EVALUATING NURSES' UTILIZATION OF ALDERETE'S SCORE CHART IN MONITORING OF PATIENTS IN THE POST ANESTHESIA CARE UNIT AT KENYATTA NATIONAL HOSPITAL

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DECLARATION

I declare that this thesis is the result of my original work and that it has not been submitted for award of degree in any university.

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CERTIFICATE OF APPROVAL

This is to certify that this thesis has been submitted in partial fulfillment for the award of the degree of Masters of Science in Nursing (Medical Surgical Nursing) of the university of Nairobi with our approval as internal supervisors.

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DEDICATION

I dedicate this work to my family for the support accorded that saw completion of the work.

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ABBREVIATIONS

ASA	American Society of Anesthesiologists
ASPAN	American Society of Post Anesthesia Nurses
ERC	Ethics and Research Committee
ICU	Intensive Care Unit
ISO	International Organization for Standardization
KNH	Kenyatta National Hospital
KRCHN	Kenya Registered Community Health Nurse
KRN/M	Kenya Registered Nurse/Midwife
KRPON	Kenya Registered Peri Operative Nursing
MScN	Masters of Science in Nursing
PACU	Post anesthesia Care Unit
PAR	Post anesthesia recovery score
PCA	Patient Controlled Analgesia
PHD	Doctor of Philosophy
SOP	Standard Operating Procedure
UoN	University of Nairobi

OPERATIONAL DEFINITIONS

Anesthesia- It is a state of controlled, temporary loss of sensation or awareness that is induced for medical purposes.

Attitude- A settled way of thinking or frame of mind to do with the use of Alderete's score chart.

Effectiveness- The ability to achieve intended results by proper use of Alderete's score chart.

Efficiency- The state of being able to accomplish a task with the least time and effort.

Knowledge-It is familiarity or understanding of the use of Alderete's score chart through experience.

Monitoring- Observe and check the progress of a patient.

Patient's condition-This refers to how the patient is doing after anesthesia.

Post anesthesia care unit- This is the area designated for monitoring and caring of patients who are recovering from the immediate physiological effects of anesthesia and surgery.

Post anesthesia nurses-This refers to the number of nurses charged with the responsibility of taking care of the post anesthesia patients.

Post-operative patients-This refers to the patients who have gone through surgery.

Procurement- Obtaining equipment and supplies necessary for monitoring patients.

Skills- Expertise to use Alderete's score chart.

Standard operating procedure-It is a document containing step by step information on how to use Alderete's score chart.

Utilization- An action of making practical and effective use of Alderete's score chart.

ABSTRACT

Background: There have been several advances in anesthesia and surgical techniques that have led to improvement of patients' care after surgery. However post anesthesia patients are at risk of developing complications and need to be monitored closely. Alderete's scoring tool was introduced in May 2018 at Kenyatta National Hospital to determine the suitability of patients for discharge to the post-surgical care units after anesthesia. Introduction of the monitoring tool was necessitated by the fact that patients were deteriorating post anesthesia due to complications. There was also no standard tool for monitoring the post anesthesia patients that had been adopted to detect any deviation from the normal. Alderete's scoring system includes assessing a patient's responsiveness, activity or movement of limbs, respiration, blood pressure and oxygen saturation level as determined by pulse oximetry. Since the introduction of the monitoring tool, no study has been done to assess its utilization in monitoring patients.

Objective: To evaluate nurses' utilization of Alderete's score chart in monitoring of patients in post anesthesia care unit of Kenyatta National Hospital (KNH).

Methods and materials: A descriptive cross sectional study was conducted among nurses working in post anesthesia care unit main theatres at KNH. The study used mixed research methodology combining both quantitative and qualitative methods. Self-administered questionnaires were used to collect data from nurses and the theatre in charge. Quantitative data was collected using closed-ended and rating questions while qualitative data was collected using interview based questionnaires. Data was analyzed using Statistical Package for Social Sciences (SPSS) version 20. Descriptive statistics were presented in frequencies and percentages. Categorical data was subjected to inferential statistics using Pearson's Chi square to determine relationship between variables. Qualitative data was coded using assigned numbers to the responses then arranged in groups into emerging patterns and analyzed using thematic analysis. Propositions and conclusions were made and results presented in form of tables, pie charts and narrative texts.

Results: A total of 73 nurses participated in the study of which 56% were females while 45% were males.54.9% of the nurses were aged between 25-39 years, 33.8% were aged between 40-49 years while 11.3% were aged between 50-59 years. The mean age of the participants was 38 years. There was no significant relationship between the use of Alderete's score chart and level of training at confidence interval of p=0.210. However 85.7% of BScN trained were able to use the chart followed by 82.4% of KRPON trained nurses. This implied that those with higher training understood the importance of using the Alderete's chart more than the lower level of training. There was significant statistical evidence at p=0.028 that the use of Alderete's score chart depends on training of staffs on its use as evidence in the odds ratio showed that those nurses using the monitoring tool were 1.488 times more likely to be trained on the use of the tool than those who were not trained on its use.

Conclusion: The findings of the study concluded that Alderete's score chart was being used by nurses to monitor patients even though most of the nurses had not been trained and therefore did not understand the components of the chart.

Recommendations: There is need to train nurses to understand the components of the tool better. The hospital needs to improve on the nurses to patients' ratios and also ensure that there are enough equipment and supplies necessary for monitoring patients.

CHAPTER ONE: INTRODUCTION

1.1 Introduction

This chapter covers background information of the study to include origin of Alderete's score chart and why it was introduced. It also highlights why it was introduced at Kenyatta National Hospital. This chapter sets out the research questions and objectives that guided the study.

1.2 Background information

Alderete's score chart is used to determine the suitability of patient for discharge from the post anesthesia care unit (PACU) to the post-surgical ward. Alderete's score chart is also used to assess the physical status of patient including vital signs. Post anesthesia patients are at risk of developing respiratory and circulatory deficits, reduced physical activity, alteration in core body temperature and level of consciousness (Moro, Eduardo, 2009).

Alderete's score chart has been in use worldwide for over forty five years. Twenty four years ago, an improved version of the tool was introduced following advances in anesthesia and surgical techniques. It was introduced in 1970 by Jorge Antonio Alderete, who was a Mexican anesthesiologist working at the Denver's Veteran Affairs Hospital (Dowling, 2015). Before the introduction, there was no recognized tool for monitoring post anesthesia patients. Dr. Alderete saw the requirement of a standardized monitoring tool that could be used to monitor surgical patients worldwide. Although the monitoring tool has been in use for many years, its use has not been validated and there are several other post anesthetic scoring tools (Whitaker and Clyburn, 2013).

In the countries where the tool has been in use like the United States of America, it has been effective in detection of any deviation from the normal parameters leading to effective and prompt interventions thus preventing post anesthesia complications and subsequent deaths. The use of Alderete's score chart has provided use of a standardized tool that provides consistency in monitoring thus reducing errors that may occur after anesthesia (Dowling, 2015).

Alderete's score chart is a new tool for observation of post anesthesia patients at Kenyatta National Hospital (KNH). The chart was introduced in the month of May 2018 when it was realized that there was no standard observation tool for post-operative patients to meet international guidelines (Anesthetic *et al.*, 2017). Initially the post anesthetic care nurses used to record the vital signs observations on the anesthetic chart and the other general observations on the patients' cardex.

Cases had been reported of patients' condition deteriorating in the post-surgical wards immediately after being received from theatre. There was an incidence of a patient who died in one of the surgical wards a few minutes after being taken back to the ward from theatre.With increasing cases of litigation, there was need to introduce a tool that would ensure that only stable patients are discharged back to the surgical wards. After the case of a patient who went in theatre for the wrong surgery, the nurses were expected to be more careful with their nursing procedures especially the perioperative procedures.

Alderete's scoring system includes assessing a patient's responsiveness, activity or movement of limbs, respiration, blood pressure and oxygen saturation level as determined by pulse oximetry. A score of 0 to 2 is given for each of the five categories assessed and a score of 8 to 10 is considered adequate for discharge of the patient from the post anesthesia care unit to the post-surgical ward. A patient with a score of less than 8 is considered not ready for discharge and monitoring has to be continued until a desired score is achieved.

Factors that have so far affected utilization of Alderete's score chart include patients' factors to do with pre-operative condition and presence of co-morbidities. Staff factors that have affected utilization of the monitoring tool include knowledge and skills and attitude towards the use of the chart. Institutional factors have also affected the utilization of monitoring tool and these are policies governing the use of the tool and supply of resources necessary for the utilization of the scoring tool (Street *et al.*, 2015).

1.3 Problem statement

Post anesthesia monitoring is very vital for a decision to be made on the progression of the patient to the next level of care (Burke and Kyker, 2013).This confirms the fact that the stage of recovery for the patients is crucial thus the need of an efficient tool to detect any abnormality and deal with it or to hand over a stable patient to the post-surgical wards (Street *et al.*, 2015).

Introduction of Alderete's score chart was also prompted by the increased conflicts between the post anesthetic care nurses and the ward nurses at KNH. The later refusing to take patients back to the ward claiming that the patients were not stable and the theatre nurses on the other hand claiming that the ward nurses were refusing responsibility of the patients. At times the conflicts could be so bad to even involve the team leaders of theatres and the wards.

There are still some challenges experienced by the PACU nurses while monitoring the patients at KNH. According to Moro and Eduardo (2009), there must be at least two nurses at all times in the post anesthetic care unit whenever there is a patient being monitored. One of the nurses must be a registered practitioner (Moro, Eduardo, 2009). This is different at the PACU of KNH main theatres because not all patients are monitored using the Alderete's score chart due to shortage of nurses.

Other nurses are faced with conflict of responsibilities and at the end of it, completion of the Alderete's chart is compromised since the same nurses have to perform other procedures. In such cases the tool will not be filled in as required thus it will not meet the set out requirements. This is common especially when there is a slow flow of patients to the post-surgical wards due to other factors such as shortage of nurses and technical issues such as elevators not working or power blackout.

Under management of pain has led to emotional and physiological distress to the patient especially during the immediate post-operative period. In the long run there is prolonged hospital stay, increased morbidity and mortality for the post-surgical patients. Post-operative pain is managed efficiently using a tool that can provide adequate assessment for the patients during the post-operative period. Pain management is sometimes not taken seriously and some take it simply as a normal experience after surgery. Considering the effects of pain, it should be managed optimally to ensure patients' comfort (Anesthetic *et al.*, 2017).

Therefore KNH introduced Alderete's score chart as a standardized tool to guide evaluation of patients post-surgery before being discharged back to the surgical wards. However, since the introduction of this tool at PACU, some inconsistencies in its utilization had raised some concerns to the investigator. These included the fact that some post-operative patients had the charts completed while others did not have the chart at all or the chart was in the file but not completed. Other patients had charts that had components that had not been fully completed. This study aimed at evaluating utilization of Alderete's score chart in monitoring post anesthesia patients.

Since the introduction of Alderete's score chart there had been no assessment done on the utilization of the monitoring tool. The study formed a basis for other studies to be done since there were no other studies on the topic. The study aimed at finding out if there were factors affecting the use of Alderete's chart and its findings could be used for future improvement of the tool.

1.4 Justification of the study

Application of empirically developed evaluation tool ensures uniformity of care, promotes accuracy, avoids wastages of resources, meets Joint Commission requirements, and complies with American Society of Post Anesthesia Nurses (ASPAN) recommended standards (Dowling, 2015). It was necessary to find a standardized tool as a requirement of ISO standards in order to keep up with the advances in healthcare provision and have satisfied patients.

Kenyatta National Hospital was chosen as the study site because it is the biggest hospital in east and central Africa thus ensuring a larger population of respondents. The site is also convenient in that it serves as a center of policy formulation and therefore guides improvement in other healthcare institutions therefore ensuring good health and wellbeing for all at all ages which is the third sustainable development goal (Briefing and Urban, 2015).

Nurses, patients and institutional factors were noted to affect utilization of Alderete's chart in the United States of America where the tool was first used (Mosadeghrad, 2016). These factors affect delivery of many healthcare services and the researcher saw it prudent to assess how they affect utilization of Alderete's score chart.

1.5 Research questions

1. What are the staff related factors that hinder utilization of Alderete's score chart in the monitoring of patients in the Post Anesthesia Care Unit, at Kenyatta National Hospital?
2. What are the patient related factors that hinder utilization of Alderete's score chart in the monitoring of patients in the Post Anesthesia Care Unit, at Kenyatta National Hospital?
3. What are the institutional related factors that hinder utilization of Alderete's score chart in the monitoring of patients in the Post Anesthesia Care Unit, at Kenyatta National Hospital?

1.6 Objectives

1.6.1 Broad objective

To evaluate nurses' utilization of Alderete's score chart in monitoring patients in the post anesthesia care unit, at Kenyatta National Hospital main theatres.

1.6.2 Specific objectives

1. To determine the staff related factors that hinder utilization of Alderete's score chart in monitoring of patients in the Post Anesthesia Care Unit at Kenyatta National Hospital.
2. To determine the patient related factors that hinder utilization of Alderete's score chart in monitoring of patients in the Post Anesthesia Care Unit at Kenyatta National Hospital.
3. To determine the institutional related factors that hinder utilization of Alderete's score chart in monitoring of patients in the Post Anesthesia Care Unit at Kenyatta National Hospital.

1.7 Benefits of the study

The study will act as a baseline assessment of the utilization of Alderete's score chart in monitoring of patients in the post anesthesia care unit. In future other studies may be done considering the gaps identified on this study for the overall improvement of the monitoring tool.

The findings of the study will be shared in conferences and forums for Continuous professional development which will change attitude and behavior towards the use of Alderete's chart.

The study findings will be used to improve quality of post anesthesia monitoring in other hospitals considering Kenyatta National Hospital function of policy formulation. The country will benefit through utilization of the study findings in health sector as one of the big four agenda of the government by reduction of postoperative complications and improved management of the complications in case they occur.

CHAPTER TWO: LITERATURE REVIEW.

2.1 Introduction

This chapter highlights review of relevant literature guided by the study objectives. It describes Alderete's scoring system, post anesthesia care unit and patient monitoring in post anesthesia care unit. The chapter also highlights components of Alderete's score chart, post-operative pain and factors that hinder utilization of the monitoring tool at the post anesthesia care unit. The researcher conducted literature electronically using the following databases: PubMed, Medline, Google Scholar and Cochrane library.

2.2 Alderete's scoring system

Alderete's scoring system is a monitoring tool used for determining suitability of a patient for discharge from post-anesthesia care unit (PACU) to either the postsurgical ward or to the second stage (Phase II) recovery area. Anesthesia has been noted to have complications since the 19th century when general anesthesia was introduced. Patients should be monitored closely to include clinical and physical observations to avoid the post anesthetic complications (Moro, Eduardo, 2009). Post-operative complications are a major cause of morbidity and mortality that is very costly to any economy (Evans, Bottomley and Newton, 2017).

Alderete's scoring system was introduced in 1970 by Jorge Antonio Alderete who was a Mexican Anesthesiologist while working at Denver's Veterans affairs Hospital. Before introduction of the monitoring tool there was no standardized tool for monitoring patients post anesthesia. The tool was introduced to help in the standardization of a monitoring tool that was reliable worldwide (Dowling, 2015). Due to the simple nature of Alderete's score chart, it has been used universally to monitor patients after anesthesia (Margaret *et al.*, 2013).

There are many monitoring tools that are used for monitoring patients regionally but there is no data available for systematic review of the tools in determining their effectiveness to improve quality of care (Margaret, Street and Graddipdrugeval, 2013).

2.3 Phases in the post-anesthesia care unit

All patients who receive general anesthesia or regional anesthesia, or monitored anesthesia should be monitored in a post-anesthesia care unit (PACU) before discharge to the surgical ward or home for the ambulatory surgeries. This does not include the very sick patients who do not pass through PACU but are taken directly to the intensive care unit (ICU). In most PACUs, the anesthesiologists oversee the care of patients and they are consulted when there are any complications or deviations from the normal (Dowling, 2015).

The handing over of patients from the anesthesia care team to the PACU nurses is done in a uniform way. Verbal report is given about the surgery and the drugs used during induction, maintenance of anesthesia and during reversal. The patient must be re-evaluated and must be hemodynamically stable before being received by the PACU nurse. In case there is any doubt the anesthesiologist must make sure that the condition of the patient is stable enough to be under care of the PACU nurse.

Care in PACU is divided into two phases, that is phase I and phase II recovery phases. Phase I recovery ensures that the patient's vital signs return to near baseline. Phase II recovery ensures the patient is ready for hospital discharge and health education is given on any post-operative instructions and prescribed medications. Some settings have phase III that takes place at home for the ambulatory patients. It continues up to the time that the patient fully recovers from the effects of the surgical procedure (Mcgrath and Chung, 2003).

2.4 Patient monitoring in Post Anesthesia Care Unit

After anesthesia, a patient should be monitored in PACU until he or she has fully recovered from the anesthetic agent (Moro, Eduardo, 2009).There are indicators of recovery to include stable vital signs observations to include respiration, blood pressure and oxygen saturation. Consciousness, activity and level of pain are also assessed. The patient needs to be monitored closely to detect any deviation from the normal and deal with it promptly to prevent morbidity and mortality (Mcgrath and Chung, 2003).

There are measures used to determine suitability for discharge from PACU after post anesthesia monitoring. The patient needs to be hemodynamically stable with stable vital signs for 15-30 minutes. The patient needs to be well oriented and fully conscious before being discharged. This is an assurance that the effects of the anesthetic agents have worn off. There have been improvements of the level of post anesthesia care, though patients still develop complications. This calls for more to be done to prevent the complications (Doyle, Dahaba and Lemanach, 2018).

Patent airway is very vital for the post anesthesia patient. This is dictated by the fact that the patient was intubated to be given the general anesthesia. The patient must breathe spontaneously and the saturation level should be greater than 92% on room air, an indicator of adequate blood oxygenation. The patient' core body temperature should be more than 36 degrees centigrade (96.8 F) (Anesthetic *et al.*, 2017).

Post-operative nausea and vomiting is very common for most of the patients due to the effects of the anesthetic agents. This can have serious effects for example aspiration that will increase mortality and morbidity. There should be an antiemetic regimen in place if necessary (Royal Prince Alfred Hospital, 2010). Post-operative pain is very distressing to the patients and analgesic regimen should be in place so that the patient experiences tolerable levels of pain. All

these parameters must be observed and there should also be no active bleeding or apparent post-surgical complications (Moro, Eduardo, 2009).

Close monitoring of post anesthesia patients is vital to promptly manage any complications that may arise (Street *et al.*, 2015). The occurrence of complications is determined by the type of surgery, drugs administered during anesthesia, any comorbidity the patient has and preoperative assessment.

Patients are monitored more frequently during the first thirty minutes after admission to the PACU and the frequency of monitoring reduces as the patient is prepared to go back to the post-surgical ward or the next phase of PACU. The length of stay in PACU depends on several factors; including demonstrated recovery from anesthesia thus there is no specified time during which a patient must stay in the PACU. Documentation necessary for discharge to the ward must also be completed before the patient is discharged back to the ward (Margaret *et al.*, 2013).

Post-operative pain can have detrimental effect on patient's recovery. Pain should be relieved by the acceptable route which is injectable analgesics (Simpson, 2016). Other medications that may be administered post operatively include antihypertensive to control the blood pressure and antiemetic for post-operative nausea and vomiting. The vital signs have to be stable before discharge from PACU.

Patients are sometimes required to auto donate blood before surgery if their hemoglobin level is good. It is this blood that will be transfused to the patients in PACU. The blood products may be given to patients include plasma expanders that are administered while awaiting blood transfusion (Koh *et al.*, 2011).

For the complicated operations, or patients having comorbidities, post-operative monitoring should be done for longer to rule out any complications that may arise. The patients should

remain in PACU until the anesthesiologist is satisfied that the patient is stable to go to the post-surgical ward. Proper monitoring dictates the need of a standardized tool that is reliable (Galvão *et al.*, 2018).

2.5 Components of the Alderete's score chart

Alderete's score checks the readiness for discharge of patients to the post-surgical unit or recovery phase II. The original tool for scoring was used to gauge patient's consciousness, activity, respiration, and blood pressure. Dr. Alderete revised this tool in 1995 to include saturation of oxygen scores, which was lacking from the original tool (Dowling, 2015).

Each category has scores ranging from 0-2 with a maximum total score of 10.A score of 9 or 10 is required before a patient is discharged from the PACU (Anesthetic *et al.*, 2017).

Table 1: Alderete's Score Chart

POST ANESTHESIA CARE UNIT RECOVERY AND DISCHARGE SCORE				
MODIFIED ALDERETE SCORE:TICK WHERE APPLICABLE		SCORE		
PARAMETER	DESCRIPTION OF PATIENT		ADM	Discharge
Movement	Patient able to move all 4 extremities	2		
	Patient able to move 2 extremities	1		
	Patient not able to move	0		
Respiration	Patient can cough and breathe deeply	2		
	Patient has limited respiratory effort	1		
	Patient does not have any respiratory effort	0		
Blood flow(Blood pressure)	Systolic arterial pressure between plus or minus 20% of preanesthetic level	2		
	Systolic arterial pressure between plus or minus 20% to 50% of preanesthetic level	1		
	Systolic arterial pressure between plus or minus 51% or more of preanesthetic level	0		
Responsiveness	Patient wakeful and aware of where he is	2		
	Patient drowsy and aroused when called by name aloud	1		
	Patient does not respond at all	0		
Oxygen saturation as determined by pulse oximetry	Patient has oxygen saturation of more than 92% when breathing on room air	2		
	Patient needs supplementation of oxygen to maintain a saturation level more than 90%	1		
	Patient has a saturation level of less than 90% with oxygen supplementation	0		
	TOTAL SCORES			

2.6 Post-operative pain

Many patients undergo different types of surgeries every day and they experience pain which requires ongoing screening and assessment. National and international guidelines recommend that postoperative pain assessments are performed several times a day (Eriksson, 2017).

Pain assessment is important to individualize pain management to suite the requirements of each patient because pain is subjective and multidimensional. No two patients experience the same kind of pain even if they had the same surgery (Chatchumni, 2016).

Pain affects quality of patient's life and contributes to poor health outcomes (Potter, Williams and Williams, 2016). The amount of pain experienced by a patient after surgery is related to the extent of tissue damage or manipulation and the site of surgery.

Pain is associated with many problems. On the cardiovascular system pain leads to tachycardia, raised stroke volume, hypertension and hypoxia. Respiratory effects include initial hypocapnea then hypercapnea, hypoxia, hypoventilation and atelectasis (Article, 2016).

Endocrine effects of pain are catabolic and anabolic changes, fluid retention, and reduction in testosterone levels and decrease in insulin production. Pain raises blood glucose levels and this can complicate the patient's condition especially if he has diabetes mellitus (Al-Radhi, Akef and Al Khamis, 2018). Other people also experience the psychological effects of pain to include difficulty in concentration, loss of memory and confusion when the pain is severe (Hansen and Streltzer, 2005).

There are several predictors of post-operative pain. Patients who experience preoperative pain are at risk of developing post-operative pain (Baragwanath, 2003). Anxiety and fear of surgery and psychological stress contribute to post-operative pain. Type of surgery cannot be left out in these factors. Abdominal, thoracic, orthopedic and prolonged surgeries often lead to severe post-

operative pain and the patients need to be given strong analgesics (Chaturvedi and Chaturvedi, 2007). Female gender and the young patients also seem to have a high threshold of pain (Moro, Eduardo, 2009).

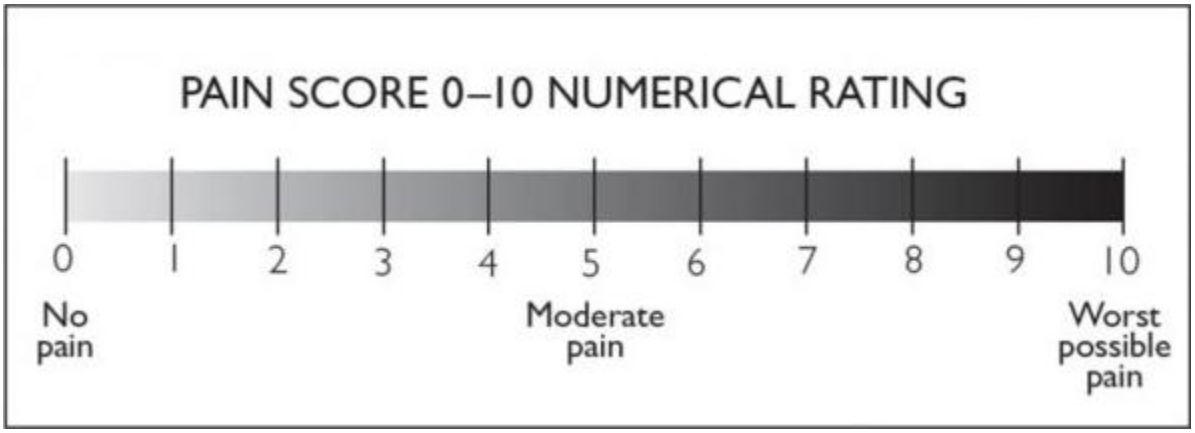
These factors should be identified early and prompt interventions be put in place to prevent post-operative pain. Prevention of post-operative pain begins during the preoperative preparation of the patient. Patient education is very important to avoid the postoperative problems (Ju *et al.*, 2018). Nurses need to be knowledgeable on pain assessment and management because they stay with the patients for the longest time (Zeb, 2019). With improving technology in anesthesia drugs free pain relief is being introduced(Doyle, Dahaba and Lemanach, 2018).

Although there are several protocols for the management of post-operative pain, they are not usually employed in the care of post-operative patients. A recent study done in United States of America showed that more than 80% of patients still experience post-operative pain (Meissner *et al.*, 2015). This is also true in our set up because pain perception is taken to be subjective and there are patients who may not be taken seriously when they complain of pain.

2.6.1 Pain rating scales

The most commonly used pain rating scale is the numerical rating scale that is designed for patients over the age of 9 years as shown in Figure 1 below. A scale of zero to ten is used to represent pain where zero is when there is no pain at all while ten is the worst pain experienced. For accuracy, the scale is used with a visual analogue.

Figure 1 : Numerical Pain Rating Scale



Wong-Baker faces pain scale that uses drawn faces to describe the level of pain is also used in children and adults who have developmental or communication problems. A set of six different facial expressions are diagrammatically represented and assigned numbers from one to ten. The patient is asked to show the facial expression that best represents the magnitude of the pain he/she is experiencing. This is illustrated in Figure 2 below.

Figure 2: Wong Baker Face Scale

There are other several pain rating scales used to assess the level of pain a patient is experiencing to include behavioral and CRIES pain assessment scales.

2.7 Factors hindering the utilization of Alderete's score chart

2.7.1 Staff related factors

Professional background of the care provider will affect the use of Alderete's score chart. This is to do with knowledge and skills of the healthcare providers that include the anesthesiologist and the PACU nurse (Afzal, Sehar and Gilani, 2018). Staffs that have the required knowledge and skills will be better placed to use the Alderete's score chart more effectively (Menlah et al., 2018). The knowledge can be acquired through training on the different components of the chart to improve on efficiency and effectiveness of utilization of the tool.

2.7.1.1 Intrapersonal factors

These include attitude and behavior of the staffs towards issues. There are those staffs that are least concerned and are negative towards any change or innovation. These staffs will not carry out proper monitoring of patients and will always have excuses as to why they are not doing what is expected of them. Proper monitoring of patients entails continually improving on knowledge and skills and also improving the monitoring tools used (Cancedda et al., 2015).

2.7.1.2 Cognitive processes

These are mental processes such as prioritizing of care and recall of information given during handing over. The PACU nurse should apply critical thinking while caring for the postoperative patient and this improves the quality of care offered (Kieft *et al.*, 2014). The anesthesiologist on the other hand should give a comprehensive report that the nurse can apply in caring for the patient.

2.7.1.3 Interpersonal factors

These include team behavior and dynamics of information transfer from one person to another (Abdel et al., 2017). The environment must be conducive to promote teamwork amongst the

healthcare providers so as to assure quality use of Alderete's score chart. Communication style of the anesthesiologist influences the quality of information transfer. The information given during handing over should be such that they are easily understood and the instructions followed easily without confusion, omission or any error. In case there is any doubt the nurse should seek clarification from the anesthesiologist before taking responsibility of the patient (Mosadeghrad, 2016).

There are several competing activities that require the staffs to multitask. The anesthesiologist may be faced with a situation whereby he is required in the operating theatre very fast to give anesthesia to another patient and this may affect the quality of handing over. The PACU nurses may be having several other patients to take care of thus affecting their monitoring and documentation of the observations of the postoperative patients. There is evidence that the workload affects the outcome of care delivered by nurses (Ball *et al.*, 2014)

2.7.2 Patient related factors

2.7.2.1 The type of surgery performed

This will dictate how the patient will be monitored post operatively. The major operations that take a long duration of time to be completed need to be monitored closely to detect any deviation from the normal and deal with it promptly. Efficient monitoring tools need to be employed to monitor these patients adequately (Abdel *et al.*, 2017).

2.7.2.2 Patients' demographic factors

These may affect the quality use of Alderete's monitoring tool in that difference in reaction to anesthetic agents call for diversification in care. For example the females and children are at a higher risk of prolonged postoperative pain ("Measuring Health Care Quality : An Overview of Quality Measures," 2014).

2.7.2.3 Patients' illness and presence of comorbidities

These will determine the length of stay in the PACU and also affect the use of Alderete's chart. For example the diabetic patients need their blood sugar levels to be stabilized before they are handed over to the postsurgical ward. These patients may need to stay in PACU longer (Kobayashi *et al.*, 2017).

2.7.2.4 Patient's intraoperative condition

This is the hemodynamic condition of the patient intraoperatively that will ultimately affect the postoperative management. Patients who require transfusion after significant loss of blood during surgery require closer monitoring when they are being transfused (Wiesmann *et al.*, 2014).

2.7.3 Institution related factors

Standard operating procedures (SOPs) should be in place to govern monitoring of post-operative patients. There should also be protocols and institutional adopted standardized information on handing over of patients. These provide guidelines to the staff on what they are expected to do. They are formalized written down procedures to govern operations (Luis Gomes Sambo, 2014).

The organization should provide tools and equipment necessary for the application of the monitoring tool. For quality care to be realized, the hospital must provide equipment necessary for operation for example pulse oximeter to measure the oxygen saturation and blood pressure machine for post-operative monitoring of patients (Cawich, Harding and Crandon, 2013). The documents necessary for monitoring patients should also be available.

Hospital policies facilitate adherence with recognized professional practices thus professional standards are maintained. This helps in avoiding omissions and commissions. The staff should operate in line with the required standards and regulations according to their governing body professional body that dictates their operation (Buerhaus *et al.*, 2007).

The hospital takes care of its resources. Human resource is one of them and the hospital can employ and deploy staff to cover where there are gaps thus leading to quality use of Alderete's chart to monitor post-operative patients. The problem of competing interests whereby nurses have several post anesthetic patients to take care of will be solved by having other nurses to supplement the care (Findings *et al.*, 2002).

There are also theatre organizational policies that govern the daily operations of operating theatres. They are important for the smooth operations in main theatres. They include clocking in registers, duty allocation, handing over registers, daily reports and drugs register. They are formulated according to the needs of the department and they are in line with the hospital policies. The policies should be revised and improved according to the needs (Evans, Bottomley and Newton, 2017).

2.8 Gaps in literature

Not many studies have been done on the utilization of Alderete's score chart. Studies available are on different monitoring tools for post anesthetic patients since there is no standard rule that post anesthesia monitoring tool has to be the same in all the institutions (Karakitsos *et al.*, 2014). In Kenyatta National Hospital the monitoring tool is new after it was introduced in May 2018 and this is the first study on the tool since its introduction.

2.9 Theoretical framework

2.9.1 Practice Partnership Model

In order to describe patients' safety during the post-operative period, the investigator proposes to adopt Practice Partnership Model according to Marjorie Splaine Wiggins. The model explains different aspects of care for the surgical patient to include working in partnership with care givers, proper communication amongst the team members and ensuring holistic patient centered care. Partnership care delivery model serves to unify healthcare and patient's safety which is a primary nursing goal (Jones and Donaldson, 2008).

The choice of the theory is guided by the fact that the theory applies directly to current nursing practice and the patient is at the center of the model. Surgical care is fragmented and can create errors and unsafe patient situations. The model can help promote patient safety and collaboration between different healthcare providers in order to improve patient care. Mutual collaborating should be observed amongst health care providers to include the surgeon, anesthesiologist, physician, nutritionist and other nurses (Moro, Eduardo, 2009). The model emphasizes teamwork to promote the wellbeing of the patient.

Patient's safety can be improved by proper handing over of report. The anesthesiologist should give a detailed and comprehensive report to the PACU nurse when handing over the post anesthesia patient. The nurse should apply nursing judgment and critical thinking when carrying out procedures and not only following written instructions from the doctors. The patient should be encouraged to be a partner in the care plan. He or she should actively participate in his or her own care. This enhances continuity of holistic care that will be provided after discharge from the post anesthesia care unit to ensure the patient does not develop complications (Street *et al.*, 2015).

2.9.2 Nursing process theory

Ida Jean Orlando in her nursing process theory principles describes effective interaction with the patient that lead to effective intervention (Jones and Donaldson, 2008). In post anesthesia care unit there is close monitoring of the patient and carrying out appropriate interventions to ensure that the patient does not develop complications. Jean Orlando depicts that nursing process be used as a tool for enhancing nursing care. On this study Alderete's score chart was introduced for monitoring patients after anesthesia to ensure that the patient does not develop complications (Safetynet, 2007).

Ida Jean Orlando describes that there has to be effective interaction for effective interventions to be realized. In PACU the nurse interacts with the patient through close monitoring in order to come up with the needs of the patient, then plan on the effective interventions in order to prevent complications. The patients may also come up with their needs through the mutual interaction and these are taken into consideration for a structured health care plan.

The theory depicts that professional nurses function in an independent role from physicians and other care providers (Locsin, 2015). In the post anesthesia care unit the nurse is charged with the responsibility of ensuring that the patients' needs are met through the dynamic relationship that exists between the patients and the nurses. The relationship brings about communication through the monitoring tool and the patients' wellbeing will be assured.

2.10 Conceptual framework

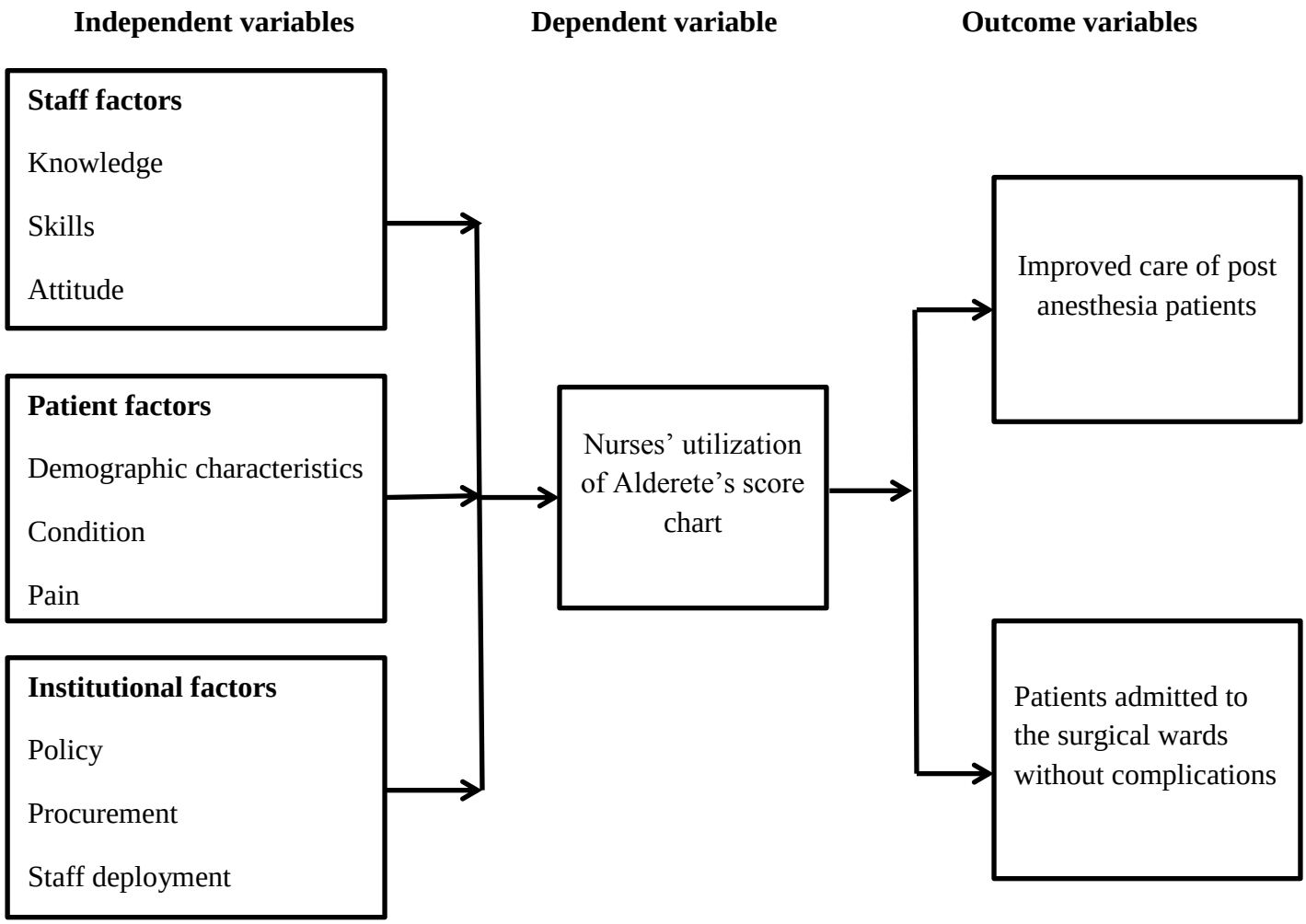


Figure 3: Conceptual framework

2.11 Definitions of variables

Independent variables in the study include staff factors, which are knowledge, skills and attitude. They also include patient factors, which are the general condition of the patient and presence of comorbidities. Institutional factors include the hospital policy that affects the operationalization of Alderete's chart in monitoring post anesthesia patients. Other institutional factors include procurement of equipment and supplies and also deployment of nurses.

The dependent variable is nurses' utilization of Alderete's score chart for monitoring post anesthetic patients recovering in post anesthetic care unit in main theatres. The intervening variables that affect the use of Alderete's score chart for monitoring patients include work load and patients' condition.

The outcome variables are improved post anesthetic care of patients and patients admitted to the post-surgical wards with no complications. This is after all the interventions have been put in place.

CHAPTER THREE: RESEARCH METHODS AND MATERIALS

3.1 Introduction

This chapter highlights the design and the methods used to carry out the research. The chapter begins by outlining the research design. This is followed by a description of the study site and study population then inclusion and exclusion criteria. Sample size determination is then outlined followed by sampling procedures. Data collection tools and procedures are then highlighted after which study variables are delineated. This is followed by a discussion of data analysis procedure, ethical considerations and data dissemination plan.

3.2 Research design

A descriptive cross sectional study was conducted on nurses working in the post anesthesia care unit of main theatres Kenyatta National Hospital. The research utilized both qualitative and quantitative research methods. The study design that was employed was explorative design since there is no study done on the topic. The study will therefore form a foundation for further research to be done on this area.

3.3 Study site

The study was conducted at Kenyatta National Hospital (KNH) main theatres in Post Anesthesia Care Unit. Kenyatta National Hospital is the largest and oldest public hospital in Kenya which serves as a regional referral hospital. It was founded as a native civic hospital in 1901and named King George Hospital. After independence the hospital was renamed Kenyatta National Hospital after the first president of Kenya who was President Jomo Kenyatta.

The hospital has a primary mandate of providing specialized health care services to patients, facilitation of medical training and research and participation in national health care planning and policy formulation. Apart from the specialized care services offered there are consulting

specialists dealing with different specialties. The hospital has a capacity of 1800 inpatients. However, due to congestion the patients' numbers can rise to as high as 3000 patients.

The hospital is located 3.5 Kilometers west of the city's central business district. There are 12 main operating theatres each theatre dealing with surgeries of different specialties. There are 24 specialized theatres in KNH and amongst these 12 are the main ones referred as Main Theatres. The specialties include pediatric, orthopedic, maxillofacial, ear nose and throat, nephrology, neurosurgery, reproductive health and general surgery. Elective surgeries are done from Monday to Friday while emergency surgeries are done round the clock. The study was carried out at the post anesthesia care unit of main theatres.

3.4 Study population

The study was carried out among nurses working in the post anesthesia care unit of KNH main theatres. On average 52 patients undergo surgery per day and the total number of nurses that take care of them in the post anesthesia care unit are seven nurses. The total number of nurses working in the main theatres is 90 nurses.

3.5 Inclusion and Exclusion criteria

3.5.1 Inclusion criteria

Nurses who had worked in main theatres for six months by the time of study.

Nurses who had consented to take part in the study.

3.5.2 Exclusion criteria

Nurses who were on leave or sick offs.

Nurses who were on night duty.

3.6 Sample size determination

The study was conducted in Main Theatres within a period of one month and the desired sample size was calculated using Fishers formula.

$$\mathbf{n} = \frac{\mathbf{Z^2(p)(q)}}{\mathbf{d^2}}$$

Where:

n= sample size (If the target population is greater than 10 000)

Z= the standard normal deviation at 95% confidence interval = (1.96).

P= the proportion in the target population estimated at to use Alderete's score chart. (Since no study has been done on these subjects 50% was used to determine the minimum sample size).

q=1-p

d= margin of error that was accepted in the study (+/- 5% or +/- 0.05)

The above formula substituted in figures:

Z= 1.96 (the standard normal deviation at 95% confidence interval)

d= 0.05(5%)

p= 0.5(50%)

q= 0.5(1-0.5)

$n = (1.96)^2 \times (0.5) \times (0.5) / (0.05^2)$

n =384.16= 384

Since the target population was less than 10,000 the sample size was adjusted using the Yamane's (1967) formula:

$$\mathbf{nf = n \div \frac{1+n}{N}}$$

nf =the desired sample size (where the population is less than 10,000)

n=the desired sample size (when the population is more than 10,000)

N=the estimate of the population size

Total number of nurses in main theatres=90 which is the target population.

Therefore nf= $384 \div \frac{(1+384)}{90} = 73$

The sample size or the study population was 73 nurses

3.7 Sampling interval

$$\textbf{Sampling interval} = \frac{\textbf{Total population}}{\textbf{Sample size}}$$

$$\frac{90}{73} = 1.23$$

Since sampling interval is approximately 1, all consenting PACU nurses were interviewed until the sample size was reached.

3.8 Sampling procedures

Systematic sampling method was used as the method of probability sampling. The nurses were all listed down on the first day of the study and the first nurse identified from the serialized list by the use of the table of random numbers. Every subsequent nurse in the continuing serialized list was included on daily basis until the sample size was obtained.

3.9 Data collection tools

Semi structured questionnaires were used to collect data. Questionnaires were administered to the nurses working in the main theatres to obtain data on the factors influencing utilization of Alderete's score chart. The key informant was also given a questionnaire to determine institutional related issues affecting the use of the monitoring tool.

3.10 Study variables

3.10.1 Dependent variable

Nurses' utilization of Alderete's scoring chart.

3.10.2 Independent variables

Staff related factors

Patient related factors

Institutional related factors

3.11 Validity of study tools

The study sought opinion of supervisors and members of the department to ascertain if the study instruments met the required standards. Study tool validity was based on their expert opinion and judgment on the clarity of the questionnaires. Expert nurses who were knowledgeable of what is expected of nurses working in PACU determined validity of data collection tools.

3.12 Reliability of study tools

Pretesting of the questionnaires was done at Maternity theatre PACU to eliminate chancing error thus ensuring reliability of the research tool. Reliability of data was also ensured by deploying research assistants who were experienced and knowledgeable on post-operative care of patients.

Questionnaires were also administered to the nurses for their response on various issues to determine quality of the monitoring tool.

3.13 Pre-test of study tools

The questionnaires were pretested at Maternity theatre PACU on eight nurses (10% of the study participants) in order to determine their reliability. This is because the Maternity theatre PACU has similar setting to Main theatres PACU. Adjustments were made on the questionnaires as necessary before they were used to collect data.

3.14 Data collection methods

Self-administered questionnaires were used to collect data from nurses and the theatre in charge to find out their level of experience and any factors affecting the use of Alderete's chart in monitoring post anesthetic patients. The investigator distributed the questionnaires to the nurses over a period of one month for four days a week.

Quantitative data was captured through closed-ended questions whereby the nurses selected the responses that closely matched their answers from the given options. The set of questions included multiple choice questions that allowed respondents to express a range of views and dichotomous questions with two options. Rating questions were also included in the questionnaires.

Qualitative data was obtained through open ended questions on the nurses' questionnaires and key informant's questionnaire. The open ended questions allowed the nurses to respond in their own words in narrative form and they also gave greater depth of information.

3.15 Data analysis procedure and presentation

Before analysis raw data was cleaned and checked for completeness. Quantitative data was analyzed using Statistical Package for Social Sciences (SPSS) version 20 database. Descriptive

analysis was done for the demographic variables using frequencies and percentages. Categorical data was subjected to inferential statistics using Pearson's Chi square to determine relationship between variables and the predicted estimates and P values of less than 0.05 which was statistically significant.

Qualitative data obtained from the open ended questions in the questionnaires were coded and reported narratively. Finally propositions and conclusions were made based on the patterns and relationship within the data. The results were presented in form of tables, pie charts and narrative texts.

3.16 Ethical consideration

Ethics clearance to conduct the study was obtained from the Ethics and Research Committee of University of Nairobi and Kenyatta National Hospital (ERC KNH-UoN). The nurses gave consent to take part in the study after introduction of the study. Importance and aim of the study was explained to the nurses for them to make an informed decision on whether to participate or not. Consent was also sought from KNH research committee and head of department anesthesia and theatres.

The nurses were assured of confidentiality by using anonymous data whereby the nurses could not be identified or linked to the responses given. There were no risks involved in the study. The information and the results obtained were to be shared with relevant authorities without revealing the names of those who gave information.

It was emphasized that participation in the study was on voluntary basis and the nurses could opt out at any stage of the study. Nurses were reminded that there were no monetary gains for participating in the study or penalty for declining to take part in the study.

3.17 Limitation and delimitation

The study findings may not be generalized to other health facilities because different hospitals use different monitoring tools for post anesthesia patients. Hawthorn effect was expected to occur and the subjects could change their behavior with the knowledge that they were being interviewed.

3.18 Data dissemination plan

The results of the study will be presented to the nurses working in post anesthetic unit of KNH Main theatres for evaluation purposes. Presentation of the study results will also be done to the management of Kenyatta National Hospital to inform on policy formulation. Presentation will be done to the panel of faculty members at the School of Nursing Sciences, University of Nairobi. The investigator desires to publish the study findings in a peer reviewed medical journal, share in scientific conferences and in Continuous Medical Education (CMEs) to improve on the quality of patients' care. The school will receive a copy for the other students to read so as to inform future studies through noted gaps**.**

CHAPTER FOUR: RESULTS

4.1 Introduction

This section reports on the findings of the study in regards to various aspects highlighted in the research objectives. The first part reports on the demographic characteristics of the nurses. The second section reports the staff related factors hindering the utilization of the Alderete's score chart followed by the patients' related factors then the institutional factors. The findings are presented using tables, charts, graphs and narratives. A total of 73 questionnaires were given out to nurses to complete on the utilization of Alderete's score chart. The nurse in charge of theatres was also given a questionnaire that highlighted institutional factors affecting utilization of Alderete's chart.

4.2 Demographic Characteristics of Participants

The frequency and percentage distribution of socio-demographic characteristics of the participants are presented under the following sub-headings.

4.2.1 Gender of respondents

The gender distribution of the participants was 56% (n=40) females while males comprised 45% (n=33) as shown in Figure 5 below. Female nurses were 11% (n=7) more than male nurses.

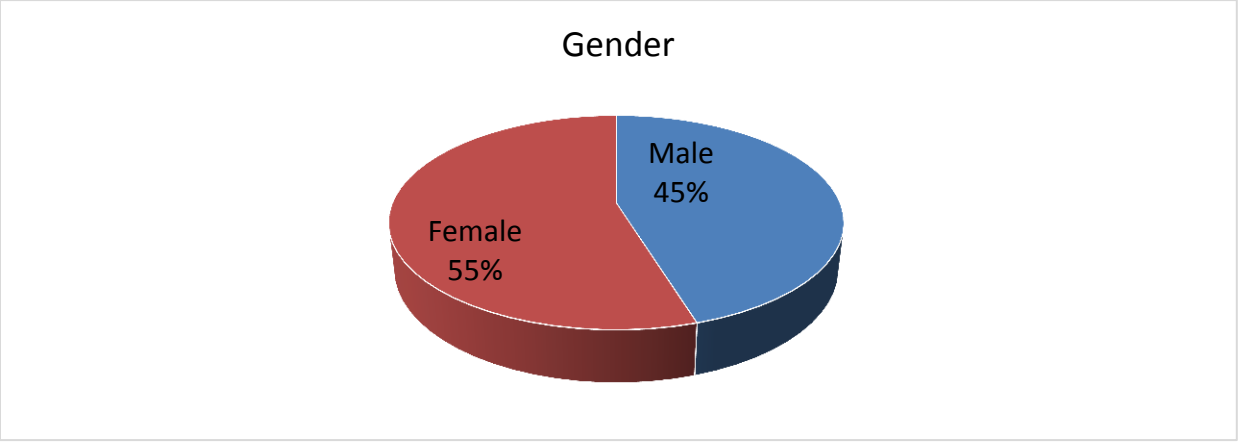


Figure 5: Distribution of respondents by gender

4.2.1.2 Association between gender and utilization of Alderete's score chart

There was no significant association between use of Alderete's score chart and gender at a P value of 0.306 as shown in Table 2. However of those using the Alderete's score chart, females were more likely to be 1.788 times more than those who did not use the chart.

Table 2: Association of use of Aldrete's score chart and gender

		Do you use the Alderete's score chart		
		Yes	NO	p-value
Gender	M	26	7	0.306
	F	27	13	
Risk Estimate				
		OR	95% Confidence Interval	
			Lower	Upper
Odds Ratio for Gender (M / F)		1.788	.616	5.188
For cohort Do you use the Alderete's score chart = Yes		1.167	.883	1.542
For cohort Do you use the Alderete's score chart = NO		.653	.295	1.445

4.2.2 Respondent age Distribution in years

In Table 3 below, most of the respondents were in the age bracket of 25-39 years 54.9% (n=39). Those who were aged between 40-49 years were 33.8% (n=24) while those aged between 50-59 years were 11.3% (n=8).

Table 3: Distribution of respondent's age

Age group in years	Frequency (n)	Proportion (%)	Mean age in years
25-29	14	19.7	38.27 (±8.77)
30-34	16	22.5	
35-39	9	12.7	
40-44	12	16.9	
45-49	12	16.9	
50-54	6	8.5	
55-59	2	2.8	
Total	71	100.0	

4.2.3 Marital status of respondents

Out of the 73 nurses who participated in the study majority were married 81% (n=58) followed by those who were single 18% (n=13) as in Figure 6 below.

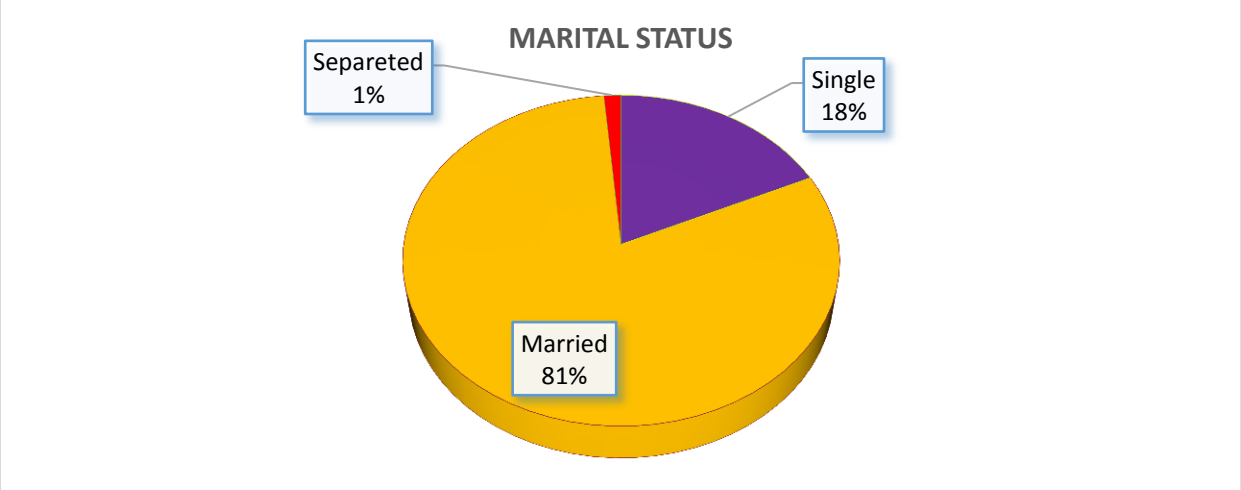


Figure 6: Distribution of Marital status

4.3 Nurses Experience and Education

4.3.1 Professional Qualification of respondents

As shown in Figure 7 below, the respondents had varying professional qualifications ranging from Masters to Diploma. Slightly more than a half of the respondents 52% (n=38) had diploma qualification, 23% (n=17) had higher diploma training in perioperative nursing (KRPON), 19%

(n=14) had BScN qualification, 4% (n=3) had KRN/M qualification while only one respondent 2% had attained Masters Qualification.

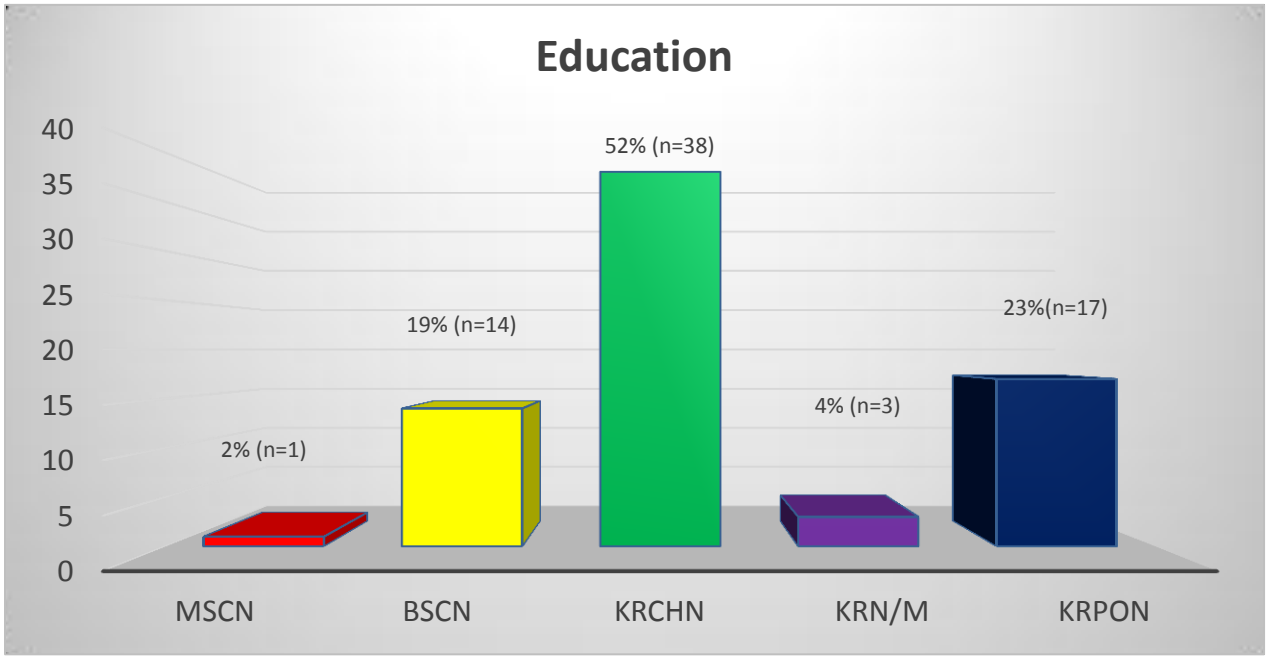


Figure 7: Distribution of respondents' professional qualification

4.3.2 Association of use of Alderete's score chart and level of training

There was no significant relationship between use of Alderete's score chart and level of training at P=0.210 as shown in Table 4 below. However 85.7% of BScN trained were able to use the chart followed by 82.4% of KRPON trained nurses. This implied that those with higher training (post basic diploma) understood the important of using the Alderete's chart more than the lower entry level nurses.

Table 4: Association of use of Alderete's score chart and level of training

		Do you use the Alderete's score chart		
		Yes	NO	p-value
Level of Training	MScN	1	0	0.210
	BScN	12	2	
	KRCHN	25	13	
	KRN/M	1	2	
	KRPON	14	3	

4.3.3 Years worked as a nurse

More than half 58% (n=42) of the nurses had worked for more than ten years, 16% (n=12) of the nurses had worked for more than five years, 19% (n=14) had worked for more than two years while only 7% (n=5) had worked less than two years. This implied that most of the nurses 93% (n=68) who participated in this study had worked for more than two years as illustrated in Figure 8 below.

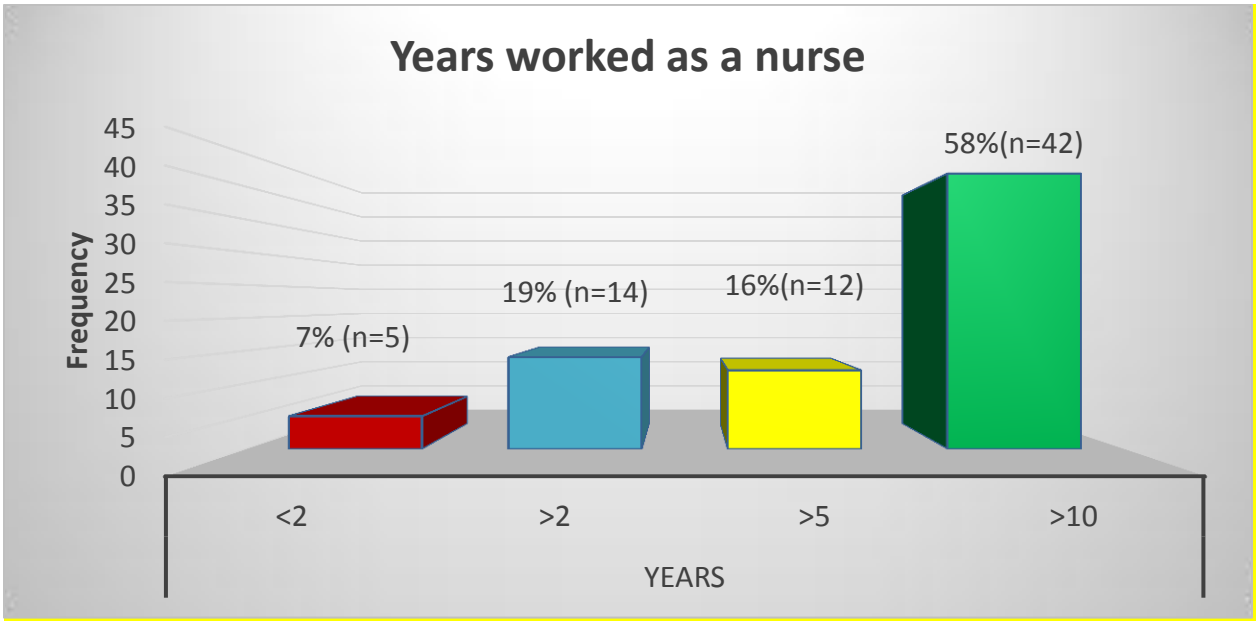


Figure 8: Distribution of respondents' years of work

4.3.4 Association of use of Alderete's score chart and years of experience as a nurse

There is no statistical significance in use of Alderete's score chart and respondents years of experience at P=0.072. The nurses utilized Alderete's score chart in monitoring post anesthesia patients regardless of the years of experience. This is shown in Table 5 below.

Table 5: Association of use of Alderete's score chart and years of experience as a nurse

		Do you use the Alderete's score chart		
		Yes	NO	P-Value
Years of experience as a nurse	<2y	4	1	0.072
	>10y	34	8	
	>2y	7	7	
	>5y	8	4	

4.3.5 Working Experience in Theatre

In regards to experience 26% (n=19) had worked for more than two years but less than or equal to 5 years followed by equal proportion of 25% (n=18) of nurses who had worked for <6 month and >5 years but less than or equal to 10 years respectively. The rest 24% (n=17) had worked for more than ten years in theatre as shown in Figure 9 below.

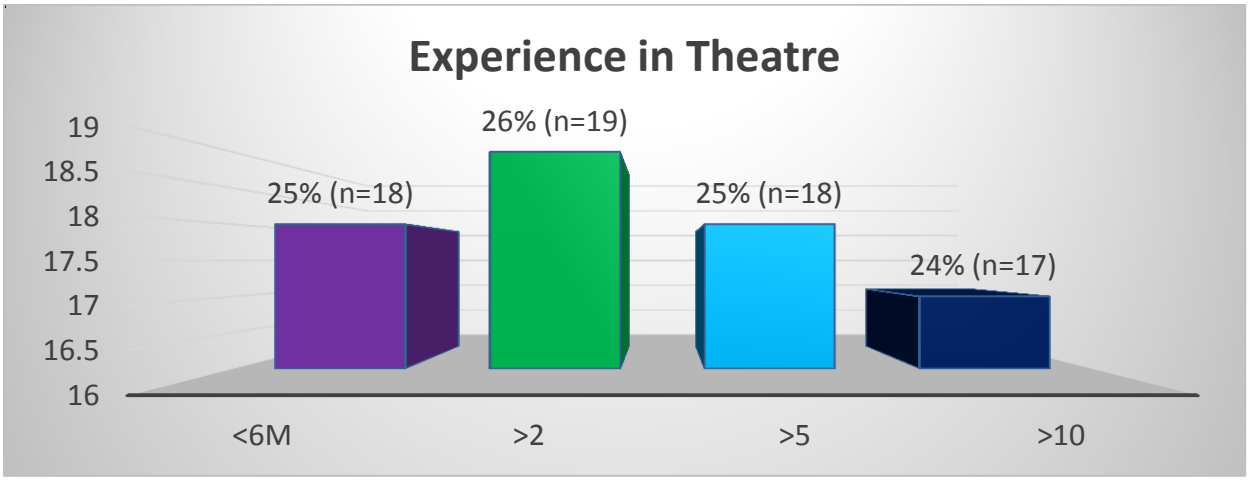


Figure 9: Distribution of respondent years of experience in theatre

4.3.6 Association of use of Alderete's score chart and years of experience in theatre

There is no statistical significance between the use of Alderete's score chart and the years of experience in theatre at p=0.290.Therefore all nurses were likely to use the Alderete's score chart regardless of the years they had worked in operating theatres.

Table 6: Association of use of Alderete's score chart and years of experience in theatre

		Do you use the Alderete's score chart		
		Yes	NO	p-value
Years of Experience in theatre	>10y	16	1	0.290
	>2y	13	6	
	>5y	13	5	
	<6m	10	8	

4.3.7 Perioperative Training

Only 41% (n=30) of the respondents had been trained as perioperative nurses while 59% (n=43) which is more than half had not been trained as perioperative nurses as shown on Figure 10 below.

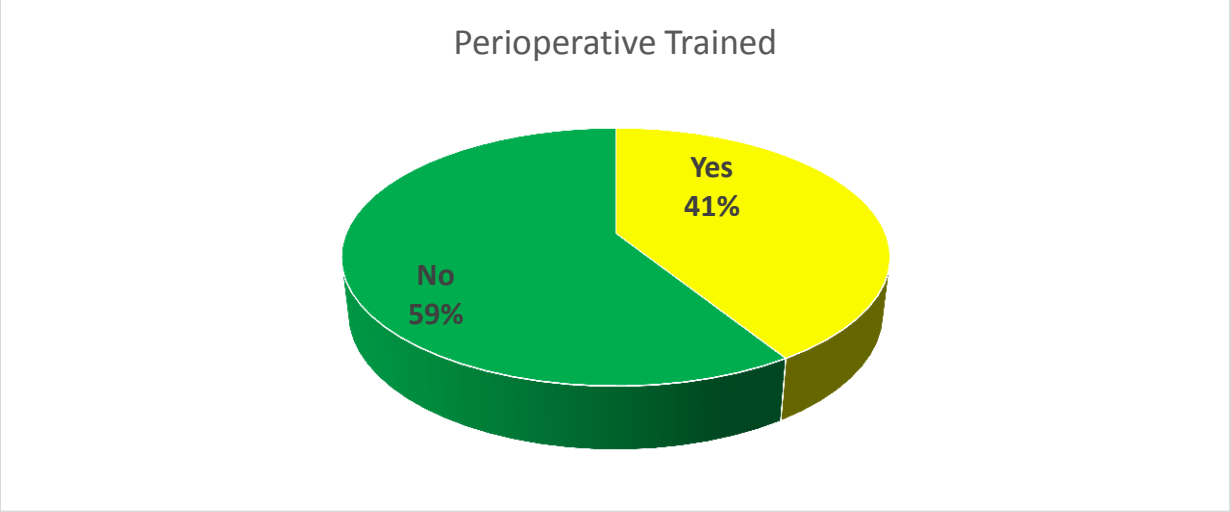


Figure 10: Proportion of perioperative training

4.3.8 Association of use of Alderete's score chart and training on perioperative nursing

As shown in Table 7 below, the association between use of Aldrete's score chart and perioperative training was not statistically significant at P=0.112. However nurses who used the score chart were 2.679 times more likely to have perioperative training than those who were not using the chart.

Table 7: Association of use of Alderete's score chart and training on perioperative nursing

		Do you use the Alderete's score chart		
		Yes	NO	P-Value
Perioperative nursing trained	Yes	25	5	0.112
	NO	28	15	

Risk Estimate			
	OR	95% Confidence Interval	
		Lower	Upper
Odds Ratio for Perioperative training (Yes / NO)	2.679	.851	8.433
For cohort Do you use the Alderete's score chart = Yes	1.280	.976	1.678
For cohort Do you use the Alderete's score chart = NO	.478	.195	1.173

4.4 Knowledge on Alderete's score chart

A large proportion of the respondents 85% (n=61) working in theatre had no training on the use of Alderete's chart as shown in Table 8 below. The respondents who had at least two hours of training in Alderete's score chart were 15% (n=11). However, 93% (n=53) used the chart to monitor patients post anesthesia despite lack of training on its use. Of those who used Alderete's charts 96% (n=51) understood when to fill in the chart and discharge the patient from post anesthesia care unit.

Table 8: General Knowledge on Alderete's score chart

	Participant understanding of Alderete's score chart	Yes	No
1	Have you had any training on the use of Alderete's score chart?	15% (n=11)	85% (n=61)
2	Do you use the Alderete's chart to monitor post anesthesia patients?	73% (n=53)	27% (n=20)
3	Does the patient condition affect the use of Alderete's chart?	39% (n=27)	61% (n=42)
4	Does the time taken to fill the chart affect the performance of other nursing procedures?	18% (n=13)	82% (n=60)
5	Is there any improvement that can be made on the chart?	24% (n=16)	76% (n=52)

4.4.1 Association of uses of Alderete's score chart and whether patient's condition affects its use.

Use of Alderete's score chart and whether patient's condition affects its use was not statistically significant at P=0.565. However, those who used the chart were 1.561 times more likely to say that patient's condition affects use of the chart than those who did not use the chart.

In regards to whether the condition of the patients affected the use of Alderete's score chart, 61% (n=42) respondents said NO while 39% (n=27) respondents said YES. Some of the arguments of those who said no were that pain perception differs in every individual and the use of spinal anesthesia limits the rating of pain. They also argued that very sick patients needed close monitoring as per the post-operative doctor's instruction as compared to patients who were stable post anesthesia.

Table 9: Association of use of Alderete's score chart and whether patient's condition affects its use

		Do you use the Alderete's score chart		
		Yes	NO	P-Value
Does patient's condition affect its use	Yes	22	5	0.565
	NO	31	11	
Risk Estimate				
		OR	95% Confidence Interval	
			Lower	Upper
Odds Ratio for Does patient's condition affect its use (Yes / NO)		1.561	.475	5.132
For cohort Do you use the Alderete's score chart = Yes		1.104	.856	1.424
For cohort Do you use the Alderete's score chart = NO		.707	.276	1.810

4.4.2 Association on use of Alderete's score chart and its effects on nurses performance

Regarding whether other nursing procedures are affected during the completion of chart, 82% (n=60) reported NO meaning that other nursing procedures were not affected by filling in the Alderete's score chart. On average the nurses reported using less than three minutes to complete the chart. However 19% (n=13) felt that the completion of the chart could affect other nursing procedures especially when there were more patients to be monitored in a poor nurse to patient ratio in PACU. This information is given in Table 10 below.

Table 10: Association on use of Alderete's score chart and its effects on nurses' performance

		Do you use the Alderete's score chart		
		Yes	NO	P-value
Does it affect your performance	Yes	10	3	1.000
	NO	42	14	
Risk Estimate				

	OR	95% Confidence Interval	
		Lower	Upper
Odds Ratio for Does it affect your performance (Yes / NO)	1.111	.267	4.620
For cohort Do you use the Alderete's score chart = Yes	1.026	.734	1.432
For cohort Do you use the Alderete's score chart = NO	.923	.310	2.749

4.4.3. Association on use of the Alderete's score chart and need for its improvement

Table 11 below indicates that majority of the respondents 76% (n=52) acknowledged that there was no need to improve the chart as compared to 24% (n=16) who reported that the chart needed some improvement such as improvement on monitoring of non-invasive blood pressures and assessment of surgical site. They also felt that a digital kind of monitoring was better and more accurate.

Table 11: Association on use of Alderete's score chart and need for its improvement

		Do you use the Alderete's score chart		
		Yes	NO	P-value
Any improvement on the chart	Yes	14	2	0.323
	NO	38	14	
Risk Estimate				

	OR	95% Confidence Interval	
		Lower	Upper
Odds Ratio for Any improvement on the chart (Yes / NO)	2.579	.519	12.816
For cohort Do you use the Alderete's score chart = Yes	1.197	.934	1.534
For cohort Do you use the Alderete's score chart = NO	.464	.118	1.830

4.4.4 Association on use of Alderete's score chart and Alderete's score chart training

There was significant statistical evidence at P=0.028 that the use of Alderete's score chart depends on the training of staffs on its use as evidence in the odds ratio showed that those nurses using the Alderete's score chart were 1.488 times more likely to have been trained on the use of the chart than those who were not trained on its use. This is shown in Table 12 below.

Table 12: Association on use of Alderete's score chart and Alderete's score chart training

		Do you use the Alderete's score chart		
		Yes	NO	P-Value
Any training on Alderete's chart	Yes	11	0	0.028
	NO	41	20	
Risk Estimate				
		OR	95% Confidence Interval	
			Lower	Upper
For cohort Do you use the Alderete's score chart = Yes		1.488	1.249	1.773

4.4.5 Pearson correlation of variables

Table 13: Pearson Correlation of the variables

Correlations												
		1	2	3	4	5	6	7	8	9	10	11
Pearson Correlation	1	1.000										
	2	.168	1.000									
	3	-.083	-.269	1.000								
	4	-.064	-.184	.552	1.000							
	5	-.078	-.223	.747	.754	1.000						
	6	-.196	-.328	.646	.417	.589	1.000					
	7	.150	.094	-.260	-.429	-.370	-.259	1.000				
	8	.221	.075	-.223	.042	-.156	-.286	.183	1.000			
	9	.131	.014	.141	-.077	.081	.051	.039	.083	1.000		
	10	.127	.120	-.175	.019	.000	-.189	.135	.438	.141	1.000	
	11	.194	.195	-.026	.044	-.112	-.154	.135	.099	.091	.176	1.000

Key
1= Do you use the Alderete's score chart
2= Gender
3= Age
4= Marital status
5= Years of experience as a nurse
6= Years of experience in theatre
7= Perioperative trained
8= trained on use of Alderete's score chart?
9= Does patient's condition affects its use?
10=Does its use affects nurses performance?
11= Is there need for any improvement on the monitoring tool?

4.5 Nurses attitude and perception towards hospital Support

The nurses had positive attitude and perception on support the institution was giving with regards to the use of Alderete's score chart within the hospital as demonstrated in Table 14 below.

Table 14: Attitude and perception of respondents towards hospital support

	Strongly Agree %(n)	**Agree %(n)**	**Neutral %(n)**	**Disagree %(n)**	**Strongly disagree %(n)**
Alderete's score chart should be used in monitoring Post anesthesia patients	66%(47)	25%(18)	6%(4)	1%(1)	1%(1)
All theatre nurses should to be trained on the use of Alderete's score chart	79%(56)	18%(13)	0	1%(1)	1%(1)
It should be mandatory for nurses to monitor patients using the Alderete's chart	34%(21)	44%(27)	15%(9)	5%(3)	2%(2)
I am confident in using the chart	27%(16)	32%(19)	27%(16)	12%(7)	2%(2)
I understand the components of Alderete's score chart	27%(16)	12%(7)	4%(3)	51%(36)	8%(6)
There is adequate time to monitor patients using Alderete's chart	12%(9)	36%(26)	26%(19)	19%(14)	7%(5)
Monitoring patients using Alderete's chart is cumbersome	6%(4)	23%(16)	7%(5)	49%(34)	16%(11)
More emphasis should be put by the hospital to use Alderete's Chart	41%(29)	46%(32)	7%(5)	4%(3)	1%(1)
Hospital is supporting use of Alderete's chart by availing tools and equipment's needed.	34%(24)	27%(19)	15%(11)	15%(11)	8%(6)
Shortage of nurses hinders the use of Alderete's chart in the hospital	51%(36)	30%(21)	6%(4)	6%(4)	8%(6)

Most of the study participants 66% (n=47) strongly agreed with the hospital policy on the use Alderete's score chart to monitor post anesthesia patients with another 25% (n=18) agreeing with the same statement. However 6% (n=4) did not agree or disagree with the statement as another 2% (n=2) disagreed with the statement. A large number 97% (n=69) agreed that all theatre nurses should be trained on how to use the score chart and it should be mandatory for all nurses to monitor post anesthesia patient using the chart as evident by 78% (n=48) who supported the statement in the table 6 above. Despite lack of training, 59% (n=35) of the study participants still believed that they had confidence using the chart. However 41% (n=24) had no confidence using the chart. Of note was that more than half of the participants 59% (n=42) did not understand the components of Alderete's score chart and a further 4% (n=3) of the participants were not sure of whether they understood the components or not. Most of the study participants were also positive that use of the chart was not cumbersome as 65% (n=45) disagreed with the statement. Though the hospital supported the use of Alderete's score chart, more emphasis should be put by the hospital in improving the number of nurses as shortage of nurses had been identified as hindrance to use of the score chart.

Table 15 below gives a mean of 9.32 (±3.641) for patients taken care of by a nurse at any given shift and out of that 5.23 (±3.438) are adults who have undergone general anesthesia.

Table 15: Patient to nurse ratio per shift and Average number of adult patients on general anesthesia

	Number of patients cared for per shift	On average how many are adults on general anesthesia
Mean	9.32	5.23
Std. Deviation	3.641	3.438
Minimum	3	1
Maximum	20	17

4.6 Respondent perceived factors that affect compliance to the use of Alderete's score chart

Staff related factors were the leading among the perceived factors affecting compliance on the use of Alderete's score chart 23% (n=16). Among the identified staff related factors were staff lack of knowledge and training on how and when to use the chart this was also evident on the number of respondents who have been trained on Alderete's score chart 15% (n=11). Poor nurse to patients' ratio was also mentioned as factor together with shortage of nurses per shift. The negative attitude of the nurses on the use of the chart also contributed to factors that affected its use. Some respondents 29% (n=20) believed that the use of the chart was time wasting and cumbersome for them. Institutional related factors 60% (n=42) identified by the respondent were lack of the charts 48% (n=29), followed by lack of enough monitors to monitor patients continuously in PACU 29% (n=18). This made it difficult to fill the chart. The institution has also failed to provide the adequate number of staff to improve on the ratio of nurse to patient which ought to be one to one. The average number of patients taken care of by one nurse per shift is estimated at between 6 to 13 patients. As per patient related factors 17% (n=12), the following were identified as the key issues that affected compliance on Alderete's score chart. Patients' age together with the mode of anesthetic agent used during surgery were identified to affect the use of the chart. In addition, the duration and nature of the surgery could also affect the use of the chart. The number of patients in PACU at any particular time would also affect the use of the chart. Lastly the pain perception of each patient was also viewed as a factor that affected the use of the chart.

4.7 Key Informant response

The key informant's questionnaire (see appendix III) confirmed that there was a hospital policy which was developed in the year 2018 governing the use of Alderete's score chart. She indicated that the policy should be followed by all nurses working in post anesthesia care unit while monitoring and discharging patients back to the wards. However she also reported that there were times when some patients were discharged back to the ward without the chart having been completed. This implied that some nurses were not observing the hospital policy on the use of the chart. She indicated that the situation usually involved nurses who worked inside the operating rooms whenever they were allocated in PACU. To overcome this, the department resolved to use education, experience and interest in allocating nurses in the respective areas of work including PACU.

CHAPTER FIVE: DISCUSSION, CONCLUSION AND RECOMMENDATIONS

5.1 Introduction

This section presents a discussion on the findings of the study and relates the finding to the research questions. In the first section the demographic characteristics of the respondents are discussed. In the second section is a discussion on staff related factors that affect compliance on use of Alderete's score chart. The third section represent a discussion on patients related factor affecting compliance while the fourth section discusses the institution factors affecting compliance on use of Alderete's score chart. The final section is comprised of conclusions and recommendations.

5.2 Respondents' socio demographic characteristics

From the study findings there were more females than males. This is due to the fact that nursing is still a female dominated profession. According to the Kenya nursing workforce report of the year 2010, the newly qualified nurses that were registered on the Nursing Council of Kenya register comprised of 73.9% females and 26.1% males (Martha Rogers, 2012). The statement confirms that there are more female nurses than male nurses in the workforce. According to a study done by Katrina et al (2010) on gender roles and completion of nursing education, there was poor enrolment of the males. It was also clear that more males were likely to leave the course than their female counterparts (McLaughlin, Muldoon and Moutray, 2010).

The mean in the participants' age in years was 38.27. This is similar to the report of health work force in Kenya done in 2015 that showed that 58% of all healthcare workers are aged 41 years and over suggesting an aging health workforce. This was attributed to the fact that there was low employment, healthcare workers were moving to other countries for better remuneration and lack

of replacement for those who retire or die (Locsin, 2015). The issues of workforce lead to staffs shortage which is seen to be also agreeing with a report on Sub Saharan Africa workforce that came up with the same problems (Al-Radhi, Akef and Al Khamis, 2018).

5.3 Staff related factors affecting Alderete's score chart compliance

Professional background of the care provider did not affect the use of Alderete's score chart and most of the nurses were using Alderete's score chart regardless of their professional qualifications. However those with higher professional qualification used the chart more than those with lower professional qualification. This is similar to a study done by Renate et al (2014) that stated that nurses must gain autonomy of their own experiences and this can be achieved through higher education (Kieft *et al.*, 2014). Staffs that have the required knowledge and skills will be better placed to use the Alderete's score chart more effectively.

Nurses were utilizing the Alderete's chart yet more than half of them did not understand the components well. The nurses cannot use the chart appropriately if they do not understand the components and this will compromise the post anesthesia care being offered.

In regards to use of Alderete's score chart and years of experience, there was no statistical significance. This may be attributed to the fact that the monitoring tool was introduced two years ago yet most nurses had worked in Main Theatres for over two years.

On whether other nursing procedures were affected during completion of Alderete's score chart, majority of the nurses reported that they were not affected. The nurses gave the reason that poor ratio of nurses to patients contributed to this problem when a nurse had so many patients to take care of. A research done on impact of nurses shortage on patient care concluded that shortage of nurses led to stressful hospital environment (Buerhaus et al., 2007). This is the same as the finding that the nurses observed shortage to be a factor that affected the delivery of health care.

Concerning suitability of the chart and whether there was need for improvement, many respondents reported that the chart needed some improvement. The parameters that were suggested were noninvasive blood pressure monitoring, assessment of the operation site and digital monitoring of temperature. According to a research done by Fredric Michard post-operative complications are a burden to the economy and there is need to continually improve the monitoring tools (Evans, Bottomley and Newton, 2017). This study is also in line with post-operative remote monitoring that acknowledged need for improvement of equipment (McGillion *et al.*, 2018).

On the association of the use of Alderete's score chart and training on the use of the chart, there was significant statistical evidence that most of the nurses using the tool were most likely to have been trained. Training is important for healthcare providers to embrace the best practices and to continually improve on the services offered to patients (Cancedda et al., 2015). Training on a new tool that has been introduced to improve care is very important to make the staff familiar with the tool and understand the components. It also helps the staff to acquire the basic skills needed to use a certain instrument and puts them at a higher level in terms of knowledge and skills thus helping them in avoiding errors and omissions (Kyriacos, Jelsma and Jordan, 2014). This statement agrees with a research carried out to determine the factors that influence the quality of health care service quality by Ali Mohammad whereby he stated that training of staffs is very vital (Mosadeghrad, 2016).

Nurses utilized Alderete's score chart to monitor post anesthesia patients because it made their work easier avoiding duplication of documenting on the patients' cardexes, observation charts and anesthetic charts that was there before introduction of the tool. The chart was also simple and easy to complete ensuring efficiency especially when the patients in PACU were many.

5.4 Patient related factors affecting Alderete's score chart compliance

According to the study findings many respondents said that the patient's condition did not affect the use of Alderete's score chart for monitoring post anesthesia patients. However other nurses felt that very sick patients needed close monitoring as per the post-operative doctor's instructions as compared to patients who were stable post anesthesia. According to Bigony "Is your patient ready for discharge", all patients should be monitored closely especially the very sick since they are at great risk of developing complications (Bigony, 2012). Therefore the issue of not utilizing Alderete's score chart because a patient is very sick should not arise.

From the study findings another reason given for the patient related factors affecting the use of Alderete's score chart was that pain perception differs in every individual making it difficult to assess for pain objectively. This was in agreement with a study done by Kerstin Eriksson (2017) where the findings indicated that patients had diverse experiences to pain (Eriksson, 2017). Pain is an important parameter to be monitored and managed during the post anesthesia period even though reports indicate that patients still reported poor management of pain (Skraastad *et al.*, 2017). This can lead to serious complications that increase mortality and morbidity and straining the resources through prolonged hospital stay. This is similar to a study done by Meissner, Coluzzi, Morlion and Pergolizzi that concluded that poor management of pain may lead to serious medical complications (Meissner *et al.*, 2015).

The condition of patients in PACU did not affect utilization of Alderete's score chart because the chart was suitable for monitoring all kinds of patients regardless of the age or the condition of the patients. Therefore the chart was suitable for monitoring all kinds of patients.

5.5 Institutional related factors affecting Alderete's score chart compliance

The nurses believed that the hospital was supporting the use of Alderete's score chart. It is vital for an institution to support various innovations aimed at improving the quality of care offered to the clients (Royal Prince Alfred Hospital, 2010). This is similar to the findings of a study done by Aiken, Clarke and Sloane that concluded that hospital support for the nurses was key to quality health care (Findings et al., 2002). The findings were in contrast to a study by Laura Dowling on Alderete's Discharge Scoring whereby the nurses did not know that a policy on utilization of Alderete's score chart existed (Dowling, 2015).

Standard operating procedures should be in place to support the operations of any institution for uniformity and for accuracy of performance. From the study there is a policy governing the use of Alderete's score chart even though it is not followed by all the staffs. This is similar to a study done in Cambridge United Kingdom where it was concluded that staffs do not follow policies entirely because of individual preferences and institutional factors (Shah et al., 2015).

On the perceived factors that affect compliance on the use of Alderete's score chart, staff shortage was the leading cause. This is similar to a study done by Redfern, Ball and Briggs on "Care left undone" who concluded from the study findings that low nurse staff levels are a reason of care left undone (Ball et al., 2014). It is the duty of the institution to ensure that there are enough nurses to perform a given task or perform the expected duties (Cawich, Harding and Crandon, 2013).Staff shortage can lead to complications since the patients do not receive the close monitoring required post anesthesia (Street et al., 2015).

It also came out that at times the staffs experience shortages of supplies necessary for monitoring patients, for example shortage of the Alderete's score charts. The staffs are therefore not able to adequately monitor the patients if the charts are not available. The equipment are at times not adequate for the many patients who need monitoring and this was one of the reasons given by the

respondents as a hindrance to not using the post anesthesia monitoring tool. This is similar to a study done by Ali Mohammad Mosadeghrad who concluded that the quality healthcare is realized by availability and management of resources (Mosadeghrad, 2016).

Shortage of staff and supplies hindered the nurses from effectively utilizing the Alderete's score chart. Therefore implementation of the hospital policy governing utilization of Alderete's score chart could not be realized at all times.

5.6 Conclusion

Based on the findings of this study the researcher draws the following conclusions;

Most nurses were using Alderete's score chart for monitoring post anesthesia patients, regardless of their professional qualifications even though the higher levels of professional proficiency were using the tool more than the lower levels. Most of them had not been trained on the utilization of Alderete's score chart and could not use it effectively since they did not understand the components of the chart.

The patients' condition did not affect utilization of Alderete's score chart. It was utilized for monitoring all patients regardless of condition after anesthesia or other demographic characteristics. However it was difficult to score the patients' pain threshold due to the dynamic nature of pain and anesthetic agents used.

There was a policy governing the utilization of Alderete's score chart even though it was not observed by all nurses at all times. There were also instances where the nurses were not able to utilize the monitoring tools because the charts were not available. Shortage of nurses also hindered effective monitoring of patients using Alderete's score chart.

5.7 Recommendations

Alderete's score chart is an important measuring tool after anesthesia and it should be mandatory for all the nurses to use the tool in order to improve patients' outcome after surgery.

All nurses should be trained on the use of Alderete's score chart as this will improve compliance on its use.

The hospital needs to improve on the nurses ratios in PACU to improve monitoring of the post anesthetic patients.

There should be adequate supply of equipment, machines and all the necessary charts required in the post anesthesia care unit.

The nurses are using the Alderete's chart for monitoring patients, however various aspects of improvement of the tool should be looked into in order to make the tool more suitable.

The investigator recommends further studies on the factors that affect the compliance to Alderete's score chart in other theatres in KNH to get the full picture.

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APPENDICES

APPENDIX I: INFORMATION ON PROCEDURE FOR GIVING CONSENT

TITLE OF STUDY: Evaluating nurses' utilization Alderete's score chart in monitoring of patients in the post anesthesia care unit at Kenyatta National Hospital.

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University of Nairobi.

Hello,

My name is Roselyne A. Odundo, a Master of Science in nursing student at the school of Nursing Sciences, University of Nairobi. I am conducting a research on**: "Evaluating nurses' utilization of Alderete's score chart in monitoring of patients in the post anesthesia care unit at Kenyatta National Hospital".** The purpose of this study is study is to assess the use of Alderete's score chart used for monitoring post anesthetic patients. I am requesting you to participate in the study. You will be required to complete a questionnaire which will take you not more than (30 min) minutes. I am requesting you to complete the questionnaire as honestly and openly as possible.

Confidentiality

Your name will not appear on the questionnaire. Whatever you write will be treated confidentially and will only be between me and you. At no time will you be identified by name or your opinion shared with anyone else.

Risks

There are no perceived risks for your participation in this study. However if a question makes you uncomfortable, you may decide not to answer it.

Voluntary participation

Participation in this study is voluntary. You are free to decline or withdraw from the study any time. Refusal to take part will not attract any penalty. You retain the right to withdraw from the study without any consequences.

Participation or non-participation does not come with any financial cost. Equally, there is no compensation for participating in the study.

Information dissemination plan

The results of this study will be presented to the nurses working of Main theatres KNH and the management of Kenyatta National Hospital to aid in development of policies on Alderete's score chart which will help in the improvement of patient care. Relevant stakeholders will use the study for examination purposes while publication and abstract presentation will be for scientific use. The means of disseminating the results will be group briefings at the KNH Main theatres.

Contact person

Please contact the following people if you have any questions or concerns about the content of this study.

Name and role	**Institution**	**Contact**
Roselyne Odundo (primary investigator)	**University of Nairobi School of Nursing**	**0725224244**
Dr Eunice Omondi (lead supervisor)	**University of Nairobi School of Nursing**	**euomondi@hotmail.com**
Dr Blasio Omuga	**University of Nairobi School of Nursing**	**mitenga@yahoo.com**
The Secretary Ethics and Research committee	**KNH-UON ERC**	**Tel no:020 2726300 Ext: 44102 Email:uonknh_erc@uonbi.ac.ke**

Consent confirmation form

I have read the foregoing information, and I have had the opportunity to ask questions about the study. And any questions I have asked have been answered clearly and to my satisfaction. I do therefore agree voluntarily to participate in this study and understand that I have the right to withdraw from the study at any time without attracting penalties in any way.

Signature of participant …….. Date……...

Researcher's statement

I the undersigned have fully explained the relevant details of this research study to the participant named above and believe that the participant has fully understood and has freely given his/her consent.

Researcher's name……Signature…….Date……..

Role in the study…….

APPENDIX II: QUESTIONNAIRE FOR NURSES

Questionnaire for the research ‘ Evaluating nurses’ utilization of Alderete’s score chart in monitoring of patients in the post anesthesia care unit at Kenyatta National Hospital.’

Instructions

- Read and sign the attached consent form before filling in this questionnaire. Do not write your name on the questionnaire.

The questionnaire has sections A to D. Fill all sections.

- Indicate the most appropriate answer for sections A to C by circling.
- For section D tick the choice that best describes your feelings on nurses’ attitude and hospital policy on Alderete’s score chart.

Section A: Demographic factors

1. Indicate your gender

    a) Female

    b) Male

2. What is your age in complete years?.....

3. What is your marital status?

    a) Single

    b) Married

    c) Divorced

    d) Separated

Section B: Nurses' experience and education

4. What is the level of your training?

a) MScN

b) BScN

c) KRCHN

d) KRN/M

e) KRPON

5. How long have you worked as a nurse?

a) Less than 2 years

b) >2 years

c) >5 years

d) >10 years

6. How long have you worked in Main theatres?

a) Less than 6 months

b) >2 years

c) >5 years

d) >10 years

7. Have you trained as a perioperative nurse?

a) Yes

b) No

8. If Yes in 7 above, indicate the year of completion of perioperative nursing training…….

9. Have you had any training on Alderete's score chart since you qualified as a nurse?

a) Yes

b) No

10. If Yes in 9 above, please indicate the year you were trained. Year trained……

11. If yes in 9 above, please indicate the length of time covered in training in hours. No of hours covered……..

Section C: General questions about Alderete's score chart

12. Do you use the Alderete's score chart in monitoring post anesthetic patients?

a) Yes

b) No

13. If Yes above, at what stage do you fill it? .....

14. How many patients do you care for per shift? .....

15. Amongst these patients how many are adults who have undergone general anesthesia? .....

16. Does the patient's condition affect the use of Alderete's chart?

a) Yes

b) No

17. If Yes above specify how patient's condition affect the use of the chart……
……
……

18. On average how long does it take you to complete filling the Alderete's score chart? .....

19. Does the time taken to complete filling the Alderete's score chart affect the performance of other nursing procedures?

a) Yes

b) No

20. If Yes above, please specify how…….

..……

……

21. Is there any improvement you think can be made on Alderete's score chart?

a) Yes

b) No

22. If Yes above, what improvement can be made? Please explain

……

……

……

23. What are the factors affecting the use of Alderete's scoring chart to monitor post anesthetic patients?

……

……

……

24. How has Alderete's score chart improved the monitoring of patients?.....

.....

.....

.....

Section D: 25. Nurses' attitude and perception towards hospital support

Please indicate your rating by ticking your best choice

NOs		Strongly agree	Agree	Neutral	Disagree	Strongly disagree
1	Alderete's score chart should be used in monitoring post anesthetic patients					
2	All theatre nurses should be trained on the use of Alderete's score chart					
3	It should be mandatory for nurses to monitor patients using the Alderete's score chart					
4	I feel confident on my ability to use the Alderete's score chart					
5	I understand the components of Alderete's score chart					
6	I have adequate time to monitor patients using Alderete's score chart					
7	I find monitoring of patients using Alderete's score chart cumbersome					
8	The hospital should emphasize the use of Alderete's score chart					
9	The hospital supports the use of Alderete's score chart by availing tools and equipment needed					
10	Shortage of nurses in the hospital is a hindrance to the use of Alderete's score chart					

APPENDIX III: KEY INFORMANT'S QUESTIONNAIRE

1. How many shifts do nurses work?

.....

2. How long is each shift?

……..

3. How many nurses work per shift?

.....

……

4. What criteria do you use to allocate nurses in different areas?

.....
.....
.....

5. Is there any hospital policy governing the use of Alderete's chart?

Yes…….

No……..

6. If yes, when was it developed? .....

7. Is it followed by nurses?

All nurses……..

Some nurses……..

None of the nurses……

8. If not followed by all nurses, why is it so?

.....

……

9. If no to Q 5, why isn't there one?

……..

……

Thank you very much for your participation.

APPENDIX IV: LETTER OF APPROVAL FROM ETHICS AND RESEARCH COMMITTE

UNIVERSITY OF NAIROBI
COLLEGE OF HEALTH SCIENCES
P O BOX 19676 Code 00202
Telegrams: varsity
Tel:(254-020) 2726300 Ext 44355

KNH-UON ERC
Email: uonknh_erc@uonbi.ac.ke
Website: http://www.erc.uonbi.ac.ke
Facebook: https://www.facebook.com/uonknh.erc
Twitter: @UONKNH_ERC https://twitter.com/UONKNH_ERC

KENYATTA NATIONAL HOSPITAL
P O BOX 20723 Code 00202
Tel: 726300-9
Fax: 725272
Telegrams: MEDSUP, Nairobi

Ref: KNH-ERC/A/193

24th May, 2019

Roselyne Atieno Odundo
Reg. No.H58/7451/2017
School of Nursing Sciences
College of Health Sciences
University of Nairobi

APPROVED
24 MAY 2019
KNH/UoN-ERC

Dear Roselyne

RESEARCH PROPOSAL: COMPLIANCE ON THE USE OF ALDERETE'S SCORE CHART ON POST ANESTHETIC PATIENTS RECOVERING IN KENYATTA NATIONAL HOSPITAL (P96/02/2019)

This is to inform you that the KNH- UoN Ethics & Research Committee (KNH- UoN ERC) has reviewed and approved your above research proposal. The approval period is 24th May 2019 – 23rd May 2020.

This approval is subject to compliance with the following requirements:

a. Only approved documents (informed consents, study instruments, advertising materials etc) will be used.
b. All changes (amendments, deviations, violations etc.) are submitted for review and approval by KNH-UoN ERC before implementation.
c. Death and life threatening problems and serious adverse events (SAEs) or unexpected adverse events whether related or unrelated to the study must be reported to the KNH-UoN ERC within 72 hours of notification.
d. Any changes, anticipated or otherwise that may increase the risks or affect safety or welfare of study participants and others or affect the integrity of the research must be reported to KNH- UoN ERC within 72 hours.
e. Clearance for export of biological specimens must be obtained from KNH- UoN ERC for each batch of shipment.
f. Submission of a request for renewal of approval at least 60 days prior to expiry of the approval period. (*Attach a comprehensive progress report to support the renewal*)
g. Submission of an *executive summary* report within 90 days upon completion of the study. This information will form part of the data base that will be consulted in future when processing related research studies so as to minimize chances of study duplication and/ or plagiarism.

For more details consult the KNH- UoN ERC website http://www.erc.uonbi.ac.ke

Yours sincerely,

PROF. M. L. CHINDIA
SECRETARY, KNH-UoN ERC

c.c. The Principal, College of Health Sciences, UoN
The Director, CS, KNH
The Chairperson, KNH- UoN ERC
The Assistant Director, Health Information, KNH
The Director, School of Nursing Sciences, UON
Supervisors: Dr. Eunice Omondi, Dr. Blasio Osogo Omuga

APPENDIX V: LETTER OF APPROVAL FROM KENYATTA NATIONAL HOSPITAL

KNH/R&P/FORM/01

KENYATTA NATIONAL HOSPITAL
P.O. Box 20723-00202 Nairobi

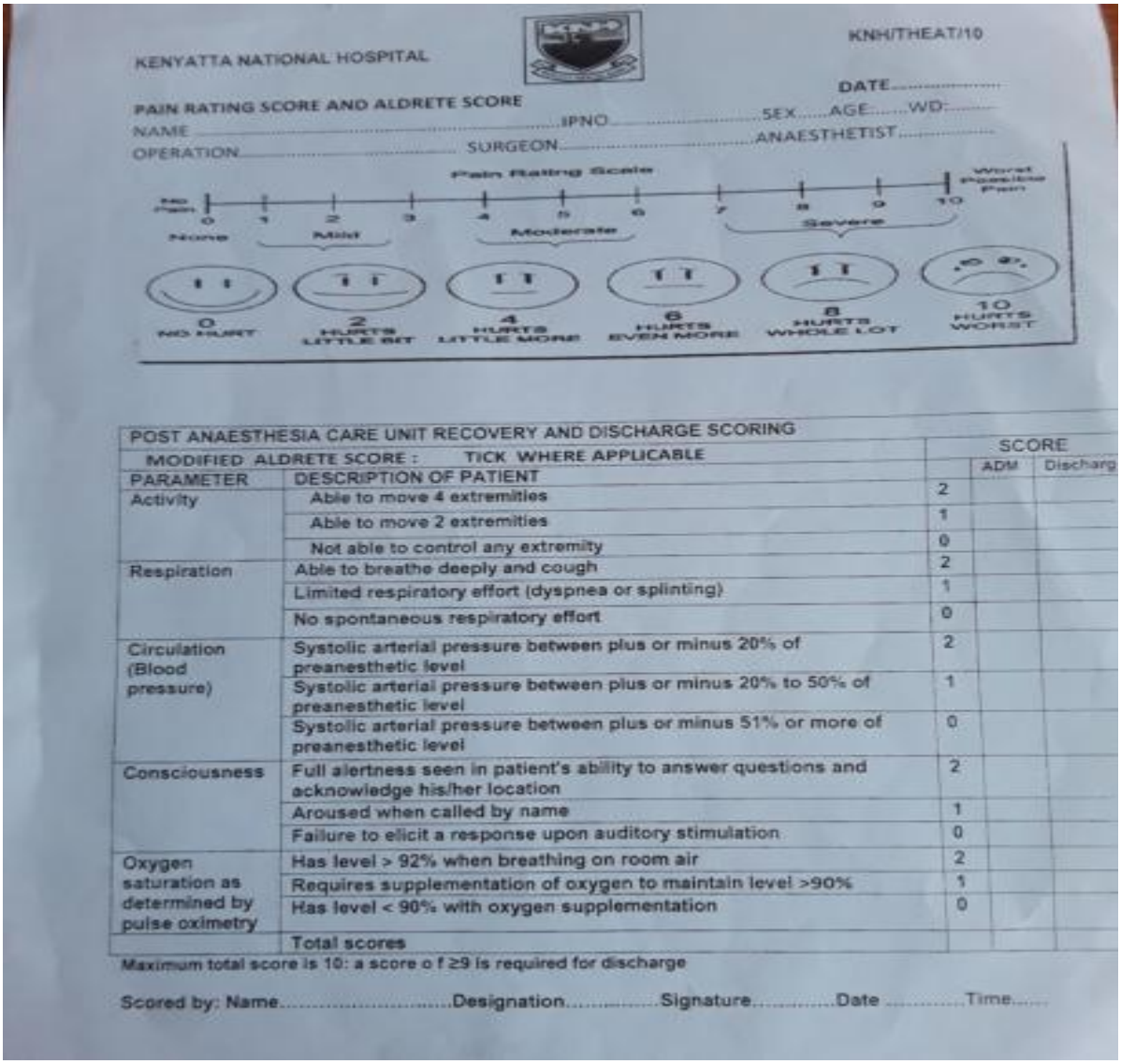
Tel.: 2726300/2726450/2726565
Research & Programs: Ext. 44705
Fax: 2725272
Email: knhresearch@gmail.com

Study Registration Certificate

1. Name of the Principal Investigator/Researcher
   HOSELYNE ATIENO ODUNDO
2. Email address: roseodundo@yahoo.com Tel No. 0725 224244
3. Contact person (if different from PI).....
4. Email address: ..... Tel No. .....
5. Study Title
   Compliance on the use of Aldrete's score chart on post anesthetic patients recovering in Kenyatta National Hospital Main Theatres
6. Department where the study will be conducted Main Theatres
   (Please attach copy of Abstract)
7. Endorsed by Research Coordinator of the KNH Department where the study will be conducted.
   Name: ..... Signature ..... Date .....
8. Endorsed by KNH Head of Department where study will be conducted.
   Name: Dr. K. Mwaniki Signature ..... Date 27/05/2019
9. KNH UoN Ethics Research Committee approved study number _____
   (Please attach copy of ERC approval)
10. I HOSELYNE ATIENO ODUNDO 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 ..... Date 27/05/19
11. Study Registration number (Dept/Number/Year) INCUBE / 19 / 2019
    (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.

APPENDIX VI: SAMPLE ALDERETE'S SCORE CHART USED IN KNH



KENYATTA NATIONAL HOSPITAL

KNH/THEAT/10

DATE.....

PAIN RATING SCORE AND ALDRETE SCORE

NAME.....IPNO.....SEX.....AGE.....WD:.....

OPERATION.....SURGEON.....ANAESTHETIST.....

Pain Rating Scale

No Pain 0 None | 1 2 3 Mild | 4 5 6 Moderate | 7 8 9 Severe | 10 Worst Possible Pain

0 NO HURT | 2 HURTS LITTLE BIT | 4 HURTS LITTLE MORE | 6 HURTS EVEN MORE | 8 HURTS WHOLE LOT | 10 HURTS WORST

POST ANAESTHESIA CARE UNIT RECOVERY AND DISCHARGE SCORING

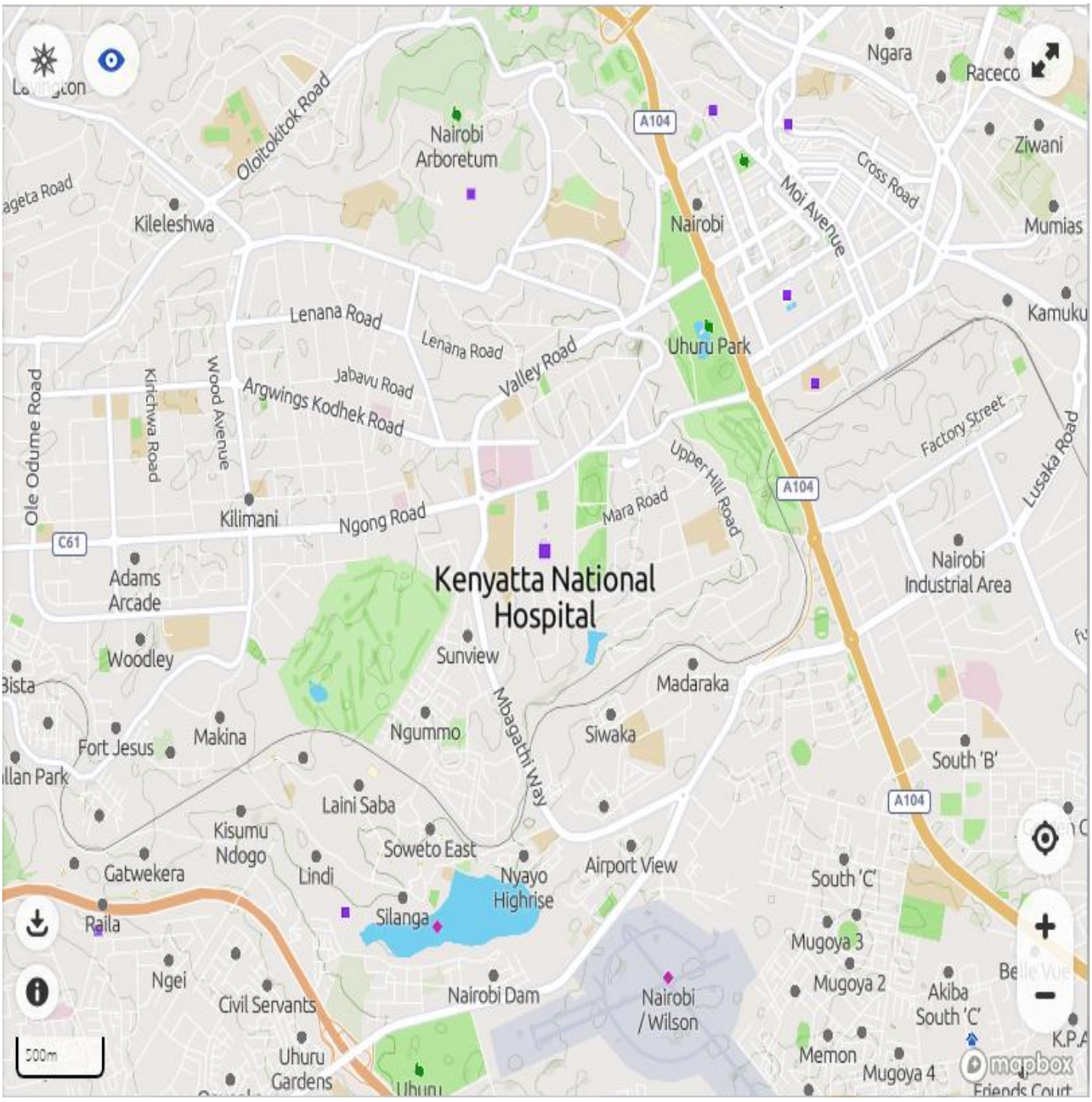
MODIFIED ALDRETE SCORE : TICK WHERE APPLICABLE

PARAMETER	DESCRIPTION OF PATIENT		SCORE ADM	SCORE Discharg
Activity	Able to move 4 extremities	2		
	Able to move 2 extremities	1		
	Not able to control any extremity	0		
Respiration	Able to breathe deeply and cough	2		
	Limited respiratory effort (dyspnea or splinting)	1		
	No spontaneous respiratory effort	0		
Circulation (Blood pressure)	Systolic arterial pressure between plus or minus 20% of preanesthetic level	2		
	Systolic arterial pressure between plus or minus 20% to 50% of preanesthetic level	1		
	Systolic arterial pressure between plus or minus 51% or more of preanesthetic level	0		
Consciousness	Full alertness seen in patient's ability to answer questions and acknowledge his/her location	2		
	Aroused when called by name	1		
	Failure to elicit a response upon auditory stimulation	0		
Oxygen saturation as determined by pulse oximetry	Has level > 92% when breathing on room air	2		
	Requires supplementation of oxygen to maintain level >90%	1		
	Has level < 90% with oxygen supplementation	0		
	Total scores			

Maximum total score is 10: a score o f ≥9 is required for discharge

Scored by: Name.....Designation.....Signature.....Date .....Time.....

APPENDIX VII: DIRECTIONAL MAP OF KENYATTA NATIONAL HOSPITAL



APPENDIX VIII: PHOTO OF KENYATTA NATIONAL HOSPITAL