are to stay with the tracheostomy tube.

Majority of the respondents (72.7% n=66) have a good patient – health worker relationship. Those who did not have a good relationship had a perception that health care workers were rude, despised patients and were unwilling to help. A study done by Foster (2009) showed that among the challenges patients on tracheostomy underwent, were; necessity of communication, retaining normality, psychosocial discomfort, painful procedures, fear of the unknown and relationship with staff. With the majority of the respondents having a good relationship with staff, it means there will be ease of communication whereby patients are free to air their predicaments in health care. Majority of the respondents (74.2% n=66) were able to swallow food well and 13 out of the 17 respondents that were not able to swallow food well, had been taught on a swallowing technique. This is means better nutrition for the patient since there are no limitations to the type of food they eat.

Pain was also another challenge faced by respondents especially post operatively and majority of them were on pharmacological therapy. Most patients were satisfied with pain management practices. This means that the comfort of the respondents was well taken care of.

Family relationships on the other hand were widely described as intact and indeed some participants reported that their families were very supportive and empathetic after the tracheostomy procedure. In a study done by Yieh et al (2009) the psychological well-being and the quality of the caregiver-patient relationship of family caregivers were found to be significantly positively correlated with caregivers' health. The lack of family support was found to be significantly negatively correlated with caregivers' health. Psychological well-being, quality of caregiver-patient relationship, and family support accounted for 59% of the variance in caregivers' health. This means that with support and good family relationships, the patients are bound to have better coping mechanisms and better quality of life.

Patients commonly reported deteriorations in overall quality of life. Changes in quality of life were associated with significant emotional instability manifesting variously including through

reported loss of self-esteem. This finding is similar to a study done by Foster (2009) where it was found that among the challenges tracheostomy patients undergo is retaining of normality and psychosocial discomfort. This could mean that the patient support structures which include counseling on the condition are not effective. It could also mean that the respondents did not receive much support from their relatives.

5.4 Factors influencing tracheostomy care in KNH

The study findings indicate that the environment where the patients are admitted especially in the ENT ward is not favorable. This is seen when the key informant reports that cleanliness is a challenge in the ward. This could predispose the patients to nosocomial infections which will then give the nurses extra work in caring for the tracheostomy patients and therefore not give 100% tracheostomy care due to the additional care of the infectious process.

ICU and ENT clinic both had enough equipment and supplies while the A&E and ENT ward reported not having enough equipment and supplies. In the study, the ENT ward, handles most patients (up to 20 per day) and with lack of equipment, there will definitely be poor patient care. This impacts negatively on the quality of care and is in agreement with Lipinge et al (2006) whose study found out that the absence of basic equipment hinders health professionals from providing quality care to their clients, consequently affecting morale. This could mean that the procurement process in the hospital is not good since some areas have enough supplies and equipment while other areas are not well equipped

On interviewing the key informants, it was found out that the nurse to patient ratio was low in the ENT ward and ENT clinic (1:17 and 1:15 respectively). This will impact negatively on the care since the nurses are overwhelmed by the workload. It means that the time nurses will have to spend on individual patients is limited. Therefore there will be a tendency to overlook some aspects of care like counseling and patient teaching on self-care not have enough time to provide quality care which involves counseling. It could also negatively affect the quality of care in that the time the nurses will take to respond to patient queries might be long since they are overstretched and therefore ever busy. This is especially evidenced by the fact that at times the nurses take long to administer pain medication whenever patients complain of pain

The study findings showed that the doctors who performed the tracheostomy had a significant training in ENT and as such, there were fewer complications reported post tracheostomy. This however differs with a study done by Gilyoma et al 2011 where it was found that the high rate of complications in patients who had emergency tracheostomy could be attributed to the fact that the majority presented late to the Accident and Emergency (A&E) department in severe respiratory obstruction and so emergency tracheostomy was the solution. This ended up not being done by otolaryngologists but by general practitioners manning the A&E at the time

5.4.2. Process Factors influencing tracheostomy care

The odds of tracheostomy care training was 13-fold greater among respondents with secondary and tertiary education compared to respondents with primary or no formal education OR = 13.3 (95% CI 1.2-655.9). This means that there was a bias in training of patients on self-tracheostomy care with more concentration being on those with secondary and tertiary education. This could mean that morbidity is bound to be high in those respondents that have not gone beyond primary level of education.

5.5. CONCLUSION

There are very low standards of tracheostomy care at KNH. This is seen by there being only three nurses trained on tracheostomy care, there are no enough supplies and equipment in the wards handling majority of the tracheostomy patients and patients are not adequately taught on tracheostomy care or counseled on their conditions to avert most of the challenges they undergo.

5.6. RECOMMENDATIONS

1. The hospital should invest in training of nurses in tracheostomy care.
2. Facilities within the hospital that handle most tracheostomy patients should have adequate supplies and equipment.
3. All tracheostomy patients should be nursed in the same specialized area rather than spread them in various wards where nurses might not be experienced enough in care.

4. Tracheostomy patients should be issued with Passy Muir speaking valves and other communication materials like pen and papers to enable them have effective communication.
5. Patients should be counseled adequately on their condition to enable them develop coping mechanisms.

5.7. SUGGESTION FOR AREAS OF FURTHER RESEARCH

1. Impact of lack of tracheostomy care training on tracheostomy care.

2. A case study on effectiveness in care of all tracheostomy patients in one specialized ward as opposed to scattering them in various wards on discharge from ICU as is the case in KNH.

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APPENDICES

APPENDIX 1: CONSENT EXPLANATION AND CONSENT FORM

Dear Respondent,

My name is **ELVIS ONCHIRI NYANSIKERA**. I am a student at the University of Nairobi pursuing a Master's degree in Nursing (Medical Surgical). I am carrying out a research on **"Quality of tracheostomy care. A case of Kenyatta National Hospital.** "The research has been approved by the Ethics and Research committee of KNH and permission to carry out the research granted by the Hospital.

In order to obtain the information, I have developed a questionnaire and an in-depth interview guide which I will use to interview you. I am kindly requesting you to participate in the study by filling in the questionnaire and answering questions during the in-depth interview. Participation is voluntary and there is no penalty for declining to participate. There are no risks involved in participating in this study. The information you provide will be treated with confidentiality as permitted by law. You are not required to write your name or any other identification number on the study questionnaire. You are free to withdraw from the study at any stage without fear of victimization.

The findings will provide motivation to produce evidence based policy document to guide the care of tracheostomy patients. The research findings will also be used by the Ministry of Health to streamline management of tracheostomy patients in all the hospitals. The results of the study will be availed to you after the study is completed in case you wish to know the findings. You may ask any questions about your rights as a participant or anything else about the research that is not clear. Your participation will be highly appreciated.

In case of any questions or clarifications feel free to contact the principal investigator on mobile number 0722-427177 or contact the Secretary to the KNH/UON- ERC at 2726300 Ext 44102.

Thank you.

ELVIS ONCHIRI NYANSIKERA (INVESTIGATOR).

Respondent's consent

I have read and understood the above details about the research. I voluntarily agree to participate in the study.

Respondent's signature …… Date ……

PI/Designee signature…… Date……

KIAMBATISHO 2: FOMU YA MAELEZO KUHUSU IDHINI

Kwa Mhusika,

Jina langu ni **ELVIS ONCHIRI NYANSIKERA**. Mimi ni mwanafunzi katika Chuo Kikuu cha Nairobi ambapo ninanuia kuhitimu na shahada ya juu ya uuguzi. Nafanya utafiti kuhusu; **Ubora wa huduma kwa wagonjwa waliofanyiwa upasuaji wa koo (tracheostomy) katika hospitali kuu ya Kenyatta.** Utafiti huu umeidhinishwa na kupitishwa na Kamatii ya Maadili ya Utafiti ya hospitali ya Kenyatta na chuo kikuu cha Nairobi.

Ili kupata habari kuhusu swala ninalo tafitia, nimeunda dodoso au fomu ya maswali. Ombi langu kwa unyenyekevu ni kuwa utashiriki kwa kujibu maswali yaliyoko katika fomu hii. Kushiriki kwako kutakuwa kwa hiari na hakuna adhabu kwa kudinda kushiriki. Hakuna hatari ya kushiriki katika utafiti huu. Majibu katika fomu hii yatashughulikiwa kwa siri kama inavyoruhusiwa kisheria. Haihitajiki kuandika jina lako au utambulisho wa aina yoyote katika fomu hii. Pia, unaruhusa ya kujitoa katika utafiti huu katika hatua yoyote bila hofu ya uonevu.

Matokeo ya utafiti huu yatasaidia kubaini ubora wa huduma kwa waliofanyiwa upasuaji kooni ili kubuni mbinu mwafaka za huduma kwa waliofanyiwa upasuaji. Matokeo haya pia yatasaidia wizara ya afya katika ubunifu huo. Ikiwa utapenda kujua matokeo ya utafiti huu una haki ya kuyapata. Unaweza kuuliza maswali yoyote kuhusiana na haki yako kama mshiriki au kitu kingine chochote kuhusu utafiti huu ambacho unahisi si wazi. Shukran kwa kukubali kushiriki.

Ikiwa una maswali, maoni au mapendekezo yoyote au ufafanuzi, jisikie huru kuwasiliana na mpelelezi mkuu kwa nambari ya simu 0722-427177 au wasiliana na Katibu wa KNH/UON-ERC kwa nambari ya simu 2726300/ 44,102.

Ahsante.

ELVIS ONCHIRI NYANSIKERA (MTAFITI).

Ridhaa ya kushiriki utafiti

Nimesoma na kuelewa maelezo yote katika fomu hii kuhusu utafiti unaofanywa na ninakubali kwa hiari yangu kushiki.

Sahihi ya mhusika ……. Tarehe……

Mtafiti mkuu/mtafiti msaidizi…… Tarehe……

APPENDIX 3: QUESTIONNAIRE

Quality of Tracheostomy care; A case of Kenyatta National Hospital, Nairobi County.

Demographic Data

Questionnaire number: _____ Date: _____/____/_____

dd/mm/yyyy

Section 1. Sociodemographics

1.1 How old are you? _____ years

1.2 What is your sex? Please indicate M or F _____

1.3 Where do you live?

□Specify _____

1.4 Level of education? (tick one)

□ None

□ Primary

□ Secondary

□ College

□ Other, please specify _____

1.5. Marital status? (tick one)

□ Single-never married

□ Married

□ Separated

□ Divorced

□ Widowed

□ Other, please specify _____

1.6What is your employment status at the moment?

□ Unemployed

□ Employed

□ Casual worker

□ Other, please specify _____

1.7 How many dependents do you have? _____

2.0 **Challenges While On Tracheostomy**

Question 1 – 5, answer with a Yes or No

1.1. Were you taught on tracheostomy care? _____
1.2. Do you know how long you are scheduled to stay with the tracheostomy tube? _____ If yes, have you been counseled adequately on this? _____
1.3. Do you have challenges when it comes to communication? _____
1.4. Do you enjoy a good patient – health worker relationship? _____
1.5. Are you still able to swallow food as before now that you have a tracheostomy? _____
1.6. If you are not able to swallow food normally, have you been taught on the swallowing technique? _____
1.7. Have you ever experienced a blockage of the tracheostomy tube?_____ If yes, how often does this happen?_____

1.8. How would you rate pain management in the ward on a scale of 1 to 10 with one being minimal and 10 being excruciating and unbearable pain? _____

1.9. How would you rate your self-esteem after tracheostomy on a scale of 1 to 10 with 1 being very low and 10 being very high? _____

1.10. How would you rate your relationship with your family since having the tracheostomy on a scale of 1 to 10 with one being poor and 10 being excellent? _____

1.11. How many times have you had an accidental decannulation in the past two weeks or since admission if you were admitted less than two weeks ago?_____

APPENDIX 4: IN-DEPTH INTERVIEW SCHEDULE.

Hello. My name is Elvis Nyansikera. I am a Master of Science in Nursing student at the University of Nairobi, undertaking a study to explore the quality of tracheostomy care in Kenyatta National Hospital. The findings of the study will provide motivation to produce evidence based policy document to guide the care of tracheostomy patients and will significantly improve on the care of tracheostomy patients. I would like to ask you a few questions concerning what you have gone through since you had the procedure done on you. The interview will be in written form since you are not able to communicate audibly. I believe there is no right or wrong answer, the information you give in this forum will be treated confidentially and will be in no way linked with you. The interview will take approximately 30 minutes so feel free to participate.

PART A: GENERAL INFORMATION

Name of respondent

Age

Gender

Time interview started

Time interview ended

Name of interviewer

Script Code

1. Why was tracheostomy done on you?
2. How has your life been since the time you had the procedure done on you?

Probes

- How did you feel overally after the procedure?

3. What do you know about tracheostomy?

Probes

- Definition
- How is it done?
- When is it done?
- What are some of the complications?
- Which complications have you experienced so far?

4. Describe the reception you got when you first came to the hospital. How would you compare it with what you expected?
5. How long did you stay before the procedure was done on you?
6. Describe the relationship between you and the health care team in the hospital.
7. What have you been taught so far about the tracheostomy?
8. What challenges do you have when it comes to communication?
9. What self-esteem problems have you encountered so far?
10. Describe the effect the tracheostomy has created in your family relationships.
11. How would you describe pain management in the ward?

Probes

How is it managed in the ward?

How quick is the nurses' response to complaints of pain?

What other alternatives do you use to manage?

12. What other challenges do you have concerning your condition?
13. Are you satisfied with the tracheostomy care services at the hospital?
14. What would you like addressed concerning your condition?

Do you have any other questions?

Thank you very much for your time.

APPENDIX 5: KEY INFORMANT GUIDE FOR HEALTH PROVIDERS (Clinical team involved in patient management)

Key Informant Guide

Introduction

Hello. My name is Elvis Nyansikera. I am a Master of Science Nursing student at the University of Nairobi, undertaking a study to explore the quality of tracheostomy care in Kenyatta National Hospital. The findings of the study will provide motivation to produce evidence based policy document to guide the care of tracheostomy patients and will significantly improve on the care of tracheostomy patients. Specifically, the study is aimed at assessing the quality of care given to the tracheostomy patients and also assess staff in terms of qualification and level of training in tracheostomy care. It is also meant to elicit the hospital's contribution to whatever tracheostomy care challenges that may be there. I would like to ask you a few questions concerning the tracheostomy care practices in your facility. I believe there is no right or wrong answer, the information you give in this forum will be treated confidentially and will be in no way linked with you. In addition, only research assistants will have access to the information from this discussion. The interview will take about 30 minutes and since I realize how limited your time is, I greatly appreciate you taking the time to speak to me. Do you have any question for me?

PART A: GENERAL INFORMATION

Name of respondent	
Professional cadre	
Number of years working in this facility	
Current roles	
Gender:	
Time interview started:	
Time interview ended:	
Name of note taker:	
Name of interviewer:	
Script code	

Issues from debrief

Part A: Background information

1. Let us start by briefly talking about your work in this facility
   Probes
   For how long have you worked in this facility?
   Can you describe your roles in this facility?

2. How many nurses work in the facility per shift?
3. How many tracheostomy patients does the facility handle daily on average?

PART B: Quality of care

4. What are the minimum qualifications of nurses that work in the facility?
   Probes
   - *Classify them according to qualification.*
   - *Do they have any special training on tracheostomy?*
   - *How many are trained on this?*
5. Could you tell us your opinion regarding the quality of care given to the patients?
   Probes
   - *Are there enough equipment and supplies for the procedures?*
   - *What's the nurse to patient ratio?*
   - *How often do consultants review the patients after tracheostomy?*
   - *How long do doctors on call take to review patients on being called?*
   - *On average, what are the qualifications of doctors who perform tracheostomies?*
   - *Post- surgical care*
   - *Rehabilitation and long term care.*

6. In your opinion, what should the hospital do to improve the quality of tracheostomy care?

PART C: Factors that influence quality of tracheostomy care.

7. What are some of the challenges faced by the health care team when it comes to tracheostomy care?
   Probes
   - *Staff training on tracheostomy care*
   - *Lack of equipment and supplies*
   - *Staff shortages*
   - *Patient factors*
   - *Others?*

8. Could you tell the key recommendations you may want to suggest to improve tracheostomy care in the facility?
9. Do you have any questions for me?
   Thank you very much for your time.

APPENDIX 6: LETTER TO KNH/ U.O.N ERC

Elvis O Nyansikera,
School of Nursing Sciences,
University of Nairobi,
P.O Box 30197.
Nairobi.

The Chairman,
KNH/Ethics and Research Committee,
P.O Box 20723,
Nairobi.

Dear Sir/Madam

RE: REVIEW AND APPROVAL OF STUDY ENTITLED; QUALITY OF TRACHEOSTOMY CARE, A CASE OF KENYATTA NATIONAL HOSPITAL.

My name is Elvis Nyansikera. I am a second year student pursuing Master of Science degree in Nursing (Medical Surgical Nursing) at University of Nairobi.

I am kindly requesting for review and approval to collect data on the above study in your hospital to be enable me complete the project.

Your comments and suggestions are welcome

Attached please three (3) copies of my research proposal.

Yours faithfully,

Elvis Nyansikera

H56/74264/2012

APPENDIX 7:KNH/UON ETHICS AND RESEARCH COMMITTEE APPROVAL LETTER

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