FACTORS AFFECTING CLINICAL DECISION MAKING BY NURSES AT THE CRITICAL CARE UNIT IN KENYATTA NATIONAL HOSPITAL

A dissertation submitted in part fulfilment of the requirements for the award of the Degree of Master of Science in Nursing (Critical Care) of the University of Nairobi

BY

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DECLARATION

I. Mutisya Albanus Kyalo declare that this dissertation is completed as an independent work. It is original except where due reference is made and neither has nor will be submitted for aw ard of any other University.

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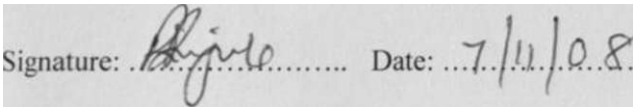

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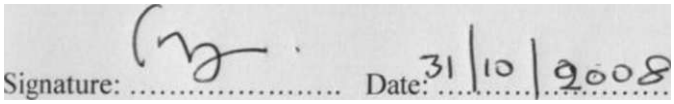

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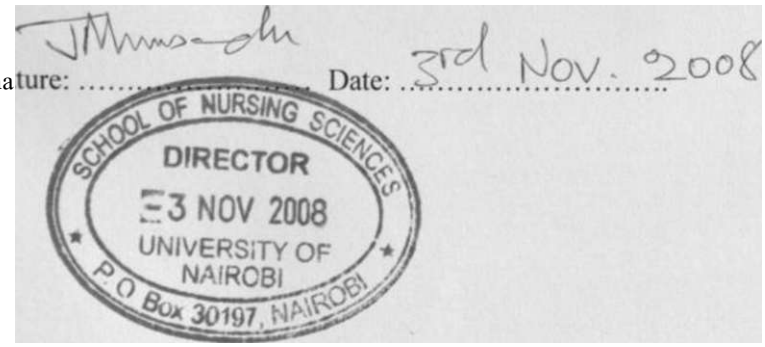

DEDICATION

To my wife Dorcas, son Caleb and daughter Joan for their patience, support and encouragement during the course of my study.

To Critical Care Nurses whose knowledge, skills and abilities enable them to work in the extremely dynamic environment of critical illnesses.

To those who care to safe lives.

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I appreciate the School of Nursing Sciences of the University of Nairobi for the good learning atmosphere and Kenyatta National Hospital for sponsoring me to pursue a course in my treasured field (Saving lives) and hence to undertake this research.

To you all, GOD BLESS YOU abundantly!

OPERATIONAL DEFINITION OF TERMS

Acute care areas: Accident & Emergency department, Intensive care unit, Renal unit and Operating rooms.

Clinical decision: A decision made with regard to patient care.

Clinical decision making: The ability to sift and synthesize information, make judgement and appropriately implement this judgement on patient care in the clinical environment. In this study it is defined as participation in decisions made by nurses in their usual clinical practice.

Clinical Health Care Workers: Doctors and Nurses

Critical Care Nurse: A Specialised Licensed professional Nurse who is responsible for ensuring that patients with life threatening conditions and their families receive optimal Nursing care.

Critical Care Nursing: That specialty within nursing that deals specifically with human responses to life threatening problems.

Critical Care Unit: A hospital unit that is specially equipped and staffed to treat patients with life threatening conditions.

Decision performance: Same as decision making as done by nurses

Effective Decision making: One of the most important components of professional Nursing practice consisting of gathering, processing and prioritizing critical patient information to choose and implement Nursing actions and evaluate the results with subsequent improved patient outcomes.

Participation in decision making: Decision making where nurses' input (knowledge and skills) on patient care is taken into account and implemented.

Socio-dcmographic factors: Age. gender, professional education, post basic training and position held by the nursing staff

ABBREVIATIONS

A & E : Accident & Emergency

ACLS : Advance Cardiac Life Support

ATLS : Advanced Trauma Life Support

BLS : Basic Life Support

BScN : Bachelor of Science in Nursing

BMC : British Medical Council

CALS : Comprehensive Advanced Life Support

CC : Critical Care

CCN : Critical Care Nursing

CCNs : Critical Care Nurses

CCU : Critical Care Unit

DH : Department of Health

ED : Emergency Department

EM : Enrolled Midwife

EN : Enrolled Nurse

ENs : Emergency Nurses

ETAT : Emergency Triage And Treatment

Fig. : Figure

HOD : Head of Department

ICN : Intensive Care Nurse

KECN : Kenya Enrolled Community Health Nurse

KNH : Kenyatta National Hospital

KRCHN: Kenya Registered Community Health Nurse

KRM : Kenya Registered Midwife

KRN : Kenyan Registered Nurse

KShs : Kenya shillings

MScN : Master of Science in Nursing

NHS : National Health Services

ORN : Operating Room Nursing

RR : Resuscitation Room

SONS : School of Nursing Sciences

SPSS : Statistical Package for Social Sciences

EXECUTIVE SUMMARY

Introduction: There is an established association between quality of patient outcomes and nurses" decision-making. Decisions made by Critical Care Nurses have a direct and immediate impact upon the well being and indeed, the survival of the patients under their care. A public outcry over deteriorating health care services in KNH acute care areas has been blamed on nurses. However, nurses' views and experiences on factors influencing their clinical functioning and clinical decision making have not been studied in KNH.

Objectives: The study was done to investigate the factors that affect clinical decision-making among the nurses at the Critical Care Unit in Kenyatta National Hospital. Specifically, it aimed at establishing the socio-demographic factors that influenced clinical decision-making of the nurses and the nature of the influence.

Materials and Methods: This was a cross-sectional descriptive study that utilized a correlational methodology to examine the relationship between Critical Care Nurses' decision-making about some technical aspects of care. A clinical decision-making questionnaire (CDMQ) with a scale of 27 items was developed through extensive review of literature and modified previous scales and distributed to a random sample of 80 CCNs. The scale had a 4-point likert (Range 27-108). It was carried out between January and June 2008. Comparisons, correlations and stepwise regressions were used for analysis that employed SPSS version 12.0.

Results: The CDMQ scale exhibited appropriate reliability (cronbach's alpha 0.91). Decision-making scores were moderate (Mean: 72.40 ± 12.94). The factor that accounted for the greatest variability to clinical decision-making was other performance improvement courses done (P=0.001) followed by gender (P=0.013) and professional education (P=0.042) in that order. Level of appointment, age and experience were not significantly related to decision-making.

Conclusions: The results revealed moderate decision performance among KNH CCNs. Other performance improvement courses done, besides the basic training was the most significant predictor. The model developed, however, only accounted for (21%): a low variability in decision-making meaning that, other factors may be affecting decision-making by nurses.

Recommendations: There is need to consider knowledge and skills obtained through acute and critical care specializations or life support courses when positing nursing staff to the critical care areas. More research (using both quantitative and qualitative approaches) need to be done to identify what other aspects of the clinical environment affect decision performance by nurses.

CHAPTER ONE

1.1 INTRODUCTION

Nurses are the largest group of serv ing stafTin health service organizations. Their practice takes place in a context of ongoing advances in research and technology. Clinical environments are dynamic, complex and inherently stressful. Nurses must deal with increasing patient complexity, sophisticated technology and often declining resources (Bucknall T., 2003). This in turn changes the complexity of Nursing care requirements including decision making.

Nurses are the only professional group in health care to provide 24-hour bed side care and thus have a great opportunity to apply their knowledge to meet patients' needs (Hurst. 1993).They spend about 50% of their time evaluating patients in their care and view patients holistically in order to generate choices and make decisions (Garbutt. 2006). More importantly, they arc usually the first to observe any rapid deterioration or improvement in a patient's phy sical state and it is their interpretation of events that determine subsequent action.

Nurses make decisions in many areas of their practice including clinical, ethical and group decisions. Clinical decisions are generally related to patient care. Emphasis on cost effective and quality health care requires the Nurse to possess astute decision-making skills. The ability to make effective clinical decisions is the most important factor affecting the quality of care and especially in Critical Care areas.

F.ffective clinical decision-making is essential for the future of professional nursing practice and therefore the nursing profession has a responsibility to enhance the clinical decision-making abilities of its members. Factors that affect nurses' decision making and their relative influence need to be identified so that those that facilitate can be enhanced and those inhibiting addressed.

1.2 BACKGROUND INFORMATION

Considering that nurses constitute the largest stalTin health care organizations and are always with the patients, their decision making activities and the underlying contextual factors need to be addressed. Some factors influencing clinical decision making that have been studied elsewhere include nurses' education, experience, age. positions held, modalities of nursing care practiced, stress, and nurses' role among others (Hoffman et al. 2003)). Others include creative thinking ability, self concept as well as organizational variables such as type and size of patient care units, models of nursing care and staffing patterns (Mohsen et al. 2004; Bakalis, 2006).In theses studies, some of the factors are shown to be facilitators or inhibitors while others have a mixed impact on decision making.

A qualitative study done by Mohsen et al (2004) in Iran identified internal and external factors affecting clinical decision-making. Feeling competent, being self confident, nursing education, organizational structure and being supported were identified as important factors affecting effective decision-making. Others were nurse-patient ratios, workloads, non nursing problems and interpersonal relationships.

The studies have outlined the effect of a variety of influences to clinical decision making. These include the importance of education (Schutzenhofer & Musser. 1996) and experience (Watson. 1994) and less often level of appointment (Bucknall & Thomas. 1996). age (Schutzenhofer & Musser. 1996) and area of practice (Bucknall & Thomas, 1996).The ideology nurses hold towards their work (occupational ideology or orientation) has also been linked to clinical decision-making.

Though the studies have identified the variables as important predictors and even attempted to prioritize them, most studies acknowledge that no single variable influences decision-making and that different variables will contribute differently to variability in decision-making (Hoffman et al,2003).

Rhodes (1985) examined the effect of occupational orientation (values to work role) on clinical decision-making of English Nurses and described three such orientations as professional, bureaucratic and paramedical.

She found that Nurses with paramedical occupational orientation believed their job was to carry out medical orders while those with bureaucratic orientation deferred the authority and responsibility for decision making to those above them in hospital hierarchy. Those w ith professional orientation believed in having control over their own work and decision making.

Rhodes (1988) suggested that, education would be linked to decision-making as it aims to prepare Nurses professionally to undertake clinical decision-making as part of their professional role. She speculated that higher preparation supports an attitude of w illingness to make decisions and would lead to greater involvement in decision-making. However, other studies done found that, university level education had not led to greater professional autonomy nor to more independent decision-making (du Toit, 1995). Prescott et al (1987) in the United States found education to have a positive influence on clinical decision-making while Pardue (1987) also in the United States found no significant differences between the decision-making abilities of four groups of Nurses with different educational levels.

Prescott et al (1987) investigated the kind of decisions nurses could make and the kind they wished to make. They found that. Nurses frequently did not independently or consistently make patient care decisions in those areas identified as belonging to the Nursing domain such as nutrition, rest, elimination and mobility. However, they did determine that education had a positive influence on decision-making.

The above finding is in contrast to that of Lauri and Salantera (1995) who indicated that, the link between Nurses' education level and decision-making are not consistent. They concluded that, basic educational level alone does not explain decision-making ability. Therefore, research into the link between educational level and decision-making is inconclusive and the results are conflicting.

The qualifications of nursing staff in Kenyatta National Hospital ranges from enrolled (certificate) nurses to nurses trained at masters levels. In addition the hospital conducts five different post basic nursing specialist higher diploma courses which are expected to enhance the decision making abilities of the nurses and hence improve the quality of patient care outcomes (KNH records).

The nurses are with the patient 24 hours a day implementing many patient care decisions. The effect of the differences in educational levels on clinical decision making has not been established.

Experience is often considered as an important factor affecting decision-making. The evidence on the effects of this is conflicting and this needs to be examined further (Watson. 1994). Thiele et al (1991) investigated experience using the Clinical Decision Making Scale (CDMS) which measures the perception of decision-making ability and the Nurses' confidence in doing so. Those who were less experienced lacked confidence and made decisions less frequently than those who were more experienced.

Lauri et al (2001) found no association between experience and clinical decision making. It is more reasonable to assume that more experienced Nurses are older and hold appointments (positions) at higher levels. Studying the impact of these two variables on decision-making could establish their effects (Lauri et al. 2001).

The frequency with which Nurses reported they made decisions and the relationship between levels of appointment (positions held) and decisions making was examined for Critical Care Nurses in Australia by Bucknall & Thomas (1996). Those practising at higher levels (senior positions) were found to make more decisions than those practising at lower levels (junior positions) and there was considerable variability in clinical decision-making. This finding was consistent with that of Schutzenhofer & Musser (1996).

Nurses at the CCU in KNH have a wide variation of experiences and hold different positions in the unit. Some have worked in different critical care settings across the country and have a rich experience in CC. It has been observed that sometimes doctors undertaking post graduate training in anaesthesia rely on nurses to learn practical skills like ventilator and cardiac monitor settings (KNH CCU, 2007-2008).

The relationship between age and clinical decision-making participation is unclear in the research literature. Schutzenhofer & Musser (1996) in their literature review found age to have a positive influence in some studies and a negative effect in others.

Thomson et al (2000) found no reliable evidence from research that age and information use in decision making are related. Nursing stafTat KNH belong to different age brackets and whether this has an effect in decision making or not remains to be established.

F'he effect of area of speciality on participation in decision-making has also been examined. Rhodes (1985) found no differences. However. Bucknall & Thomas (1996) found differences in clinical decision-making where CCNs were found to regularly make decisions on extended roles like acting in emergency situations and deciding to change patient medications unlike their medical-surgical, mental health and community counterparts.

Attempts have been made by some researchers to define the varying importance of different factors to clinical decision-making. A study in England, which replicated a Canadian study examined factors which participants (Critical Care Nurses) stated affected their decision-making. The factors were ranked in order of priority with knowledge and experience being placed first then role modelling and least priority given to values (Thompson & Sutton. 1985).

The authors recommend that the above factors are important though not conclusive and should be included in any study examining the importance of different factors affecting clinical decision-making. They further state that, age should also be included as it could impact on other variables such as experience and level of appointment (Lauri et al. 2001).

1.3 STATEMENT OF THE PROBLEM

Decisions made by Critical Care Nurses have a direct and immediate impact upon the well being and indeed, the survival of the patients under their care. This is because they spend most of their time with the patients and can note improvements or deteriorations in patients' condition (Hoffman et al, 2003). There is an established association between quality of patient outcomes and nurses' decision-making and that a way to enhance the quality of patient outcomes is to increase nurses' participation in decision-making regarding nursing interventions. Health care institutions are therefore seeking for strategies to more appropriately utilize the workforce for maximum output (Kriariksh & Anthony, 2001).

Kenyatta National Hospital being a referral institution has for the last two decades witnessed a growing demand for health care services, increased public awareness of their rights as clients has led to heightened expectations resulting to demand for high quality of care and a shift of focus to the kind of services provided by clinical health care workers notably the nurses. Being with patients most of the times, CCNs participate in making decisions ranging from life saving to referral and discharge decisions. Moreover, their contribution is highly regarded by postgraduate doctors studying anaesthesia who mainly man the CCU. However, the exact decisions and factors influencing them have not been determined.

More often and in the recent times, the public continue to criticize the poor quality of patient care in Kenyatta National Hospital (Daily Nation. 14 December 2007 pg 14: KNH public relations office. 2007). This public outcry over deteriorating health care services has been blamed on the nurses. This often results into litigation against the nurses and the employing organization (East African Standard, 7 July 2007 pg 2; E.A. Standard. 23 July 2007 pg 14). In some occasions, nurses have been threatened by patients or patients' relatives. The institutional image generally and specifically that of the nursing profession is therefore tainted. Nurses on their part become demoralised with consequences on the quality of care provided (KNH public relations office. 2007). Some studies done in Australia and United Kingdom have linked poor quality health care to nurses' knowledge and skills including clinical judgement and decision making (Bird & Wallis, 2002; McCaughan et al. 2002; Huber et al, 2000). However, this may not be the case at KNH since no study has been done.

According to the personnel records, nurses in KNH are trained at different levels and have varied clinical experiences. They also belong to different age brackets and hold different positions. However, their views and experiences on factors influencing their clinical functioning and clinical decision making have not been studied. Despite CCNs' role in patient care at the CCU, there are no reports or information on their decision making w ithin the clinical environments.

Given the high variability in decision making performed by Critical Care Nurses and the variations in protocols and procedures between different critical care settings plus sometimes the overlapping and ambiguous legislation governing the activities of medical practitioners and nurses, there is little wonder that sometimes accusations and counter accusations arise.

Therefore the study was done to obtain CCNs' views and experiences on factors affecting their clinical decision making and how they do this.
Recognition of the factors and their effects was the first step in strengthening and empowering nurses to make better clinical decisions and therefore improve patient care outcomes.

1.4 JUSTIFICATION

Despite clinical decision making being such a crucial part of the Critical Care Nurses' role, no study had been done in KNH to assess decision making among nurses. Study findings elsewhere on factors affecting this are often conflicting with same factors being rated differently in different studies.

Understanding the clinical decision-making of the nurses and the factors that affect them has important benefits for nurses and the employing organization. Programmes to improve nurses' clinical decision-making skills would be developed. Improved clinical decision making lead to improved patient care outcomes including high quality care, decreased length of hospital stay by patients, decreased costs of health care, patient and their relatives' satisfaction and improved professional image.

At organizational level, improved clinical decision-making afford greater protection against litigation and support quality management. It also assists interdisciplinary working by promoting and encouraging the factors that support harmonious interdisciplinary working leading to improved institutional image.

The study was therefore an eye opener in identify ing the factors affecting CCNs' clinical decision making at KNH.

1.5 OBJECTIVES

1.5.1 Main Objective:

The study was done to investigate the factors influencing clinical decision-making by nurses at the Critical Care Unit in KNH.

1.5.2 Specific Objectives:

Specifically, the study was done to:

1. Determine socio-demographic factors (age, sex, level of professional education, experience & position) of the nurses working at the CCU;
2. Establish the frequency with which nurses make clinical decisions at the CCU;
3. Establish the independent clinical decisions made by Nurses in CCU;
4. Determine the relationship between nurses' socio-demographic factors (age. sex. level of professional education, experience & position) and clinical decision-making.

1.5.3 Research Questions:

The research helped answer the following questions:

1. Which factors influence clinical decision making by Nurses in the CCU?
2. How often do nurses in Critical Care Unit participate in making clinical decisions?
3. Do nurses in CCU ever make independent clinical decisions?
4. Are there significant relationships between CCNs' socio-demographic factors (age. sex, level of professional education, experience & position) and clinical decision making?

1.5.4 Research Hypothesis:

Ho: There is no relationship between CCNs' socio-demographic factors and clinical decision making.

CHAPTER TWO: LITERATURE REVIEW

2.0 INTRODUCTION

This chapter discusses literature review on decision making, critical care environment and factors affecting clinical decision making by nurses. It also summarizes the benefits of effective clinical decision making by nurses.

2.1 DECISION MAKING

Carroll and Johnson (1990) define decision-making as "a process by which a person, a group or an organization identifies a choice or judgment to be made, gathers and evaluates information about alternatives and selects from among alternatives'".

Ellis and Hartley (2000) define decision-making for Nurses as "a systematic cognitive process in which you identify alternatives, evaluate them, come to a conclusion and select an option". Generally, decision making is a purposeful, goal-directed effort applied in a systematic way to make a choice among alternatives. It is a step in the problem- solving process.

The first step in the decision-making process involves gathering appropriate information. Multiple alternatives are then generated and considered. Identified alternatives are then ranked based on desirability, probability and personal risk.

In making a decision the desired outcome should be clearly stated. The decision-maker should select the option that best achieves the outcome with an acceptable amount of risk. The chosen alternative should be monitored closely for achievement of the desired outcome.

Decisions are influenced by many factors including emotions, values, perceptions and current social climate. Effective decision makers are self confident, proactive, flexible, focused and accountable for their actions. Nurses make decisions in many areas of their practice including clinical, ethical and group decisions and decisions involving the delegation of duties. Nurses must also make decisions as a member of a group. Working with interdisciplinary treatment teams and other clinical institutional committees is frequently included as a nursing responsibility.

Emphasis on cost-effective health care requires the Nurse to posses astute clinical decision making skills. Clinical decisions are generally related to patient care. The complexity of clinical practice often makes clinical decisions difficult.

2.2 CRITICAL CARE ENVIRONMENT

Critical care. Coronary care and intensive care units are critical care areas. Critical care nurses need to have advanced knowledge in cardiac nursing, specifically pathophysiology and pharmacology, be highly skilled in the use of the equipment and develop characteristics such as alertness, sensitivity and a full understanding of body hemodynamics to be able to interpret the patient's needs and take the necessary actions. Defibrillation, emergency intravenous drug therapy and recording and interpretation of electrocardiograms have become integral to nursing practice in many critical care areas (Caunt 1992). Nevertheless, care for critical care patients should be directed not only towards physical problems but also towards psychosocial wellbeing (Jowett &Thompson 1988). Critical care nurses also have a teaching, counseling and supporting role.

The essence of critical care nursing lies not in the special environment but in the nurse's decision making process and willingness to act on the decisions made. More precisely, critical care nurses anticipate events on the basis of their knowledge of normal physiology and the patient's condition. They attempt to seek the rational basis for all interpretations and responses to clinical cues.

Critical Care environment is qualitatively different from some other Nursing environments. Contrastingly to others, there is a sustained exposure to life threatening crisis situations and higher levels of decisional stress (I lay and Oken as reported by Bucknall T, 1996).

The CCN is routinely confronted w ith patient of a rapidly changing health status which demands immediate thinking and action lest life be lost. With Hashing lights and frequent alarms, technology complicates decision making and increases the number of decisions being made by Nurses. Alarms signal an alteration in the status quo that requires a rapid assessment to determine if it is a patient or machine malfunction (Bucknall and Thomas. 1996).

Critical Care Nurses must be able to diagnose in both the biomedical domain as a competent health care team member and in the Nursing domain as an expert clinician (Carnavali, 1984). They must therefore be highly trained to be able to identify problems and make decisions quickly. Although Intensive Care is often seen as a medically-driven specialty, it has been argued that all members of the multi-disciplinary team are crucial to patient care outcome (Smith. 1998).

Patient management is almost universally team based. Decision-making is dynamic and unpredictable. Clinical judgement almost always occurs in a group context. Indeed, poor communication in Intensive Care Units (ICU) has been linked to an increased length of hospital stay by patients and up to 1.8 times more risk-adjusted mortality (Miller, 2001). A key issue in the development of effective clinical working relationships is recognition of the contributions that individual disciplines bring to patient care (Maureen Combs. 2003). Although some decisions cannot be differed to consult with colleagues or await physician orders, more frequently, multi-disciplinary teams need to work interdependently (Bucknall T., 2003).

2.3 FACTORS AFFECTING CLINICAL DECISION MAKING BY NURSES

Clinical decisions are influenced by many factors. Some of the factors studied elsewhere include Stress, Experience. Education. Assertiveness, Personal beliefs and Values. Role values and Levels of appointment (Benner. 1984: Bourbonnais & Baumann. 1985; Rhodes, 1985: Pardue, 1987; Prescott et al, 1987: Bucknall & Thomas. 1996).

Studies have outlined the effects of a variety of influences to clinical decision making. These include the importance of education (Pardue. 1987: Prescott et al, 1987; Schutzenhofer & Musser, 1996) and experience (Benner, 1984: Watson, 1994) in clinical decision making and less often level of appointment (Bucknall & Thomas. 1996), age (Schutzenhofer and Musser. 1996) and areas of practice (Bucknall and Thomas, 1996). The ideology Nurses hold towards their work (occupational ideology or orientation) has also been linked to clinical decision-making (Rhodes, 1988). Most studies acknow ledge that no single variable influences decision-making and that different variables will contribute differently to variability in decision-making (Hoffman et al. 2003).

Rhodes (1985) examined effects of occupational orientation (values to work role) on clinical decision making of English Nurses and described three such orientations as professional, bureaucratic and paramedical.

The paramedical occupational orientation describes Nurses as subordinate to doctors and leads to a belief amongst nurses that their job involves carrying out medical orders. Bureaucratic occupational orientation is one where Nurses defer authority and responsibility for decision-making to those above them in the hospital hierarchy. They see themselves as accountable to superiors and believe in the right of managers and those in higher positions to make decisions for them. In professional occupational orientation, nurses have professional values and traits and believe in having control over their own work and decision-making (Rhodes. 1985).

Rhodes (1985) concluded that amongst British Nurses, a professional occupational orientation to nursing practice was linked with higher levels of clinical decision- making. Decision-making in that study was examined from the perspective of Nurses reporting on the amount of everyday decision-making in which they actually participated.

Rhodes (1985) also suggested that education would be linked to decision-making as it aims to prepare nurses professionally to undertake clinical decision making as part of their professional role. She speculated that higher educational preparation supports an attitude of willingness to make decisions and would lead to greater involvement in decision-making (Rhodes, 1985). One goal of most educational programmes for Nurses is to enhance both cognitive skills and decision-making ability (Pardue, 1987). Other researchers have found that university level education did not lead to greater professional autonomy or to more involvement in independent decision-making (du Toit. 1995).

Prescott et al (1987) in the United States found that education had a positive influence on decision making while Pardue (1987) also in the United States found no significant differences between the decision-making abilities of four groups of Nurses with different educational levels.

Prescott et al (1987) also investigated the kind of decisions Nurses could make and the kind they wanted to make.

They found that Nurses frequently did not independently or consistently make patient care decisions in those areas identified as belonging to the Nursing domain such as rest, nutrition, elimination and mobility. However they did determine that education had a positive influence on decision-making.

This finding is in contrast to that of Lauri and Salantera (1995) who indicated that the link between Nurses' educational level and decision-making are not consistent. They also concluded that basic educational level alone does not explain decision making-ability.

In summary, research in to the link between educational level and decision-making is inconclusive and the results are conflicting.

Practicing Nurses in Kenyatta National Hospital have different levels of qualification ranging from hospital based certificates to masters' level preparations and the link between educational level and decision making participation has not been investigated here.

Experience is often considered as an important factor affecting decision making. The evidence on the importance of experience to decision-making is conflicting (Benner. 1984: Thieleet al. 1991: Watson. 1994). Thiele et al (1991) investigated decision making and experience using the Clinical Decision Making in Nursing Scale (CDMS) which measured the perception of decision making ability and the Nurses confidence in doing so. They found that those who were less experienced lacked confidence and made decisions less frequently than those who were more experienced.

However. I.auri et al. (2001) in their international study found no association between experience and decision-making. It is reasonable to assume that more experienced Nurses are older and hold appointments at higher levels. Studying the impact of these two variables on decision making can establish their effects.

The frequency with which Nurses reported they made decisions and the relationship between level of appointment and decisions made was examined for CCNs in Australia (Bucknall & Thomas. 1996). Those practicing at higher levels were found to make more decisions than those practicing at a lower level and there was considerable variability in participation in decision-making. This finding is consistent with that of Schutzenhofer & Musser, (1996).

The relationship between age and clinical decision-making participation is also unclear in the research literature. Schutzenhofer& Musser (1996) found age to have a positive influence on clinical decision making in some studies and a negative effect in others. Thomson et al. (2000) stated that there is no reliable evidence from research that age and information use in decision-making are related. It should therefore be considered as it could impact on other variables such as experience and level of appointment.

As for the effects of specialty and participation in decision-making, Rhodes (1985) found no differences while Bucknall and Thomas (1996) found differences in clinical decision making where CCNs were found to regularly make decisions on extended roles like acting in emergency situations and deciding to change patient medications unlike their medical-surgical, mental health and community counterparts.

Some researchers have attempted to define the varying importance of different factors to clinical decision-making. A study in England which replicated a Canadian study examined factors that participants (CCNs) stated affected decision-making (Thomson and Sutton. 1985). The factors were ranked in order of priority with know ledge and experience being placed first then role modeling and least priority being given to values. The effects of self-reported factors on clinical decision-making were also listed in order of importance by Pardue (1987) as experience, knowledge, values, role models and stress.

The order of priority listed by I lughes and Young (1990) was clinical experience, clinical setting, beliefs and preferences, short term memory capacity and interpersonal conflict. Experience was listed as being of highest priority in three other studies with varying priority given to the other factors.

Other researchers have attempted to classify the factors influencing decision making by Nurses into organizational and personal factors with some being either facilitators or inhibitors of decision making and others having a mixed impact. The organizational factors include hospital units (i.e. types of Nursing Care Units for example, CCU, medical surgical unit), staffing patterns and type of Nursing Care Modality practiced. The personal factors include education, experience and interpersonal style (assertiveness and tactful approach) where a big difference is noted in thinking, analyzing problems and assessing patients between diploma and degree Nurses (Prescott et al. 1987).

Primary Nursing is consistently cited by both Nurses and Physicians as a facilitator of decision making for Nurses. Knowing the patient well is the basis for Nurses perceiving more autonomy and being accorded greater involvement by Physicians. Heavy workloads and a variety of non Nursing duties were found to be inhibitors to Nurses' decision making (Mohsen et al, 2004).

Additional factors found in research literature to influence decision making include evidence based practice, psychological stress, Nurse-Physician relationships and Nurses' role.

2.4 REVIEW OF THE FACTORS AFFECTING CLINICAL DECISION MAKING

2.4.1 Knowledge

Several authors found that knowledge and clinical experience were the most important factors influencing clinical decision making (Bucknall and Thomas. 1997); Caputo and Mior, 1998). The knowledge a Nurse brings to the diagnostic task plays a critical role in determining how the problem will be interpreted (Corcoran. 1986). Pelletier et al. 1998). The knowledge that Nurses store in their memories in the form of concepts, schema and scripts is retrieved when needed. The person with a broad knowledge base will provide more perspectives when reframing problems and generating solutions (Drummond. 1996). The deeper the nurses' conceptual knowledge base, the wider the range of cues he/she will discover and use during the decision making process (Moore, 1996). Bucknall and Thomas (1997). investigating clinical decision making by 230 Australian CCNs found that 95% had difficulty making clinical decisions due to lack of knowledge. For instance, only 20% were competent to identify basic types of arrhythmias, for example, Tachycardia and Bradycardia.

In a study of 53 qualified German Nurses, none of them was able to perform Basic Life Support (BLS) adequately and 60% were judged to be in-effective due to lack of knowledge (Sefrin & Paulus. 1994). In addition, Benner (1984) reported that although community Nurses believed their work required a scientific basis, their practice was founded on practice- based knowledge.

Pre registration education has a crucial role to play in clinical decision making. Moore and Knight (1997) stated that, there must be a sound and broad knowledge base to underpin clinical decision making decisions.

2.4.2 Experience

Clinical experience is identified as being essential for effective clinical decision making (Benner and Tanner. 1987). Benner (1984) showed that the experience level of the Nurse has a profound effect on the decision making process. In their experimental study examining differences in way that novice and expert Nurses make decisions. Holden and Klinger (1988) showed that the experts often use less information in making a more accurate diagnosis. Similarly. Corcoran (1986) found that experts generated more alternative actions, were more specific in evaluating alternative actions and developed better Nursing plans than novices. Further. Clark (1996) investigated novice Nurses and found that clinical decision making was the foundation of their daily work, and that it was a difficult process for them to apply theory to clinical practice. Me concluded that, experts make better clinical decisions.

2.4.3 Nurse-Physician relationship

The mutually supportive Nurse - Physician relationship in CC is paramount to Nurse clinical decision making (Baggs et a I. 1997). In their study. Nurses and Physicians reported similarly moderate amount of collaboration, but Nurses reported less satisfaction with clinical decision making than physicians. Knaus et al. (1986). found that the interaction and joint decision making that occurs between Nurses and Physicians in CCU was more effective in mortality and morbidity issues. Nevertheless. Schumacher (1993) found that consulting with Nurse Colleagues when in doubt was perceived as essential in the clinical decision making process of Nurses.

2.4.4 Evidence based practice

Studies have identified the need to base clinical decision making on evidence based practice (Alexander. 1997; Davies. 1997). Clinical guidelines, protocols and care pathways are approaches that encourage evidence based practice if founded on the best available research evidence and kept up to date.

It is generall\ acccptable that Health Care staff work towards providing the best possible outcomes of care and treatment (Fry. 1998). Consequently every decision that nurses make should take account of the evidence available and their ability to appraise and interpret this evidence. According to Marriner Tomey (1992), clinical guidelines and protocol serve as a basis for decisions and actions, help coordinate plans, control performance, increase consistency of action and delegate authority.

Tingle (1997) argued that practitioners are better protected if they can show their decisions are based on care pathways or clinical guidelines because this indicates that care is provided in a controlled environment that supports reflective clinical practice. However, the DH (1996) states that the onus of responsibility remains firmly on individual clinicians. Clinical guideline cannot be used to mandate, authorize or outlaw treatment options.

2.4.5 Nurse's Role

The role of CCNs has a profound effect on clinical decision making (Bucknall and Thomas. 1997). Nurses have a multi-dimensional role to fulfill. CC areas are not quiet, calm environments but places with highly advanced technological equipment, frequent alarms and emergency situations. CCNs must have an advanced knowledge specifically of Pathophysiology and Pharmacology. They need to be highly skilled in the use of the equipment and develop characteristics such as alertness, sensitivity and a full understanding of body hemodynamics so as to be able to interpret the patients' needs and take the necessary actions.

CCNs are frequently confronted with patients experiencing rapidly changing health status and often intervene in crisis situations. Bowler Mallik (1998) found that serious CCNs identified themselves as independent, autonomous practitioners involved in clinical decision making.

When Nurses make clinical decisions, they are accountable for them. According to Vaughan (1989). Nurses are held accountable when they have personal and structural autonomy. Personal autonomy is the expertise, knowledge and skills related to a defined area of work. In contrast, structural autonomy is the freedom and authority given by the organization to an individual to act (Vaughan, 1989).

When Nurses consider they have a higher level of autonomy, they perceive personal autonomy as the base in which clinical decisions are being made. However, what actually takes place is the structural autonomy or authority which is usually bureaucratic (Scott et al. 2003), with medical staff having a traditional dominant role over Nurses.

Therefore, personal and structural autonomy have contradictory effects (Vaughan, 1989). While personal autonomy is about loyalty to the profession, maintenance of high standards and responsibility to patients, structural autonomy is about loyalty to the institution and following its rules and regulations.

2.5 BENEFITS OF EFFECTIVE CLINICAL DECISION MAKING BY NURSES

Almost every country and health care system has witnessed a growing demand for healthcare services over the last two decades. In Kenya, the health care systems and especially the public ones are facing an increasing number of challenging factors such as limited financial resources, socio-demographic changes, rising health care costs, increasing health care demands, impact of HIV/AIDS and heightened public expectations.

Despite all these, the government authorities remain responsible for meeting the public's increasing need for accessible, affordable and quality health care. The health care institutions are therefore seeking for strategies to more appropriately utilize the workforce for maximum output. Much technological developments have taken place in the Critical Care arena. While these developments provide the potential for significant improvements in health care, the devices alone can not effect these changes and therefore effective use of assessment information through decision-making process is essential to improve outcomes of care.

Effective clinical decision making is important for the Nurses and their employing organizations. Clinical effectiveness w ill be enhanced with higher quality of patient care, decreased length of hospital stay by patients, reduction in health care costs and client satisfaction.

To health care institutions, effectiveness in decision making will afford decreased costs in health care provision, quality management, enhanced harmonious inter-disciplinary working and motivation. Moreover, the institution will afford greater protection against litigations and foster improved public image.

2.6 SUMMARY OF LITERATURE REVIEW

Numerous factors influence clinical decision making by Nurses (Pardue. 1987). They include personal and contextual factors. Most studies acknowledge that no single variable influences decision making and that different variables have different effects on decision making.

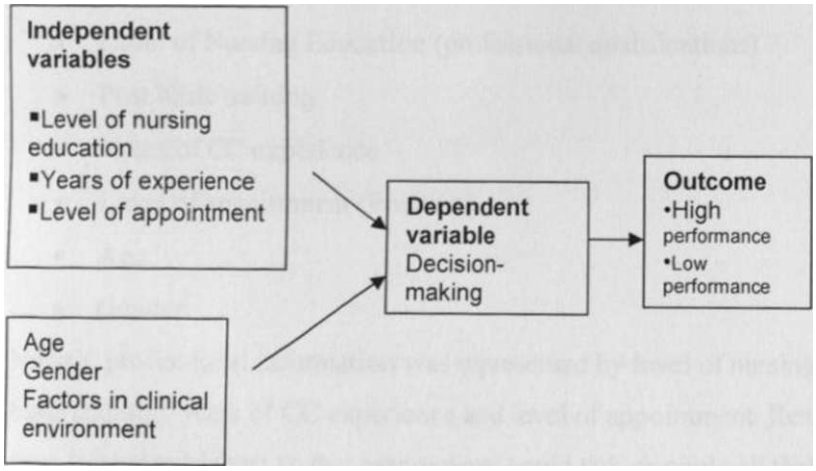
Effective decision making has important benefits to the Nurses, the patient and the health care institution as a whole. Study findings on the above factors are contradicting with suggestions that further studies are necessary to help refine the findings. It is therefore important for this research to be conducted to identify which factors affect decision making and how they do this among the CCNs in Kenyatta National Hospital.

2.7 CONCEPTUAL FRAMEWORK

The following model (Fig. I) was tested in the study. The model suggested that decision-making in CCU is influenced by many factors including level of nursing education, clinical experience, level of appointment (position held), gender and age among others.

It was expected that level of education and years of Critical Care experience would be positively correlated with decision-making and so would the level of appointment. However, age and gender were expected to have either a mixed or a negative correlation with decision-making.

Fig. I: Interactive relationships between variables affecting clinical decision-making



2.8 STUDY VARIABLES

DEPENDENT VARIABLE

- Clinical decision-making

Perceived frequency of decision making was measured by responses to a four-point Likert-scale statements (1= Never; 2= Rarely; 3= Sometimes; 4= Always). A higher score (i.e. 3 and 4) represented a higher frequency of decision-making (decision performance) while a lower score (i.e**.1 and 2)** implied little or no decision performance. A mean likert score above 2.5 was taken to mean **YES** to decision-making while a mean likert score below 2.5 meant **NO** decision-making.

INDEPENDENT VARIABLES

These included:

- Level of Nursing Education (professional qualifications)
- Post basic training
- Years of CC experience
- Level of appointment (Position)
- Age
- Gender

Nurses' professional information was represented by level of nursing education, post basic training, years of CC experience and level of appointment. Responses were ranked from lowest to highest so that respondents could tick or circle all that applied. Modality of nursing care used, nurses to patients ratio and gender had their codes for easy checking by the respondents. Respondents indicated their ages on a blank space.

CHAPTER THREE: MATERIALS AND METHODS

3.1 STUDY DESIGN

This was a descriptive cross-sectional survey where a two-step analytical process was undertaken.

3.2 STUDY AREA

The study was carried out in the Critical Care Unit (CCU) at Kenyatta National Hospital (KNH). KNH is the largest referral and teaching hospital in Eastern and Central African region. It caters for the learning needs of medical and nursing students from the above region. It is located in Nairobi Province about 3 kilometers from the Nairobi Central business District (CBD).

The Hospital has a capacity of 2000 beds and has over 2000 patients admitted at any one time. It has several specialized departments including mcdicine. surgery, obstetrics and gynecology, pediatrics, laboratory, radiology. A&E. operating theatres, renal, orthopedic and training. It has about 1800 nurses of different educational backgrounds.

The upgraded CCU has 21 beds with new mechanical ventilators and cardiac monitors. Most of the beds are fully occupied at any one time and sometimes patients have to wait for even 24 hours at the ED waiting for an empty bed. There are 100 nurses who provide care to the critically ill patients. KNH is chosen for being the leading public teaching and referral hospital and also because of time and budget restrictions.

3.3 STUDY POPULATION

The study population included all nurses working in the Critical Care Unit in KNH at the time of study. There were a total of 100 Registered Nurses in the unit with a minimum qualification of a diploma in Nursing.

3.4 SAMPLE SIZF. DETERMINATION

A power analysis was completed using the following formula by Fisher et al (1999) with a two-tailed alpha set at 0.05 for the statistical test Pearson product moment correlation to determine the sample size.

$$n = £ p g$$

$$d^2$$

Where

n = the desired sample size (if the target population is greater than 10.000)

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

P= the expected population correlation coefficient (population effect size)

(Since no studies had been done on these subjects, 50% (large effect size) was used to determine the sample size)

q= 1-p

d= level of precision (set at +/- 5 % or 0.05)

Substituting these figures in the above formula:

$$n = \frac{(1.96)^2 (0.50) (0.50)}{(0.50)^2}$$

$$= 384$$

Since the target population was less than 10.000, the sample size was adjusted using the following formula:

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

Where nf= the desired sample size when population is less than 10,000

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

N= the estimate of the population size

$$\text{Hence } nf = \frac{384}{I+ (384/ 100)}$$

384/4.84

79.3

The calculated sample size was 79.3. In total. 80 Nurses were sampled.

3.5 SAMPLING METHOD

Simple random sampling method was used. One hundred (100) small papers were prepared.80 were coded **Y** and 20 coded N. They were mixed together in a container and the respondents allowed to pick them at random. Those who picked **Y** coded papers were involved in the study while those who picked N coded were not.

Inclusion criteria

1. KRCHN male or female who had worked for at least three months in the CCU.
2. Those who were willing and who consented to participate in the study

Exclusion criteria

1. All nurses who were not KRCHN and had worked in CCU for less than three months.
2. Nurses who did not consent to participate in the study.

3.6 STUDY INSTRUMENT

A Clinical Decision Making Questionnaire (CDMQ) was developed by the researcher and used to elicit information from the respondents (Appendix I). It was developed based on extensive review of pertinent literature and previously used scales. It was modified to suit our setting. It considered two elements of decision making i.e. direct patient care and decisions related to extended roles. Direct patient care referred to:

- Diagnosing a patient's condition
- Providing nursing care
- Psychological support
- Teaching the patient and his/ her family and
- Proving discharge information for patient and his/her family

Decisions on nurses' extended roles considered:

- Acting in emergency situations
- Informing patients about their prognosis
- Arranging (further) patient investigation
- Changing patients' medications and
- Making decisions to discharge a patient

A clinical decision-making **scale of 27 items** was used to assess the frequency of decision-making. Each item had a four-point likert scale ((1= Never: 2= Rarely; 3= Sometimes; 4= Always). The questionnaire consisted of four sections: Demographic profile, nurses' professional information, clinical decision-making scale and factors affecting nurses' decision making. It was coded to assist in data entry into the computer and analysis.

3.7.1 SELECTION AND TRAINING OF RESEARCH ASSISTANTS

Two research assistants w ere recruited and trained on the purpose of the research, the objectives, how to use the research tool and interviewing techniques. They were also trained on how to check the tool for completeness.

3.7.2 PRE TESTING OF THE QUESTIONNAIRE

The questionnaire was pre-tcsted at the CCU of KNH. Five nurses working in the CCU were requested to fill in the questionnaire. These nurses were excluded in the final survey. It was found to have a high cronbach's alpha of 0.91 indicating that it was reliable in terms of internal consistency. Reliability coefficient above 0.70 is considered satisfactory (Polit & I lungler. 1997). Appropriate amendments were made to the questionnaire to make it clear, unambiguous and simple to understand and interpret but be able to collect the required information.

3.8 VALIDITY AND RELIABILITY

The instrument for data collection was a structured questionnaire whose validity and reliability was ensured through pre-testing. Reliability is concerned with how consistently the instrument measures the target attribute (Burns & Grove. 2001). The instrument had a reliability Cronbach's alpha of 0.91. Validity is concerned with the degree to which the instrument measures what it is supposed to measure (Polit & Beck. 2004). Careful planning and the study design also enhanced the validity of the study.

3.9.1 DATA COLLECTION METHOD

Data was collected using a semi structured self administered questionnaire. The questionnaire was given to the respondents and an envelope provided to put the filled questionnaire and return it sealed to the principle researcher or the research assistants.

3.9.2 DATA CLEANING

Once collected, data was checked for completeness. It was then entered into the computer.

3.9.3 DATA ANALYSIS AND PRESENTATION

Data was analyzed using computer software. Statistical Package for Social Sciences (SPSS) version 12.0. Descriptive analyses were used to describe the sample. Frequency distributions were calculated for gender, age. educational level, other courses done, experience and levels of appointment. Mean values were calculated for the various rankings given for decision performance. The strength of relationships between variables gender, professional qualifications, other courses done, age. experience and level of appointment were determined using bivariate correlations.

Pearson correlation was used for relationships where both variables were normally distributed and at interval level For example, the relationships between age. experience and decision-making. Spearman correlations were used for non parametric and ordinal level data including the relationships between professional qualifications other courses done, gender and levels of appointment and decision-making.

Factors found by correlation and simple linear regression to be significantly related to decision-making were entered into stepwise selection regression analysis to determine the contribution of each factor. The results were then presented in terms of percentages, tables and graphs w ith appropriate descriptions of the findings.

3.10 ETHICAL CONSIDERATIONS

Authority was sought from the Ethics and research Committee of KNH. A clearance permit from the Ministry of Education. Science and Technology was obtained. Permission was also obtained from KNH administration since the findings were very useful for administrative and education purposes.

A written consent was obtained from the participants. Whoever agreed to participate signed a consent form and was given a questionnaire to fill in and return in a sealed envelope in a week's time. No one was coerced nor induced in any way to participate in the study.

The questionnaires were serialized and the respondents were not required to write their names or any other identification numbers. Information provided was treated with utmost confidentiality and this was communicated to the respondents. Assurance was given to the respondents that the information given was for study purposes only and that no plans whatsoever were intended to victimize anybody. Those who wished to know the findings of the study were assured that they were to be shared to them once the study was completed.

3.11 STUDY ASSUMPTIONS

The study assumed that understanding the factors that affect clinical decision making and improving the decision making abilities of the CCNs, would help improve patient outcomes. This was because nurses' decision making is important as they form 70% of the health care workforce.

3.12 STUDY LIMITATIONS

- The study's generalizability may be affected given that the study was undertaken with a sample from one health service institution. This was countered by using the formula by Fisher et al (1999) for sample size determination. Also, random sampling method was used to get the sample. These helped make the findings statistically significant.
- The design focused predominantly on technical aspects of care leaving out equally important aspects of ethical decision-making and planning for care. Also, the tool used needs refinement probably with a larger sample to assure its reliability. Thus, a more comprehensive evaluation of care is necessary .

CHAPTER FOUR: RESEARCH RESULTS

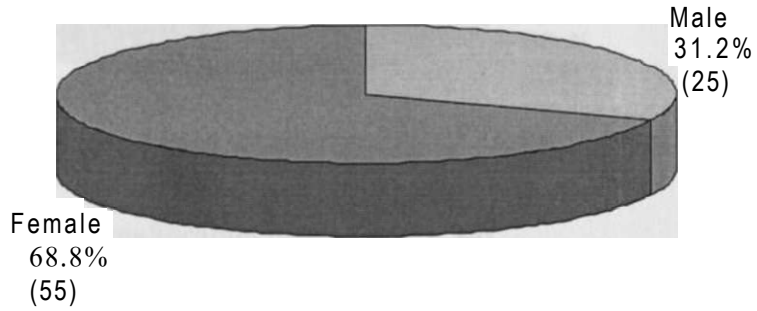
This chapter reports the study findings based on quantitative and qualitative data obtained from 80 nurses and the unit-in-charge of the critical care unit in KNH. All the 80 questionnaires distributed were returned giving a 100% response rate. The results are given as per the study objectives.

4.1 SAMPLE CHARACTERISTICS

4.1.1 Respondents' Sex and Age

Out of the 80 respondents. 25 representing (31.2%) were males while 55 representing (68.8%) were females **(Fig 1 below).** Thus the females were two times more than the males. This gender distribution may be explained by the evolution of nursing as a profession for women, a trend which is currently changing.

Figure 1: Sex of the respondents (n = 80):



The respondents' ages ranged from 25 to 49 years with a mean of 34.69 years (SD = 5.015). Majority were aged between 30 and 40 years (79%) **(Table 1 below).**

Table 1: Age (in years) of the respondents (n = 80)

Age in years	Frequency	Percentage
25-29	12	15.0
30-34	30	37.5
35-39	21	26.3
40-44	13	16.3
45-49	4	5.0
Tot?l	N = 80	1Q0.0

4.1.2 Professional qualifications

Figure 2 below shows that. 80% of the respondents were Kenya Registered Community Health Nurses (KRCHNs) with KRN/KRM and BScN each having 7.5%. The least number were KRNs who formed only 5% of the respondents. None had a master's degree qualification. These qualifications reflect the new trends in the nursing education in Kenya where nursing education has moved from training plain KRNs to training the comprehensive KRCHNs and BScNs. Both male and female nurses had almost equal proportions for those w ith KRCHN training and above (80% and 90% respectively) **(Table 2 below).**

Figure 2: Percentage of Nurses' by professional qualifications (n = 80)

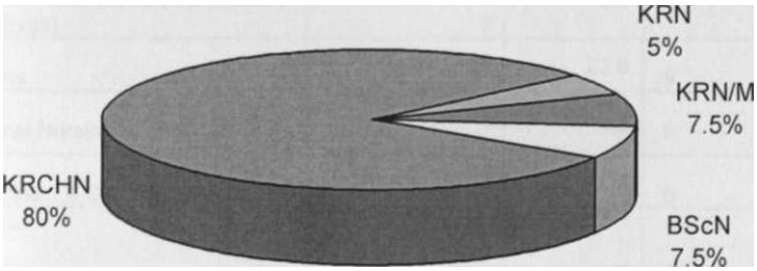


Table 2: Professional qualification by gender (n = 80)

Gender	Frequency	Professional Qualification
Male	25	BScN = 2 KRCHN= 18 KRN/M =4 KRN = 1
Female	55	BScN = 4 KRCHN = 46 KRN/M =2 KRN =3

4.1.3 Post basic trainings

The study found that. 65% representing 52 of the 80 respondents had training in intensive care nursing course while 7 (8.8%) had trained in life support courses (BLS. ACLS & / or ATLS).

There was one respondent each for Renal Nursing and Accident & Emergency Nursing post basic courses. Almost a quarter (23.8%) of the respondents had no post basic training. There were equal proportions for male and female nurses who had trained in intensive care nursing course (64% and 65% respectively) **(sec table 3 below).**

Table 3: Post basic trainings

Post basic trainings	Frequency	Percent	Gender	
			Male	Female
ICN	52	650	16	36
BLS, ACLS, ATLS (Life support courses)	7	88	0	7
None	19	238	9	10
Renal Nursing course	1	1.3	0	1
Accident & Emergency Nursing	1	1.3	0	1
Total	N = 80	100	25	55

4.1.4 Appointment levels (Positions held)

Regarding the positions held. 47 (58.8%) of the respondents were appointed at the level of nursing officer one (NO1) with 33.8% (27) being appointed at nursing officer two (NO 11) level and 7.5% (6) at nursing officer three (NO 111) level **(Figure** 3). These are common cadre levels of appointment. One moves from one level of appointment to the next after accomplishing at least three years of experience in the previous level. This finding meant that, over half i.e. 58.8% of the nursing staff in the CCU are at senior position levels who mainly perform ward administrative duties in the general wards. Analysis by gender showed no significant difference in levels of appointment with almost similar proportions of NO 1 and NO 11 for male and female nurses (88% and 94% respectively).

Fig. 3: Percentage of respondents by appointment levels (n = 80)

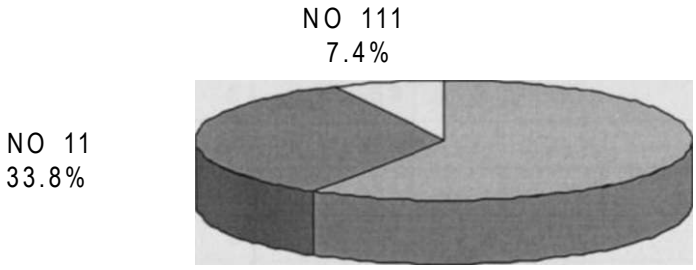


Table 4: Appointment levels by gender (n = 80)

Gender	Frequency	Appointment
Male	25	NO I = 15 NO 11 = 7 NO 111= 3
Female	55	NO 1 = 32 NO 11 = 20 NO 111= 3

4.1.5 Respondents' experience in Nursing

Table 5: Experience of the respondents (n = 80)

Experience	General Nursing		Critical Care Unit	
	Frequency	Percentage	Frequency	Percentage
Below 1 year	3	3.8	10	12 5
1 - 4 years	5	6.3	38	47.5
5 - 9 years	34	42 5	23	288
10-15 years	30	375	9	11.3
Over 15 years	8	10.0		
Total	N = 80	100. 0	N = 80	100. 0

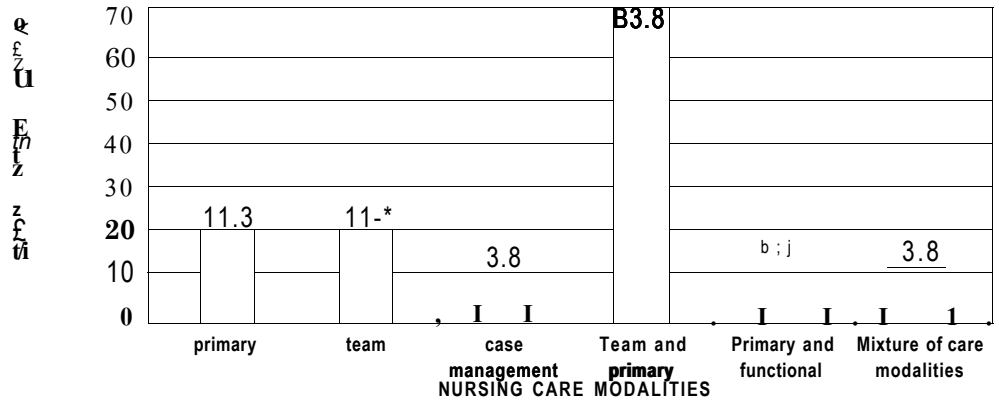
The above table shows that, majority, (80%) of the respondents had practiced nursing for betw een 5-15 years with 10% (8) having a nursing experience of over 15 years. Only 3.8% had an experience of below one year but over three months since this was the minimum experience required for one to qualify to participate in the study.

On the other hand. 47.5% (38)of the respondents had a critical care experience of between 1 - 4 years with more than a quarter (28.8%) having an experience of 5-9 years and 11.3% an experience of 10-15 years in the CCU. Gender analysis showed no proportional difference in nursing experience between male and female nurses either in critical care or in nursing generally **(Table** 5).

4.1.6 MODALITY OF NURSING CARE PRACTICED AND STAFFING RATIOS

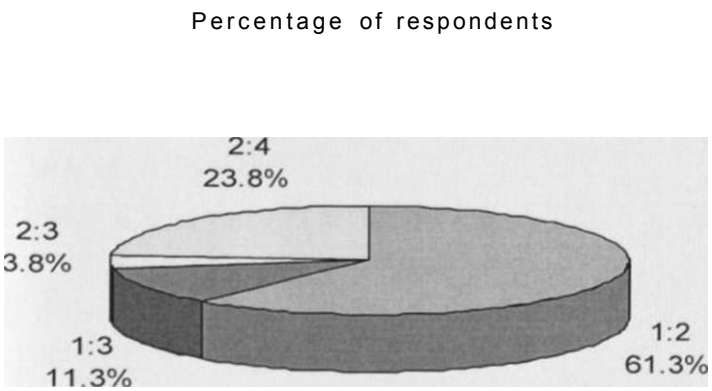
More than half (63.8%) of the respondents indicated that a mixture of primary and team nursing was commonly practiced in the CCU while primary nursing and team nursing separately were each mentioned by 11.3% of the respondents **(Fig.** 4). Modality of nursing care practiced in CC has been cited in literature as affecting decision-making by CCNs. Primary nursing practice encourages decision-making by nurses since the nurse is w ith the patient most of the time and can identify patient needs, plan and intervene as appropriate. Knowing the patient well is the basis for nurses perceiving more autonomy and being accorded greater involvement by physicians. On the other hand, either team or functional nursing alone was found to have a negative influence to decision-making by nurses (Prescott et al. 1987 as reported by Hoffman et al. 2004).

Figure 4: Responses to nursing care modality' practiced (n = 80)



The commonest nurse to patient ratio in the unit according to the respondents was one nurse to two patients (1**:2)** as indicated by **61.3%** of respondents **(Fig 5).** Staffing ratios have been shown to affect nurses' decision-making.

Figure 5: Nurse: patient ratio (n = 80)



4.2 DECISION-MAKING SCORES/FREQUENCY OF DECISION-MAKING

Nurses' clinical decision-making based on their own patient assessment findings was assessed using a four-point likert scale. The cumulative CDMQ score which was generated by summing the scores of all individual items was regarded as a measure of nurses' participation in decision making with higher numeric values corresponding to higher frequency in decision making and lower numeric values corresponding to lesser frequency of decision making. The likert scale rates **3 (sometimes)** and **4 (always)** were taken to imply **YES** to decision-performance whilel **(never)** and **2 (rarely)** implied **NO** decision-performance. The questionnaire scores ranged from 27 (minimum) to the highest possible 108 w ith a mid-point of 54.

The cumulative CDMQ scores were moderate exhibiting a mean of 72.40 (SD = 12.94), well above the midpoint of 54. They ranged from 35 to 100 **(Table** 6).

Table 6: **Mean values and standard deviations for decision-making scale (n** = 80)

Total score possible	Mean	Range	Standard deviation
108	72.40	35 - 100	12.94

Table 7:
Ratings of the frequency of decision performance by nurses based on their own patient assessment findings, n = 80; (Likert scale; 1: never, 2: **rarely,** 3: sometimes,

	Clinical decision	Average Likert		Overall Mean	SD	Decision makers	
		Male	Female			Yes	No
1	Administering narcotics	1.60	1 67	1.65	0.91	16	64
2	Adjusting inotropic infusion	1.88	2.27	2.15	1.05	35	45
3	Adjusting patient's ventilator settings	2.72	3.22	306	0.90	64	16
4	Inserting peripheral IV line	2 12	2 55	2.41	1.11	38	42
5	Altering maintenance IV fluids	2.80	3.35	3.17	0.91	67	13
6	Diagnosing patient's condition	2.12	2.51	238	1.01	36	44
!7	Changing patient's medications	2 24	2.20	2.21	098	37	43
8	Decision to admit patient	1.72	1 67	1.68	092	15	65
9	Decision to discharge a patient	1.48	1.76	1.67	1.00	21	59
10	Provide discharge information to patient	2.52	3.16	2.96	1.07	55	25
11	Discuss patient's condition and prognosis	228	2.78	2.62	0 95	45	35
12	Assessing patient's clinical status	356	3.55	3.55	0.79	69	11
13	Participate in collaborative therapeutic	2 84	316	3.06	089	65	15
14	Obtaining blood samples for laboratory	1.20	1 35	1.3	0.64	6	74
15	Collecting specimens for bronchial culture	392	3 82	3.85	048	78	2
16	Acquiring CVP readings	3.96	389	3.91	0.32	79	1
17	Acquiring PAWP readings	1 64	1 84	1.77	1 05	23	57
18	Acquiring PCWP readings	1.24	1 22	1 22	0 57	12	68
19	Evaluating hemodynamic measurements	3 32	3.47	3.42	0.75	69	11
20	Insertion of indwelling urinary catheter	3 12	3.29	3.23	0.75	69	11
21	Performing emergency defibrillation	2 88	2 96	293	0.81	61	19
22	Decision to wean patients from ventilation	2 52	273	266	0 92	48	32
23	Performing endo-tracheal intubation	1.92	1 98	1.96	0 93	25	55
24	Decision to extubate a patient	2.40	2.56	251	088	46	34
25	Participation in medical ward rounds	3.36	362	353	0.61	75	5
26	Teaching nursing students on CC procedures	3.36	3.76	3.63	0.76	74	6
27	Conducting history taking and physical exam	3.76	3.84	381	0.57	77	3
	Statistics for CDMQ SCALK	1.56	1.27	Mean 72.40	Std Dev 12.94		

In table 7 above, average decision making ratings for individual items on the scale are exhibited. The average CDMQ score (Mean of average likert scoring for each item) was 2.7 (SD = **0.48),** well above the midpoint of 2.5. This indicated that, nurses perceived they made decisions reasonably frequently on the items in the questionnaire based on their own patient assessment findings. Sixteen out of the twenty seven (59%) clinical activities on the likert scale scored a mean of over 2.5 while the remaining eleven (41%) had a mean less than 2.5.

The highest decision making was observed with regard to the clinical decision of **acquiring CVP readings** (average 3**.91); collecting specimens for bronchial cultures** (3.85); **conducting history taking and performing physical examinations** (3.81): **teaching nursing students on critical care procedures** (3.63) **and assessing patient's clinical status** (3.55). These are the routine tasks in the unit. They are performed daily and trained nurses have developed confidence and competence in their performance.

Lowest decision performance was reported in relation to **acquiring PCWP readings** (average 1.22). **Obtaining blood samples for laboratory** (1.30). **Administering narcotics without an order** (1.65) **and Decision to admit or discharge a patient** (1.68 and 1.67 respectively) **(Sec table** 7). Most of these tasks require high level competence, and authority that demand extended knowledge and skills.

Male nurses tended to rate their decision-making higher than their female counterparts and they reported slightly higher average CDMQ scores **(2.32** versus **1.14).**

4.3 Relationships between nurses' socio-demographic factors and decision-making (correlations)

The study findings show that, there was a significant positive relationship between post basic trainings (1CN. BLS. ACLS, ATLS) and decision-making (r = 0.355. p = 0.001). Similarly, a significant positive relationship between gender and decision-making was identified with a spearman rho of 0.277 and 0.013 level of significance. There was also a significant relationship between basic professional qualification and decision making (rho = 0.227, p = 0.042).

In contrast to some previous studies and in agreement with others, no significant relationship was found between level of appointment and decision-making. Similarly, there was no significant relationship between either age in completed years or nursing experience (generally or in critical care unit) and decision making. However, experience had a significant negative correlation with post basic trainings meaning that, many of the nurses who had worked for longer time had no post basic training (i.e. ICN. BLS, ACLS or ATLS).

It was expected that age would be related to experience and level of appointment as it is reasonable to assume that older nurses have worked longer and consequently reached higher levels. Interestingly, while there was found to be a positive correlation between age and experience, there was a significant negative correlation between age and level of appointment ($r = -0.451$, $p < 0.001$). Similarly, age was significantly negatively related to both basic professional qualifications and post basic trainings ($r = -0.484$. $p = 0.01$ and $r = -0.239$, $p = 0.05$ respectively).

On the other hand, level of appointment was significantly negatively related to experience both in nursing generally and in critical care ($r = -0.467$, $p =< 0.000$ and $r = -0.354$. $p =< 0.001$ respectively). However, level of appointment had a significant positive relationship with post basic trainings ($r = 0.383$, $p = 0.01$).This means that those with post basic training have a higher chance of being appointed to higher levels (promoted).

The above findings can be explained by the fact that there has been a considerable change in the way nurses get promotions. Instead of considering only the number of years that one has served, emphasis is being put on extra knowledge and skills that one has made an effort to acquire in the course of his / her career hence the significant negative correlation between age and level of appointment.

It also emerged that older nurses had basic professional qualifications at KRN and KRN/M level as opposed to the majority younger nurses who had KRCHN qualifications. Likewise, more younger nurses had post basic training than the older nurses hence the significant negative relationship between age and both basic professional qualifications and post basic trainings.

Tabic 8: Bivariate correlations between nurses' socio-demographic factors and decision-making

	Decision making	Gender	Age	P/basic courses	Basic professional qualif	Position	G/ experi	CCU experi
Decision Making Pearson **r** Sign 2-tailed	1	0.277* 0.013	0.141 0.212	0.355** **0.001**	-0.277* 0.042	0.159 0.159	-0.166 0.142	0.192 0.088
Gender Pearson **r** Sign 2-tailed	0.277* 0.013	1	0.123 0.275	0.049 0.666	-0.069 0.541	0.035 0.760	0.032 0.777	0.010 0.930
Age Pearson **r** Sign2-tailed	0.141 0.212	0.123 0.275	1	-0.239* 0.033	0.484** OOOO	-0.451** **0.000**	0.680** **0.000**	0.400** **0.000**
Pbasic courses Pearson **r** Sign 2-tailed	0.355** **0.001**	0.049 0.666	0.239 0.033	1	0.004 0.969	0.383** **0.000**	-0.375** **0.001**	-0.402** **0.000**
Basic professional Pearson **r** Sign 2-tailed qualifications	-0.227* 0.042	0.069 0.541	0.484** **0.000**	0.004 0.969	1	0.200 0.075	-0.420** **0.000**	-0.150 0.185
Position Pearson **r** Sign 2-tailed	0.159 0.159	0.035 0.760	0.451** **0.000**	0.383** **0.000**	0.200 0.075	1	-0.467** **0.000**	-0.354** **0.001**
G experience Pearson **r** Sign 2-tailed	0.166 0.142	0.032 0.777	0.680** **0.000**	0.375** **0.001**	0.420** **0.000**	-0.467** **0.000**	1	0.422** **0.000**
CCU Experience Pearson **r** Sign 2-tailed	-0.192 0.088	0.010 0.930	0.400** **0.000**	0.402** **0.000**	-0.150 0.185	-0.354** **0.001**	0.422** **0.000**	1

* Correlation is significant at the 0.05 level (2-tailed)
** Correlation is significant at the 0.001 level (2-tailed)

4.4 Simple linear regression for variables with significant correlation w ith decision-making

fhe study found that, the three variables (Post basic trainings, gender and basic professional qualifications) had a significant correlation with decision-making in simple linear regression as shown in table 9 below. Post basic trainings had an R^2 of 0.126 (adjusted R^2 = 0.115); Significant at p = <0.001.

This means that. 11.5% of the variability in decision-making can be attributed to post basic trainings. Gender had an R^2 of 0.077 (adjusted R^2 = 0.065); Significant at p = < 0.013.

This means that. 6.5% of the variability in decision making was attributable to this variable. Basic professional qualifications had an R^2 of 0.052 (adjusted R^2 0.040); Significant at p = < 0.042. meaning that 4% of the variability in decision making was accounted for bv the nurse's basic professional qualifications **(Table 9).**

Table 9: Linear regressions for other courses done, gender, professional qualifications and decision performance showing R^2, adjusted R^2, significance, beta & 95%CI

Variables	R^2	Adjusted R^2	Significance	Beta	95% CI
Post basic trainings with Decision-making	0.126	0.115	0.001	0.355	0.072-0.282
Gender w ith Decision-making	0.077	0.065	0.013	0.277	0.063-0.512
Professional qualifications w ith decision-making	0.052	0.040	0.042	-0.227	-0.368 - -0.007

4.5 Stepwise multiple regression for variables with significant correlation w ith decision-making in simple linear regression

A stepwise multiple regression was undertaken using the three variables which had a significant correlation w ith decision making in simple linear regression. The order of the variables according to correlation coefficient and significance level was post basic trainings, gender and professional qualifications **(See Table 10).** The R^2 for post basic trainings, gender and professional qualifications with decision-making was 0.238 (Ad justed R^2 = 0.0208) (Table 8). Thus 23.8% of the variability in decision-making is accounted for by these three variables, significant at <=0.05 (Table **10).**

R Square is the proportion of variance in the dependent variable (decision-making) which can be predicted from the independent variables (Post basic trainings, gender & professional qualifications).

This value indicates that 23.8% of the variance in decision-making can be predicted from the above independent variables. As predictors are added to the model, each predictor will explain some of the variance in the dependent variable simply due to chance. The adjusted R-square attempts to yield a more honest value to estimate the R-squared for the population. In this study therefore, using the adjusted R\ about **21%** Of the variance in decision-making can be predicted by the three independent variables, significant at $p<0.05$.

Table 10: Regression table for other courses done, gender, professional qualifications and decision making showing R^2, adjusted R and significance for each step of the regression

Variables	R^2	Adjusted R^2	Significance	Beta	95% CI
Post basic trainings with Decision-making	0.126	0.115	**0.001**	0.355	0.072 - 0.282
Post basic trainings,	0.194	0.173	**0.001**	0.342	0.069-0.481
Gender			0.013	0.260	0.058- 0.481
With decision-making					
Post basic trainings.	0.238	0.208	**0.001**	0.344	0.072-0.271
Gender,			0.017	0.245	0.047-0.462
Professional qualifications			0.038	-0.212	-0.340--0.010
With decision-making					

4.6 RESPONSES TO THE OPEN QUESTION

An open-ended question on other factors affecting the respondents' (nurses) decision to perform the identified clinical activities yielded several factors. The most common factors affecting clinical decision-making as reported by the respondents included hospital protocol (reported by 75%). medical-legal issues (75%), lack of senior / administrative support (60%). staffing ratios (50%). workload (50%) and nurse - doctor relationships (40%).

CHAPTER FIVE: DISCUSSION

The main findings of this study on clinical decision-making among KNH CCU nurses were the moderate decision performance scores. It emerged that having a post basic training in a clinical course was the most important factor accounting for the variability in decision making.

The findings in the study did support the notion that Education level is correlated with decision making. Those who were educated at high level and /or those who had a post basic training notably in Intensive Care Nursing. BLS. ACLS and/ or ATLS were more likely to have high decision performance. This finding is similar to that by Hoffman et al (2004) who found a positive association between higher educational levels and desire to want to make decisions among Australian nurses. Also Prescott et al (1987) in the United States found that education had a positive influence on decision-making.

In an open interview with the CCU in-charge, he mentioned the need for having trained critical care nurses in the unit with preference for sub-specializations like Neural CCNs, Medical CCNs or Coronary CCNs if possible. He also stated the identified need for continuing professional education and appropriate preceptorship as a way of improving decision performance of the nurses.

Experience as measured by the length of nursing practice was not related to the frequency of clinical decision making. This agrees with the findings by Hoffman et al (2004) who found no relationship. However, this is in contrast with what was found by Papathanassoglou et al (2005) among nurses in Athens who reported a positive association between CCU experience and autonomy in decision-making which was attributed to increased knowledge and psychomotor skills. Also, a Finish study done by Lauri & Salantera in 1995 and reported by Papathanassoglou et al (2005) found a similar association.

It is possible that measuring experience in this way may not capture the aspect of experience that others have postulated improves decision making. Expertise in nursing is linked by Benner (1984) to clinical decision making and experience is related to greater expertise in decision making.

However, expertise is more than just the number of years spent nursing. It is also the incorporation of new knowledge with experience to develop further skills (Derbyshire, 1994).

Interestingly, the findings showed that experience was negatively correlated with other courses done (r = -0.402, P = 0.000). This means that, the longer a nurse had practiced nursing, the lesser the chance that he/she had done a performance improvement course. Hoffman et al (2004) argues that better measures of experience are needed to more fully investigate the relationship between experience and decision making frequency.

Age in this study did not have a significant relationship with decision making. It was expected that, age would be related to experience and level of appointment (position) as it is reasonable to assume that older nurses have worked longer and consequently reached higher levels.

The relationship between age and decision making is unclear in research literature with contradictory findings (Hoffman et al, 2004). However, while age was positively related to experience (r = 0.680. P = 0.000), there was a negative relationship between age and level of appointment (r = - 0.451. p = 0.000). This means that unlike w hat might be expected, older nurses had worked for long but were not necessarily at higher levels of appointment.

It also emerged that many of the nurses who had worked for long had not done other performance improvement courses, a factor that may be considered for promotions to higher levels. Further research is required to examine what variables may be contributing to the older nurses not undertaking performance improvement courses. In Australia. Hoffman et al (2004) reported a higher frequency of decision-making among the older participants.

Unlike the findings by Hoffman et al (2004) and Bucknall & Thomas (1996) that holding higher levels of appointment was associated with more participation in decision-making, this study found no relationship just like the finding by Schutzenhoffer & Musser. (1996).

Interestingly, this study found that, level of appointment was negatively related to age and experience unlike what would normally be expected. This suggests that other factors are considered for staff promotions.

One of the most intriguing finding in this study was the effect of nurses' sex on their decision performance. Male nurses reported higher decision performance despite their comparatively fewer numbers. These results are similar to the findings by Schutzenhoffer & Musser (1994) in a general population in USA as reported by Papathanassoglou et al (2005). Although increased decision-making by male employees may be understandable on the basis of gender characteristics and social norms especially in the African context, the issue of gender and decision-making in nursing has not been sufficiently studied and different studies report different findings. Despite this finding, male gender was not a significant determinant of the scores achieved for individual clinical activities studied. This may suggest that, male gender is not specifically associated with nursing decision-making and this need to be explored further to establish clear associations.

From this study, the best model to describe decision making was one which depicts in order of importance other performance improvement courses done, gender and professional qualification as influencing decision making. However, the predicted value of the model is only about 21% with 79% of the variability in decision making uncounted for by these variables.

Attempts to define the vary ing importance of different factors to clinical decision-making have been made by some researchers. A study in England which replicated a Canadian study ranked the factors in order of priority with knowledge and experience being placed first (Thomson and Sutton. 1985). The effects of self-reported factors on clinical decision-making were also listed in order of importance by Pardue (1987) as experience, knowledge, values, role models and stress.

A mixture of Primary and team nursing was found to be the commonest modality of nursing care in the CCU. Primary Nursing practice is consistently cited by both Nurses and Phy sicians as a facilitator of decision making for Nurses. Knowing the patient well is the basis for Nurses perceiving more autonomy and being accorded greater involvement by Physicians (Mohsen et al. 2004).

Heavy workloads, nurse-doctor relationships, hospital protocols, medical-legal issues and a variety of non nursing duties were mentioned as affecting nurses' decision making and their effect needs to be explored.

Nurses input to clinical decision-making need to be identified and strengthened. By adopting a passive stance, nurses may be hindered in acknowledging their own significant contribution to decision-making. Manias and Street, (2001) as reported by Papathanassoglou et al, (2005) reported interesting ethnographic observations regarding covert 1CU nurses' decisions masked under 'passive' specific suggestions to doctors. Clinical decisions are the means by which nurses' contribution to the production of health will be judged (Thompson C et al. 2000). The apparent assumption is that, because nurses intend to benefit the patients, their decision-making actually does so.

This study agrees with Papathanassoglou et al. (2005) assertion that, questionnaires to collect data may demonstrate nurses' perception of the formal and authorized forms of decision-making, and not of the equally important "silent' decision-making that is actualized through concealed suggestions.

CHAPTER SIX: CONCLUSIONS AND RECOMENDATIONS

CONCLUSIONS

From the results therefore, it can be concluded that:

- Majority of the nurses in KNH CCU are females and most lie in the age bracket of 30 to 40 years.
- Eighty percent of the nurses in CCU have professional qualifications of KRCHN and above and majority are appointed at senior levels.
- About half (47.5%) of the nurses have a CCU experience of 1 to 4 years.
- The most commonly practiced nursing care modality in KNH CCU is a mixture of primary and team nursing with commonest nurse to patient ratio of 1:2.
- There is moderate decision-making among KNH CCNs and that acquiring CVP readings, collecting bronchial cultures and conducting history taking & performing physical examination scored the highest as the decisions most commonly made and performed.
- Three socio-demographic factors (post basic trainings, basic professional qualifications and sex) were found to influence nurses' decision-making.
- More young nurses have post basic trainings unlike nurses with longer experience.
- Promotions to senior positions are not based only on age or experience but also on newly acquired knowledge and skills as reflected by more young nurses with post basic trainings at senior levels of appointment.

The research findings therefore found significant relationships between some socio-demographic factors and decision-making and thus the null hypothesis that **'there is no significant relationship between nurses' socio-demographic factors and clinical decision-making'** is rejected. The alternative hypothesis is therefore adopted.

RECOMMENDATIONS

To actualize and improve nurses' decision making, hospital management and nurse administrators need to:

- **Encourage** and **support** nurses' post basic trainings / **sub-specializations** to increases nurses' knowledge and skills base.
- Consider **knowledge** and **skills** obtained through post basic trainings and / or sub-specializations when deploying nursing stafT.
- **Enable** nurses exercise clinical decision-making as **taught** and this be included in hospital **policies** and **protocols.**
- **Actively support** reasonable decisions made by nurses

More research needs to be done to:

- Identify what other aspects of the clinical environment affect decision-making by nurses.
- Identify other causes for deteriorating health care services in the hospital. A combination of quantitative and qualitative approaches (Triangulation approach) would presumably enhance the depth of exploration by eliciting from nurses, the factors they believe to be influencing their decision making.
- Identify factors that make older nurses not to undertake post basic trainings.

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Serial No: 001

APPENDIX 1: QUESTIONNAIRE FOR NURSES

Questionnaire for the research on 'Factors affecting clinical decision-making by Nurses at the CCU in KNH'

Instructions:

1. The purpose of this questionnaire is to obtain information for study purposes only. The information obtained will go along way in improving the clinical functioning of Nurses and also may re-direct the socialization for Nurses as clinical experts. Your responses will be held in total confidence.
2. Do not write your name or any other identification anywhere on the questionnaire.
3. The questionnaire has four sections. Complete all the sections.
4. Put the filled in questionnaire in the given envelope and seal it. Hand it over to the researcher or the research assistant.

Section A: Demographic factors

Respond by circling (O) or ticking ( ) the most appropriate responses

1. Please indicate your Gender:
   0) Male
   1) Female

2. Indicate your age in completed years

Section B: Professional information

3. Indicate your nursing qualifications:
   1) KRN
   2) KRN/M
   3) KRCHN
   4) BScN
   5) MScN (specify area of specialization)

4. What other courses have you undertaken to improve your work performance?

5. What is your level of appointment (Your designation) in this unit?
   1) NO 111
   2) NO 11
   3) NO 1
   4) SNO
   5) Other (Specify)

6. How many years have you practiced nursing?
   1) Below 1 year
   2) 1 - 4 years
   3) 5 - 9 years
   4) 10- 15 years
   5) Over 15 years

7. For how long have you worked in the CCU?
   1) Below 1 year
   2) 1 - 4 years
   3) 5 - 9 years
   4) 10- 15 years
   5) Over 15 years

8. Which Nursing care modality do you practice in this unit?
   1) Primary Nursing
   2) Team Nursing
   3) Functional Nursing
   4) Case assignment
   5) A mixture of primary & team Nursing
   6) A mixture of primary & functional Nursing
   7) Other (Specify)

9. What is the common Nurse-Patient ratio in this unit?
   1) 1:1
   2) 1:2
   3) 1:3
   4) 2:3
   5) 2:4
   6) 3:2
   7) Other (Specify)

Section C: Nurses" clinical decision making (Patient care decisions)

For questions in this section, please circle the number that best describes your response to the following question using the following key:

KEY: 1. Never 2. Rarely 3. Sometimes 4. Always

QUESTION: How **often** do you **perform** the following **clinical activities** in this unit based on **your own assessment findings?**

10. Administering Narcotics without a medication order:
    1 2 3 4

11. Adjusting an inotropic infusion to stabilize a patient's hemodynamic status without a doctor's order:
    1 2 3 4

12. Adjusting a patient's mechanical ventilator settings after arterial blood gases **(ABG) results:**

1 2 3 4

13. Inserting a peripheral intravenous line into a patient to administer emergency **drugs:**

1 2 3 4

14. Altering maintenance IV fluids depending on the patient's hydration status:

1 2 3 4

15. Diagnosing the patient's condition:

1 ~ 2 3 4

16. Making decisions to change patient medications:

1 2 3 4

17. Making decisions to admit a patient:

1 2 3 4

18. Discharging a patient from the unit:

1 2 3 4

19. Providing discharge information to the patient and / or family:

1 2 3 4

20. Discussing patients' condition and prognosis with patient and / or relatives:

1 2 3 4

21. Assessing patients" clinical status:

1 2 3 4

22. Participation in collaborative therapeutic decisions:

1 2 3 4

23. Obtaining blood samples for laboratory tests:

1 2 3 4

24. Collecting specimens for bronchial cultures:

1 ^ 2 3 4

25. Acquiring central venous pressure (CVP) readings:

1 2 3 4

26. Acquiring pulmonary artery pressure (PAP) readings:

1 2 3 4

27. Acquiring pulmonary capillary wedge pressure (PCWP) readings:
1 2 ' 3 4

28. Evaluating hemodynamic measurements:
1 2 3 4

29. Insertion of indwelling urinary catheter:
1 2 3 4

30. Performing emergency defibrillation:
1 2 3 4

31. Decision to wean patients from ventilator:
1 2 3 4

32. Performance of endotracheal intubation procedure:
1 2 3 4

33. Decision to extubate a patient:
1 2 3 4

34. Participation in medical ward rounds:
1 2 3 4

35. Teaching nursing students on critical care procedures in the unit:
1 " 2 3 4

36. Conducting history taking and performing physical examination:
1 2 3 4

Section D: Factors influencing clinical decision making

37. Write in the spaces below the factors that affect your decision to perform the above clinical activities:

Thank you for accepting to fill the questionnaire

APPENDIX 2: RESPONDENTS' CONSENT FORM

Dear respondent.

My name is Mutisya Kyalo. I am a student at the University of Nairobi pursuing a masters degree in Nursing (Critical Care). One of the requirements for award of the degree is to carry out a research. In regard to this, am carrying out a research on **"Factors affecting clinical decision making by Nurses at the** CCU **in KNH".** The research has been approved by the Ethics and Research Committee of KNH and permission to carry it out granted by the hospital. It involves interviewing nurses working at the CCU.

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

The results of the study will help improve clinical decision making of nurses which in turn will help improve patient care outcomes and inform policy on training and development of expert clinical nurses. If you wish to know the results, they will be given to you once the study is completed. You may ask any questions about your rights as a participant or anything else about the research that is not clear. You can also contact me on 0721 48 48 69 incase you have any questions later.

Thank you for your time.

Respondent's consent:

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

Respondent's sign . . . . . Date:

Investigator's sign . . . . . Date:

APPENDIX 3: APPROVAL LETTER FROM KNH ETHICS AND RESEARCH COMMITTEE

KENYATTA NATIONAL HOSPITAL
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Re" KNH-ERGf 01/ 350

18s1 April, 2008

Mr Mutisya A. Kyalo
Dept of Nursing Sciences
VERSITY OF NAIROBI

•ear Mr Mutisya

RESEARCH PROPOSAL: "FACTORS AFFECTING CLINICAL DECISION MAKING BY NURSES AT THE CRITICAL CARE UNIT AT KENYATTA NATIONAL HOSPITAL"_____(P30/2/2008)

"-is is to inform you that the Kenyatta National Hospital Ethics and Research Committee has -eviewed and approved your above revised research proposal for the period 18th April, 2008 - 17" April, 2009.

•':u will be required to request for a renewal of the approval if you intend to continue with the study beyond the deadline given. Clearance for export of biological specimen must also be obtained from K'.H-ERCfor each batch.

Oi behalf of the Committee, I wish you fruitful research and look forward to receiving a summary of the research findings upon completion of the study.

"-is information wil form part of database that will be consulted in future when processing related -^search study so as to minimize chances of study duplication

Yours sincerely

ı *w f u . O A M ^ '*

PROF AN GUANTAI
SECRETARY, KNH-ERC

cc Prof. K.M. Bhatt, Chairperson KNH-ERC
The Deputy Director CS, KNH
The Dean, School of Nursing, UoN
The Chairman, Dept. of Nursing, UON
Supervisors: Mrs RisperEve Rajula, School of Nursing Sciences, UoN
Mrs. Theresa Odero, School of Nursing Sciences, UoN
Prof. Joyce Musandu, School of Nursina Sciences. UoN

APPENDIX 4: RESEARCH AUTHORIZATION LETTER FROM MINISTRY OF HIGHER EDUCATION, SCIENCE AND TECHNOLOGY

REPI RI.IC OF KENYA

MINISTRY OF HIGHER EDUCATION SCIENCE St TECHNOLOGY

Telegrams: "SCIENCE TEC". Nairobi
Telephone: 02-3 18581
B-Mail ."ps@sci e nceandtechno logy. go. ke

JOGOO HOUSE "B"
I1ARAMBEE AVENUE,
P.O. Box 9583-00200
NAIROBI

When Replying please quote

Rcf. MOHEST **13/001/38C 478/2**

11'ₛ August 2008

Mutisya A. Kyalo
University of Nairobi
P.O. Box 30197
NAIROBI

RE: RESEARCH AUTHORIZATION

Following your application for authority to carry out research on, *'Factors Affecting Clinical Decision Making by Nurses at the Critical Care Unit in Kenyatta National Hospital,*

I am pleased to inform you that you have been authorized to carry out research at the Kenyatta National Hospital for a period ending 30' October, 2008.

You are advised to report to the Director, Kenyatta National Hospital before embarking on your research.

On completion of your research, you are expected to submit two copies of your research report to this office.

M. O. ONDIEKI
FOR: PERMANENT SECRETARY

Copy to:

The Director
Kenyatta National Hospital
NAIROBI

APPENDIX 5: RESEARCH PERMIT

PAGE 2

THIS IS TO CERTIFY THAT:

Piof7Dr./MrJMrs./Miss...EII?B.
A. KYALO

of (Address)... **MyiMITY** OF...NAIROBI..
P.O.BCFT 30197 NAIROBI

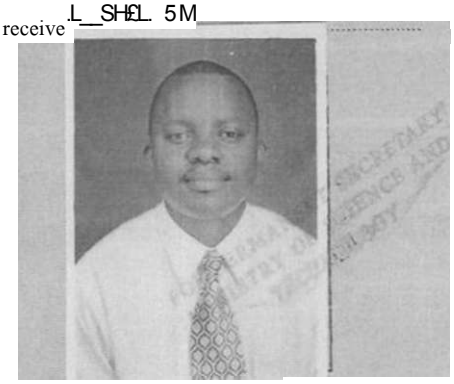
has been permitted to conduct research in
KENYATTA NATIONAL HOSPITALˆ,.

m M l ..... **District,**
.NAIROBI ..... Province,
on the tnpir FACTOR^ AFFECTING CLINICAL DECISION MAKING BY NURSES- AT tHE NATIONAL HOSPITAL

for a period ending *19J.L.9.919EL 2oM*

PAGE 3

MOHEST 13/001/38C 478
Research Permit No
Date of issue. 11/8/2008
Fee receive L_SHEL 5M



M.O. 3NDIEKI

Applicant's Signature

FOR:*Permanent Secretary*
Ministry of
Science and Technology

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