

**ERROR MANAGEMENT IN NURSING
AMONGST REGISTERED NURSES
WORKING IN A TERTIARY HOSPITAL IN
SAUDI ARABIA.**

by
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*Thesis presented in fulfilment of the requirements for the degree
of Master of Nursing Science in the Faculty of Health Sciences at
Stellenbosch University*



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DECLARATION

By submitting this thesis electronically, I declare that the entirety of the work contained therein is my own, original work, that I am the sole author thereof (save to the extent explicitly otherwise stated), that reproduction and publication thereof by Stellenbosch University will not infringe any third party rights and that I have not previously in its entirety or in part submitted it for obtaining any qualification.

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ABSTRACT

Healthcare organizations have implemented numerous safety initiatives to address errors due to the impact on the patient, families, healthcare provider and the organization as highlighted in the Institute of Medicine report. However, error identification, reporting and management remain a challenge. Nurses have been identified as the healthcare provider with the greatest potential for errors.

Supportive work environments are needed to provide optimal care to the nurse who makes an error; which may be minor to severe repercussions. The patient is identified as the first victim and the nurse who makes the error as the second victim. How nurse errors are reported, managed and disclosed is dependent on the response of leaders and peers which may be in a shame and blame or just culture approach.

The aim of the study was to assess error management in nursing amongst registered nurses working in a tertiary hospital in Saudi Arabia. The objectives were to identify the occurrence of nursing related errors, determine the current process of reporting nursing errors, describe the management of nursing errors and explore the factors impacting on the management of nursing errors.

The research methodology for this study was a descriptive, quantitative approach which is applicable when exploring the unknown. Ethical approval was obtained from the Ethics Board, University of Stellenbosch and the Institutional Review Board, King Faisal Specialist Hospital and Research Centre (General Organization) -Jeddah (KFSH&RC-J).

The population was registered nurses working in KFSH&RC-J and assigned to the job descriptions of Staff Nurse 1&2, Clinical Nurse Coordinators and Assistant/Head nurses. Sample was selected using proportional allocation for nationality and simple random selection for nursing specialty; 215 RNs from these three groups.

Data was collected using a questionnaire developed by the researcher and analysis completed using SPSS and regression analysis to identify factors which influences the reporting and management of errors. Data was presented in the form of frequency tables and graphs using the EXCEL program to analyze the data.

The main findings of the study; there was significant difference in nurse leaders and professional nurses ability to identify nursing errors; questioning of the practice of peers, views of a non-punitive environment and the ability to differentiate between error and negligence. The nurse executive was positively associated with the average positive

responses received. RNs of Middle Eastern nationality and the Adult nursing division were found to be slightly more negative in their perceptions about error reporting and management than other respondents.

Improvements are needed in the processes of error reporting and management which include education; leadership development, underreporting of errors, feedback and communication, nurse manager support and disclosure of errors.

Recommendations are the implementation of the Just Culture principles within the organization and leadership development to address error reporting and management. The need to develop a national database for error reporting in Saudi Arabia is recommended.

Nursing errors occurred in one tertiary hospital in Saudi Arabia and an on-line system is available to report errors. However, nurses do not report errors as they fear being blamed and shamed. The process of error management within the organization has not been clearly defined.

OPSOMMING

Gesondheidsorganisasies het talle veiligheids inisiatiewe geïmplementeer om foute aan te spreek weens die invloed wat dit het op die pasiënt, families, die gesondheidsverskaffer en die organisasie soos uitgelig in die Mediese Verslag van die Instituut. Nietemin, die identifisering van foute, verslaggewing en bestuur bly 'n uitdaging. Verpleegsters is geïdentifiseer as die gesondheidsverskaffers wat oor die grootste potensiaal beskik om foute te begaan.

Ondersteunende werkomgewings word benodig om optimale sorg aan die verpleegster te verskaf wat 'n fout van 'n mindere aard tot die met ernstige gevolge begaan. Die pasiënt word geïdentifiseer as die eerste slagoffer en die verpleegster wat die fout begaan as die tweede slagoffer. Die manier hoedat verpleegfoute gerapporteer, bestuur en openbaar gemaak word, is afhanklik van die reaksies van leiers en portuurgroepe wat 'n skaamte- en blameerbenadering of "just culture"-benadering kan wees.

Die doel van die studie was om die hantering van verpleegfoute tussen geregistreerde verpleegkundiges wat in 'n tersiêre hospital in Saudi werk te ondersoek. Die doelwitte is om die voorkoms van verpleegverwante foute te identifiseer, die huidige proses van verslaggewing van verpleegfoute te bepaal, die bestuur van verpleegfoute te beskryf en die faktore te ondersoek wat 'n impak het op die bestuur van verpleegfoute.

Die navorsingsmetodologie vir hierdie studie is 'n beskrywende, kwantitatiewe benadering wat van toepassing is wanneer die onbekende ondersoek word. Etiese goedkeuring is verkry van die Etiese Raad aan die Universiteit Stellenbosch en die Institusionele Beoordelingsraad, King Faisal Specialist Hospitaal en Navorsingsentrum (Algemene Organisasie) – Jeddah (KFSH & RC-J).

Die teikengroep is geregistreerde verpleegsters wat werk in KFSH & RC-J aan wie die posbeskrywing van stafverpleegster 1 & 2 toegeken is, Kliniese Verpleegkoördineerders en Assistent/Hoofverpleegsters. Die steekproef is geselekteer deur gebruik te maak van proporsionele toekenning vir nasionaliteit en 'n eenvoudige ewekansige steekproef vir verpleegspesialiteit; 215 geregistreerde verpleegsters van hierdie drie groepe.

Data is gekollekteer deur gebruik te maak van 'n vraelys wat deur die navorser ontwikkel is en die analise is voltooi deur gebruik te maak van SPSS en regressie-analise om faktore te identifiseer wat verslaggewing en bestuur van foute beïnvloed. Data is aangebied in die vorm van frekwensie-tabelle en grafieke deur gebruik te maak van die EXCEL-program om die data te analiseer.

Die vernaamste bevindinge van die studie is dat daar beduidende verskille tussen verpleegleiers en professionele verpleegsters se vermoë is om verpleegfoute te identifiseer; bevraagtekening van die praktyke van portuurgroepe; beskouing van nie-straferigte omgewing en die vermoë om te onderskei tussen foute en nalatigheid. Die verpleegekskuteur is positief geassosieer met die gemiddelde positiewe response wat ontvang is. Geregistreerde verpleegsters van Midde-Oostelike nasionaliteit en die Volwasse Verpleegafdeling is gevind om effens meer negatief te wees in hulle persepsies van fouteverslaggewing en bestuur, as ander respondente.

Verbeterings is nodig in die prosesse van verslaggewing van foute en bestuur daarvan wat opvoeding daarvan insluit; leierskapontwikkeling, onderverslaggewing van foute, terugvoer en kommunikasie, ondersteuning van verpleegbestuur en bekendmaking van foute.

Aanbevelings is die implementering van die "Just"-kultuur beginsels binne die organisasie en leierskap ontwikkeling om die verslag van foute en bestuur aan te spreek. Die behoefte om 'n nasionale databasis te ontwikkel vir die verslag van foute in Saoedi-Arabië word aanbeveel.

Verpleegfoute het in een tersiêre hospitaal in Saoedi-Arabië plaasgevind en 'n aanlyn sisteem is beskikbaar gestel om foute te rapporteer. Nietemin, verpleegsters rapporteer nie foute nie, want hulle vrees om geblameer te word en beskaamd te staan. Hierdie proses van foutebestuur binne die organisasie is nog nie duidelik gedefinieer nie.

DEDICATION

I dedicate this work to my parents, Simon and Sylvia Haines. Dad and Mom, thank you for the sacrifices and for believing in me, I love you.

And to my Heavenly Father, My Lord and Saviour Jesus Christ and God, the Holy Spirit; words cannot express the love and gratitude I feel knowing that you have gifted me with the ability to accomplish much. I live to give you glory.

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ABBREVIATIONS

AHRQ	Agency for Healthcare Research and Quality
ANCC	American Nurses Credentialing Centre
CNC	Clinical Nurse Coordinators
EXCEL	Excel is a spread sheet program from Microsoft, a component Office for business applications.
IHI	Institute of Healthcare Improvement
IRB	Institutional Review Board
JCIA	Joint Commission International Accreditation
KFSH&RC-J	King Faisal Specialist Hospital & Research Centre (General Organization)-Jeddah Branch
MOH	Ministry of Health, Kingdom of Saudi Arabia
MRP	Magnet Recognition Program
MSR	Manpower Status Report
RNs	Registered Nurses
SANC	South African Nurses Council
SN1& 2	Staff Nurses 1&2
SPSS	Statistical Program for Social Sciences
SRS	Safety Reporting System
USA	United States of America

CHAPTER 1: FOUNDATION OF THE STUDY

1.1 INTRODUCTION

Every nurse aims to provide safe patient care, with no harm to come to the patient, but as highlighted in the Institute of Medicine (IOM) report “*To Err is Human*”, every healthcare provider has the potential to make an error (Kohn, Corrigan & Donaldson, 2000:1). This report is more than 10 years old and has resulted in many changes being implemented to address errors. Initiatives include the Institute of Healthcare Improvement (IHI) bundles and the 100k Lives and 5Million lives campaigns; Joint Commission International Accreditation (JCIA) patient safety goals; Agency for Healthcare Research and Quality (AHRQ, 2004) Culture of Safety assessment tools developed and implemented; the American Nurses Credentialing Centre's Magnet Recognition Program® (ANCC, 2008) and the identification of the Just Culture concept for error reporting and management (Marx, 2001: 1-28).

Little is known about the safety culture of healthcare organizations in Saudi Arabia and whether the nursing challenges for error prevention, reporting and management are the same as reported in other countries.

1.2 SIGNIFICANCE OF THE PROBLEM

Few studies which assessed the safety culture of the healthcare environment in Saudi Arabia were found on literature review and thus little is known about the safety culture of healthcare organizations in Saudi Arabia (Alahmadi, 2010:17). Thus, the value of this study was to add to the knowledge of safety measures by error reporting and management of registered nurses which would assist clinicians, middle managers and executives in improving the safety culture for better patient and nurse outcomes in Saudi Arabia.

1.3 RATIONALE

The profession of nursing is founded on the ethical principles of veracity, beneficence and autonomy (Burkhardt & Nathaniel, 2008:53-65). The role of the nurse is that of patient advocate, speaking on their behalf and preventing patient harm (Searle, 2006: vii & 204). However, these values are challenged when the registered nurse (RN) in her role of care provider makes an error which results in harm to the patient, family, systems and the profession (Benner, Sheets, Uris, Malloch, Schwed & Jamison, 2002: 509).

Patients who are admitted to hospital place their trust in the healthcare provider to assist in their journey to wellbeing. Their expectation is that no harm but only good would be the result

of their hospital visit. Patients' expectations are that healthcare providers will deliver the best quality of care available in accordance with their professional regulation and thereby held accountable for their acts and omissions (Al-Mandhari, Al-Shafae, Al-Azri, Al-Zakwani, Khan, Al-Waily & Rizvi, 2008:1472).

Through personal experience as a nurse manager (known as a head nurse), I noted that I did not have clear guidelines or defined policies for making decisions about nursing error management. I was employed as the head nurse of the antenatal/postpartum unit for 5 years from 2001 to 2007 at King Faisal Specialist Hospital & Research Centre (General Organisation)-Jeddah (KFSHRC-J). Other challenges I identified were how to support both the RN and the patient through an adverse event which may have severe consequences in different ways for both. RNs assigned to the direct care provider role in Saudi Arabia are given the title of Staff Nurse 1 or 2, dependent on meeting recruitment criteria of the organizations.

The IOM report (Kohn *et al.*, 2000:4-6) advocates that error management should contain the following elements which are translated into the "Just Culture" approach defined by Marx (2001:3):

- Not to focus on individuals, but hold all nurses accountable for practice. This includes raising the standards and expectations of quality care delivery through development of organizations with a "culture of safety."
- Build safer care delivery systems, utilizing technology and resources to create the optimal professional environment for healthcare providers, in order to decrease opportunities to make errors.
- Focus on learning from errors as reported through the initiation of mandatory and voluntary errors reporting. This would also include education to increase prevention of errors (Marx: 2001: 3-4).

Results of studies in Saudi Arabia were found to be similar to other findings reported in literature. Alahmadi (2010:20-21) and Almutary & Lewis (2012:125) identified that a safety culture within Saudi Arabia is yet to be fully developed, with the need to eliminate blame, fear and silence regarding errors and leadership to view errors as opportunities for learning and not blame. However, many healthcare organizations are working towards introducing safety measures (Alahmadi, 2010: 20-21; Almutary & Lewis; 2012:125).

Factors identified for improvement were feedback communication systems and technology support through a non-punitive reporting system (Mwachofi, Walston & Al-Omar, 2011:277-

281; Almutary & Lewis, 2012:126). Thus, the challenge for Saudi Arabia is how to implement a “*just culture*” in the Middle Eastern healthcare setting (Marx, 2001:3).

RNs perceive the Saudi Arabian professional environment as having a paternalistic approach to care delivery where orders are expected to be followed with minimal questioning and where work contracts can easily be terminated and where a culture of blame with the fear of reprisal when errors are made exist (Tumulty, 2001:287; Alahmadi, 2010: 20-21). Spears (2005:223) and Lamb, Studdert, Bohmer, Berwick, & Brennan (2003:75) argue that error management and disclosure become the focus for the nurse and the nurse manager when nursing care results in unanticipated negative outcomes.

Organisations are continuously challenged in creating safer, therapeutic healthcare environments (Spears, 2005:223; Alahmadi, 2010:20-21). KFSH&RC-J is one such organisation which achieved Joint Commission International Accreditation (JCIA) for the third time in June 2008 and which is a member of the Intuition for Healthcare Improvement (IHI) and has implemented a voluntary error computerized adverse event reporting system (Safety Reporting System). The Safety Reporting System (SRS) encourages reporting of all adverse events through a non-punitive approach and education is provided to all staff on the benefits of the system.

The role of organisational leadership is important in the prevention and management of errors and “reducing errors will only occur if leadership accepts the ethical call of accountability to do no harm (Piper, 2012: 32). Lack of administrative feedback and not recognizing the need for education about safety culture reinforces the view that reporting is not useful (Elder, Brungs, Nagy, Kudel & Render, 2008: 162).

I was assigned to the position of Magnet Recognition Program® Coordinator at KFSH&RC-J in July 2007 and was charged with the responsibility of changing the professional work environment. The goal was to build a shared decision making structure which included the concepts of partnership, accountability, ownership and equity which would increase empowerment amongst direct care nurses and nurse leaders within the organization. These goals were based on the expected patient, staff, organizational and consumer outcomes as identified by the American Nurses Credentialing Centre Magnet Recognition Program® (ANCC, 2008).

As registered nurses at the bedside began to assume more accountability for practice and engage in decision making using the shared governance principles (Porter-O'Grady,1987), many nurses began to raise questions, e.g. how do we manage errors, do we have an environment that encourages nurses to report errors made, do managers and senior staff

members support clinical nurses through the experience of having made an error, do we have clear structures and processes available that make the process of error prevention, reporting and management a win-win outcome for both patients and staff, to what extent are the concepts of accountability, blame free, safety culture, non-punitive approach and just culture seen in the clinical setting?

This led to identifying the need for this study to be conducted to answer the question about registered nurses' perception of error management in a Middle Eastern hospital.

1.3.1 Defining nursing errors

The differentiation between medical errors and nursing errors in literature seems to be used interchangeably (Kohn *et al.*, 2000: 8-9; Chard, 2010: 133-134). Researchers do not seem to agree on a standard use of each of the definitions for errors and medical errors are seen to include all errors made by healthcare providers (Herbert, Levin & Robertson, 2001: 509; Ioannidis & Lau: 2001: 326; Hobgood, Eaton & Weiner, 2005: 138). Medical errors are described by Herbert *et al.* (2001: 509) as "*patients are harmed as a consequence of either what is done to them- errors of commission – or what is not done but should have been done to prevent an adverse event - error of omission*" when distinguishing between negligent actions and honest mistakes. This definition does not differ much when compared to Reason's (1990:9) definition of an error as "*taken as a generic term to encompass all those occasions in which a planned sequence of mental and physical activities fails to achieve its intended outcome, and when these failures cannot be attributed to the intervention of some chance agency*".

When referring to nursing errors in the context of this research these are all errors of commission or omission which affect the patient. The nurse may be the healthcare provider performing the intervention that caused the error or be implicated in the omission of care.

Herbert *et al.* (2001: 511) cite Leape *et al.* (1991) that an adverse event is "*an injury due to medical management that prolonged hospital stay or led to disability at discharge or both*". This is seen to include errors made as these can be near misses (or potential errors), errors with no harm and errors with harm. The researchers are of the opinion that there are inconsistencies in the definition of errors and a need for standardization of terminology. Hobgood *et al.* (2005:138) argue that "*adverse events are not necessarily equivalent to errors*" and there is a need to define medical errors. This is supported by the Pennsylvania Patient Safety Authority Annual Report (2008) which stated that facilities missed reporting serious events and incidents (near misses and no harm events) due to the inconsistencies of terminology interpretation.

Benner *et al.* (2002: 509-520) compiled a taxonomy of nursing errors in which she defined the most frequently occurring errors. These errors were defined as serious nursing errors that were reported to the State Board for investigation and disciplinary action. The errors were classified as serious but no definition of nursing errors was given. This taxonomy identified nursing errors into eight categories with a broad range of possible errors and causative factors. This key aspect of medical errors does cause a dilemma in reporting and management.

The need for clear definitions was seen in 1996 when the Joint Commission on Accreditation of Healthcare Organisations (JCAHO) defined sentinel events as “*an unexpected occurrence involving death or serious physical or psychological injury or the risk thereof. Serious injury specifically includes loss of limb or function. The event is called sentinel because it sends a signal or sounds a warning that requires immediate attention.*” This was revised in 1997 to include “*any process variation for which a recurrence would carry significant chance of serious outcome*” and included types of events that needed to be reported by accredited facilities (Kobs, 1998:10).

In 2004 the Patient Safety Authority (PSA), an independent state agency was established under Act 13 of 2002, the Medical Care Availability and Reduction of Error “Mcare” Act in Pennsylvania making this the only state in the United States of America with a mandate to report serious events and near misses. This authority defined a harm score which was reported to be used by more than 400 healthcare facilities in June 2004 and interested international facilities in 2008. This is the defined harm score used by the KFSH&RC-J with some modifications to the cultural differences.

1.3.2 The outcome of errors in healthcare

The outcome of an error made by a nurse that reached the patient with no harm or reached the patient with harm does result in consequences which may include disciplinary measures being applied (Benner *et al.*, 2002: 521). Attention to the process of what nurses experience when they make a mistake and how they perceive, interpret and resolve errors is needed (Spears, 2005: 223; Crigger & Meek, 2007: 177). This can serve to “*frame an understanding of these experiences in the environment of patient error*” (Spears, 2005: 223).

Chard (2010: 140) found that nurses had difficulty with differentiating between a “*close call*” (near miss) and an error which was based on a generalized definition of nursing errors, but were happy with the error management process they had experienced. The degree of error severity was not defined. The manager will have multiple challenges in managing the error as she has the patient to care for and the staff member to support as dealing with the error

(Spears, 2005:223). Several studies have found nurses unwilling to report errors, only reporting severe errors and living in fear of reprisal (Wilson, Bekker & Fylan, 2008: 364; Alahmadi, 2010:20-21; Almutary & Lewis, 2012: 125).

However, in a study by Throckmorton & Ecthegaray (2007: 411), it was found that the majority of nurses were willing to report errors. The outcomes of medical errors for nurses may include disciplinary and legal actions (Benner *et al.*, 2002:510; Lamb *et al.*, 2003:80).

The severity of disciplinary measures is dependent on the severity of patient outcome. If the error was classified as a sentinel event or the outcome was a morbidity or mortality, the outcome for the nurse may result in the most severe of disciplinary measures being taken (Lamb *et al.*, 2003:80). The shift of focus from individuals to employee competence, environment and system assistance to decrease error risk has resulted in a change in healthcare provision (Marx, 2001:3; Benner *et al.*, 2002: 510). Systems have been developed and introduced that take into account workflow, environment and staff needs to reduce the opportunity for errors (Longo, Hewett, Ge & Schubert, 2005: 2862).

Publications by Marx (2001: 3 &17) and Murphy , Stee, McEvoy & Oshiro, (2007 :893) bring the concepts of “*just culture*” and “*blame-free* “ to the forefront of nursing error reporting and have kindled an interest in healthcare providers’ perceptions and error management including disclosure to the public. However, organisations continue to be challenged in changing the healthcare environment to one of a safety culture (Kohn *et al.*, 2001:10-14; Marx, 2001:1; Spears, 2005: 223, Mayer & Cronin, 2008:429).

1.4 PROBLEM STATEMENT

Registered nurses who cause nursing errors do not disclose them due to fear that they would be held responsible or be blamed without a review into the causes of nursing errors. This fear leads to Registered Nurses not reporting nursing errors within the clinical environment.

1.5 RESEARCH QUESTION

The question which guided the research was: How are errors occurring in nursing amongst registered nurses working in a tertiary hospital in Saudi Arabia managed?

The question which guided the research was: How are errors occurring in nursing amongst registered nurses working in a tertiary hospital in Saudi Arabia managed?

Thus to quantify the management of errors made by registered nurses, the following questions were posed as sub questions?

1. What is the occurrence of nursing related errors within the organisation?
2. Is there a process of reporting nursing errors within the organisation?
3. What is the organisation approach of nursing error management?
4. Which factors impact the management of nursing errors?

1.6 RESEARCH AIM

The aim of this study was to assess error management in nursing amongst registered nurses working in a tertiary hospital in Saudi Arabia.

1.7 RESEARCH OBJECTIVES

The objectives of this study were to

- identify the occurrence of nursing related errors
- determine the current process of reporting nursing errors
- describe the management of nursing errors
- explore the factors impacting on the management of nursing errors.

1.8 CONCEPTUAL FRAMEWORK

The conceptual model broadly explains phenomena of interest, expresses assumptions and reflects a philosophical stance (Burns & Grove, 2007:167). A framework is a brief explanation of a theory or those portions of a theory to be tested in a quantitative study, with descriptive studies often examining multiple factors to understand a phenomenon not previously well studied (Burns & Grove, 2007:171).

The conceptual framework guiding the study is based on the Just Culture Approach to errors proposed by Marx (2001). The just culture approach supports Reason's (1990) theory of human error. Reason (2000: 768) advocates that the human error problem can be viewed in two ways: person approach (reducing unwanted variability in human behaviour) versus the system approach (humans are fallible and errors are to be expected, thus conditions need to be changed to reduce risk).

Just culture has many definitions in literature, but the concept advocates a balanced approach to errors, support and accountability (Marx, 2001:3; Dekker, 2007:24; Mayer & Cronin, 2008:429; Reason 2012:62). Mayer & Cronin's (2008:429) definition is "front-line personnel feel comfortable disclosing errors, including their own, while maintaining professional accountability. The Author recognizes many individual errors represent predictable interactions between human operators and the system in which they work and

Reason (2012: 62) states that just culture is not blame free but open and fair"; and thus a decision process is defined for error management (Marx; 2001: 13-18).

Excellence in patient and nurse outcomes is increased when the concepts of just culture and a culture of safety work together in the healthcare organisation. When the approach to the management of medical errors is an individual approach, which is the traditional method, it is easier for leaders to assign blame, shame individuals and punish them for errors which could be prevented (Alahmadi, 2010: 20-21; Almutary & Lewis, 2012: 125).

The systems approach which is advocated for all healthcare organisations as the ideal approach to adopt, recognizing that humans make errors and there is a need to identify risks and decrease these through better working conditions, non-punitive approach to errors, support and education of employees to learn from errors made and feedback mechanisms to employees on the errors reported (Reason, 2000: 769-770; Marx, 2001: 3-4). Thus to implement a Just Culture, an organisation would adopt the systems approach and this would be measured through the safety culture evident throughout an organisation.

1.9 RESEARCH METHODOLOGY

The methodology or design refers to the process and strategies used for gathering, analysing and interpreting the data obtained in a particular research investigation (Brink, Van der Walt & Van Rensburg, 2006:92). Quantitative research approach is defined by Burns & Grove (2007: 24) as "a formal, objective, rigorous systematic approach for generating information about the world, conducted to describe new situations, events or concepts in the world."

Descriptive quantitative research is the exploration of phenomena in real life situations, providing an accurate account of characteristics of individuals, situations or groups, discovering new meaning, describing what exists or determining frequency of occurrence (Burns & Grove, 2007:24).

1.9.1 Research design

This research design is based on a quantitative approach with a descriptive design to explore and describe error management in nursing. This is regarded as a suitable approach by Burns & Grove, (2007:24) when "exploring the unknown".

1.9.2 Study setting

Due to the nature and sensitivity of the topic the study was conducted at one tertiary healthcare organisation in Saudi Arabia, KFSH&RC-J. This limits generalization to the

population of registered nurses working in Saudi Arabia, Nevertheless, information obtained will assist decision makers in policy development with regard to managing nursing errors.

1.9.3 Population and sampling

Population is defined as “all elements (individuals, objects or substances) that meet certain criteria for inclusion in a study” and a sample as “a subset of the population that is selected for a particular study” (Burns & Grove; 2007:40). Sampling is described as the process of selecting the group of subjects, events or behaviours and the sampling frame is the list compiled to identify all subjects who have an opportunity to be selected from the accessible population (Burns & Grove, 40,330)

Table 1.1 below summarizes the planned sample for the study and chapter three will present changes which were introduced at data collection.

Table 1.1: The target population of registered nurses (RNs) as of June 2010

King Faisal Specialist Hospital & Research Center(Gen.Org)-Jeddah	Staff Nurses 1 & 2 (SN1& 2)	Clinical Nurse Coordinators (CNC)	Unit Managers (HN& AHN)	Totals
1. Critical Care Division	165	4	4	n =173
2. Maternal Child Division	80	3	3	n =86
3. Adult Division	190	7	3	n =200
4. Pediatric Division	77	3	3	n =83
5. Procedure Division	89	2	5	n =96
6. Out Patient Division	54	0	4	n =58
Target Population =N	655	19	22	N =696
Sample Size 25% of Target Population	n =164	n= 5	n= 6	N = 175

The population N=696 as of 01 June 2010 Manpower Status Report (MSR) consisted of all RNs employed at KFSH&RC-J who met the inclusion criteria. The sample selection method was planned as 25% of the total population and simple random selection would provide distribution of nursing specialty and nationality among the selection. The sample was selected using a simple random method for nationality and nursing specialty by the Director, Research Department using a computerized table of RNs from the MSR one month before the study was commenced.

1.9.3.1 Inclusion criteria

The inclusion criterion for the study was:

- RNs assigned to patient care units providing direct clinical care with job titles of Staff Nurse 1 & 2 and Clinical Nurse Coordinator
- Nurse Managers who are registered nurses with a twenty four accountability for a patient care unit with job title of Assistant Head Nurse/ Head Nurse.

1.9.3.2 Exclusion criteria

- RNs who were not assigned to patient care units and do not have direct patient contact, e.g. assigned in nurse education, coordinators, nursing supervisors, nursing informatics and executive job descriptions, i.e. Chief of Nursing, Programme Directors, Quality Managers, Nurse Recruiters and Products Coordinator.
- Eligible RNs on vacation during data collection period.
- RNs who participated in the pilot study.
- RNs that were in the probation period (first three months of recruitment) at the time of data collection.

1.9.4 Instrumentation

Instrumentation used in the study was a structured questionnaire with predominately closed-ended questions and a five point Likert scale with an option of other where appropriate. Core concepts related to error management were generated and refined into this concept questionnaire which was based on an extensive literature review, expert advisor's input and the clinical experience of the researcher in organisation processes. The questionnaire consisted of four sections as follows: Section 1: Biographical/Demographical data; Section 2: Types of Errors; Section 3: Had two sections 3.1 and 3.2 which were Likert Scale questions exploring error management and factors which affect errors and Section 4: Nurses' involvement with errors.

1.9.5 Pilot study

A pilot study is defined as "a smaller version of the proposed study and conducted to refine the methodology (Burns & Grove, 2007:38). The purpose of the pilot study was to ensure that the questionnaire would address the objectives defined in the proposed study. The pilot study was conducted with volunteer RNs n=18 (10%) who did not meet the inclusion criteria. The approach applied was test-retest of the questionnaire to assess the validity and reliability. The responses of the pilot study and the participants were not included in the main study; however, a detailed report of the findings will be provided in chapter three, the methodology of the thesis.

1.9.6 Reliability and validity/trustworthiness

Burns and Grove (2007:552), define reliability as the consistency with which an instrument measures what it is supposed to measure, while validity is the extent to which an instrument measures what it is supposed to measure. The amount of random error in the instrument will be evaluated by reliability testing. Reliability testing of the questionnaire focuses on the stability, equivalence and homogeneity of the measurement. The questionnaire was sent to the supervisor and two experts in the field of error management to comment on face and content validity through their expert judgement.

A pilot study was conducted to refine the methodology, including the instrument, i.e. the questionnaire. A statistician was consulted to assist with the design and testing of the questionnaire and guided the researcher throughout the process.

1.9.7 Data collection

A questionnaire with closed- and open-ended questions was sent out to the stratified, randomly selected participants over the selected data collection period. The researcher informed all RNs before the time of the study and explained that the selection process was random and participation was voluntary. Each participant received an information leaflet, a questionnaire and a return envelope from the researcher.

Completion and return of the questionnaire were viewed as permission obtained to participate in the study. Participants were requested to place the completed questionnaires in a sealed, opaque envelope and return through the internal mail process directly to the researcher or her assistant (secretary) or through email. The assistant would receive soft copy submissions (via internal email) of the questionnaire which she printed to prevent identification of participants before submitting to the researcher. No identifiers were used to ensure confidentiality and anonymity of participants.

1.9.8 Data analysis

Data analysis is conducted to “reduce, organize and give meaning to the data” (Burns & Grove; 2007: 41). Data analysis was completed with the assistance of a statistician. Statistical summaries of the mean, standard deviations and frequency tables were completed by a statistician. Statistical techniques used to investigate relationships between variables were determined depending on the type of data collected. The statistics used for analysis were frequency distribution, correlation statistics e.g. the Fisher two tailed exact test; t-test, Chi-Square and regression analysis to extrapolate correlations between multiple variables with a 95% confidentiality index.

1.10 ETHICAL CONSIDERATIONS

The researcher adhered to the ethical standards as defined in good clinical principles based on the Helsinki declaration and for nurse researchers as prescribed by the Democratic Nursing Organisation of South Africa's (DENOSA, 1998:2.2.1-2.3.4) ethical standards of research to protect the rights of all participants. Written permission was obtained from the Ethical Committee of the Faculty of Health Science at the Stellenbosch University and from the Institutional Review Board, KFSHRC-J to conduct the study.

Written consent was waived, as all participants received an information leaflet attached to the questionnaire explaining about the research, voluntary participant and that return of the completed questionnaire was taken as consent to participate in the study. Anonymity of participants was ensured by not using identities; hard copy questionnaire returns were submitted in a sealed envelope either in internal mail or directly to researcher / assistant (secretary). Questionnaires returned by email were printed by the researcher's assistant and included with returns. Thus, assistant had limited access to returns of questionnaires only on receipt to avoid bias for the researcher.

Participation was voluntary, anonymous and participants could withdraw from the study at any point with no consequences. The participants' confidentiality and safety were further protected as only the researcher; assistant (secretary), statistician and research supervisor had access to the collected data which was stored in sealed boxes in a locked cabinet with controlled access. No rewards or financial gain were offered to the participants. Publication of the results would not be identified to specific participants. However, every person will have equal access to all information captured in this thesis.

1.11 OPERATIONAL DEFINITIONS

Adverse event in this context:

An adverse event is defined as any adverse change in health or a negative or bad result stemming from a diagnostic test, medical treatment or surgical intervention. An injury resulting from a medical intervention can cause an adverse event (American Society for Healthcare Risk Management, 2003:20).

Clinical Nurse Coordinator (CNC):

Clinical Nurse Coordinator is a registered nurse who is employed in a Grade 9 position and is accountable for the educational needs of patient and staff of a specific patient care area. This position is expected to assume the unit manager position and delegated authority during

vacation, sick time and as needed (KFSH&RC-J, Job Description, Clinical Nurse Coordinator, December 2006, Code 0146, Form 886-34).

Direct Care Nurse

This refers to the nurse who provides care directly to patients, excluding the nurse manager. Direct care activities can be reflected as partial or full time equivalents (ANCC, 2008: 60).

Disclosure

Disclosure is the provision of information to customers, clients, patients and families and is seen as a marker of professionalism and occurs at the individual and organisational level (Dekker, 2007:47).

Error

An error is defined by the American Society for Healthcare Risk Management (2003) as a failure of a planned action to be completed as intended or use of a wrong plan to achieve an aim. The accumulation of errors results in accidents (American Society for Healthcare Risk Management, 2003:20).

Just Culture

According to Dekker (2007:24) a just culture means getting to an account of failure that can do two things at the same time which are to satisfy demands for accountability and contribute to learning and improvement.

Manpower Status Report (MSR)

Manpower Status Report (MSR) is the list of all hospital employees for KFSHRC-J which will include the assigned department and job description.

Occurrence Variance Report (OVR)

An occurrence is an event that occurs at KFSHRC - J or any of its premises which is not consistent with the routine patient care and operations and/or may adversely affect or threaten to affect the health or life of a patient, visitor or employee which may or may not result in injury and may or may not involve loss or damage to personal or hospital property. An Occurrence Variance Report (OVR) is an internal form used to document the details surrounding the occurrence (KFSH&RC-J, ACEO-J-QMPS -01-03).

Registered Nurses (RNs)

A registered nurse in KFSHRC–J, Saudi Arabia is a nurse who meets the qualifications to practise in the capacity of accountability and responsibility of caring for patients independently within a prescribed framework. This is determined by the institution according

to qualifications from country of origin, years of experience and meeting the stipulated criteria of the job description. Registered nurses are employed in positions known as Staff nurse 1, 2, Clinical Nurse Coordinators, Assistant Head Nurses, Head Nurses, special assignment positions and more senior job titles. To prevent confusion for the South African context of staff nurses, the SN 1 & 2 group of RNs will be referred to as Professional Nurses (KFSH&RC-J, Job Description: Staff Nurse 1, July 2006, Code 0146, Form 886-34).

Culture of Safety

A number of definitions of a culture of safety have been published. Mayer and Cronin (2008:429) define safety culture as “Leadership of an organisation promulgates an atmosphere in which the reporting of errors is welcomed so that others may benefit from knowledge of the situation and can develop strategies based on data”.

Unit Manager

A registered nurse is continuously accountable for the overall supervision of all registered nurses and other healthcare providers in an inpatient or outpatient area (ANCC, 2008:6). A unit manager employed at KFSHRC-J holds a Grade 9 position, Assistant Head Nurse or a Grade 10 position, Head Nurse

Tertiary Care

This refers to highly specialized medical care usually over an extended period of time that involves advanced and complex procedures and treatments performed by medical specialists in state of the art facilities (Merriam Webster Dictionary).

1.12 DURATION OF THE STUDY

The Ethical Committee of the Faculty of Health Science at the Stellenbosch University approval for this research was obtained for one year from the date 06 April 2010. The Institutional Review Board, KFSHRC-J approval was obtained on 26 April 2010 for a period of one year with six monthly progress reports submitted. An extension on approval was granted till December 2012. The data collection was completed from 05 March to the 31 March 2011.

1.13 CHAPTER OUTLINE

Chapter 1: Overview of the Study

Chapter 1 gave an overview of the research proposal and the reasons which led to this research being conducted.

Chapter 2: Literature Study

Chapter 2 is a description of the existing literature about the management of errors in healthcare and effect on registered nurses.

Chapter 3: Research Methodology

Chapter 3 is a description of the methodology used to conduct the research.

Chapter 4: Data analysis and interpretation

Chapter 4 is a discussion on the outcome/s of the research including the interpretation and application of findings. Data is presented in figures and graphs.

Chapter 5: Discussion and Recommendations

Chapter 5 is a detailed discussion of the research findings and reviews how the new knowledge gained from the study can be used and the significance for the organisation and Saudi Arabia.

1.14 SIGNIFICANCE OF THE STUDY

The study proved to be significant as no studies of this nature have been conducted in Saudi Arabia and would add value to understanding the management of nursing errors in a tertiary hospital. The study can be used as a guide to assist the nurse managers to manage nursing errors effectively. The study will be used to assist in staff development programmes in order to reduce litigation and increase their knowledge in the effective management of nursing errors.

1.15 SUMMARY

The IOM report acknowledges that errors have an adverse impact on healthcare providers, but these experiences can be changed for the benefit of all if the focus is placed on defining the solutions and better alternatives (Kohn *et al.*, 2000:3-5). The researcher has described the rationale for choosing the research topic, the identified problem statement; research question to be answered, the aim, the objectives and the methodology applied for this study. The aim of this chapter was to define the reasons for the study, provide the methodology and present the objectives accomplished.

Chapter 2 will be a discussion of the literature reviewed to gain an understanding of the problem and support of the reasons for conducting the research from expert opinions.

CHAPTER 2: LITERATURE REVIEW

2.1 INTRODUCTION

Chapter one defined the research approach to describing the process of reporting and management of errors made by registered nurses in a tertiary hospital in Saudi Arabia. This chapter will present the literature reviewed in an attempt to understand the scope of medical errors and how they are managed in healthcare facilities. The researcher is currently employed in a hospital in Saudi Arabia which places much emphasis on patient safety and the prevention of medical errors in which the researcher is actively involved.

This stimulated an interest in defining the safety culture of the hospital whether it is “*shame and blame*” or a “*non-punitive*” environment “that adheres to the “*just culture*” concept (Marx, 2001:1-3). Against this background a detailed literature review was performed to serve as a theoretical background and motivation for the study.

2.2 REVIEWING AND PRESENTING THE LITERATURE

A systematic approach was used to search the literature. Using core words as key concepts such as medical error prevention, “blame and shame”, nursing errors, error management, computerized error reporting, incident reports and root cause analysis, electronic data bases including *OVID*, *PUBMED* and *Medscape* were explored. Websites used as part of the current work situation, appropriate textbooks and international quality accreditation manuals such as *Joint Commission International (JCI)*, *National Database for Nursing Quality Indicators (NDNQI)* and the *Magnet Recognition Program (MRP)* were included in the review. The MRP is a summary of proposed excellence standards for nursing care introduced in the United States of America (USA) by the American Nurses Credentialing Center (ANCC, 2008).

The literature review was completed from 2008 to 2011 and an updated search was completed in 2012 to ensure inclusion of current studies. Literature older than five years was used for the purpose of establishing a historical view of the change in medical error management. More than 200 articles were sourced, with exclusions and inclusions based on categorization according to the studies completed from most current on error management, error reporting and the Saudi Arabian healthcare system. The researcher was guided by the research questions, the objectives and previous studies which identified the need for more research or similar findings to the proposed research.

The findings from the literature review were very wide with multiple concepts; therefore the approach used to present the literature was to categorize the topics according to an outline which would best present a concise summary.

2.3 FINDINGS FROM THE LITERATURE

The findings from the literature are presented to give an overview of the RN role as patient advocate, her/his organisational responsibilities for patient safety and a supportive work environment which decreases risks to healthcare providers. The literature findings will be presented according to the following outline:

- 2.3.1 The Registered Nurse`s Role as Patient Advocate
- 2.3.2 The Challenge for Safe Healthcare
- 2.3.3 Prevention and Awareness of Errors
- 2.3.4 Healthcare in Saudi Arabia
 - 2.3.4.1 Healthcare Regulation
 - 2.3.4.2 Nursing in Saudi Arabia
- 2.3.5 Organisation Culture
 - 2.3.5.1 The Role of Organisation Leaders
- 2.3.6 Just Culture versus Shame and Blame Culture
- 2.3.7 Systems and Processes
 - 2.3.7.1 Error Classification and Identification
 - 2.3.7.2 Error Reporting and Learning Culture
 - 2.3.7.3 The Use of Technology
 - 2.3.7.4 Work Environment Factors
 - 2.3.7.4.1 The Role of the Nurse Manager
 - 2.3.7.4.2 The Healthy Work Environment
 - 2.3.7.4.3 Professional Development
- 2.3.8 Error Management and Disclosure
- 2.3.9 Outcome of Errors
- 2.3.4 Conceptual/Theoretical Framework
- 2.5 Summary

2.3.1 The registered nurse`s role as patient advocate

A nurse is licensed and privileged to nurse by a nursing council once she has met the national curriculum of training and examination (National Council Licensing Examination, USA). At graduation, a nurse assumes responsibility and accountability for acts and omissions performed to provide patient care, demonstrated in taking an oath which states *"you are prepared to be the protector of those who are helpless and who are vulnerable"*

(Searle, 2006:viii). Medication administration is a nursing function that requires “*scientific knowledge, technical skill and ritualistic practice*” and highlights a nurse’s most important responsibility in the care of patients “*to do good and avoid harm*” (Wolf Serembus, Smetzer, Cohen, Cohen, 2007:93). Nursing is described by Lorenz (2007:118) as “*the mechanism through which protection occurs and nursing intervention models are described as models of protection, with the end result being health.*”

The profession of nursing is founded on the ethical principles of veracity, beneficence and autonomy (Burckhardt & Nathaniel, 2008, 53-65). The role of the nurse as a patient advocate is one of the fundamental values of nursing as seen in the nurse pledge or oath at graduation (Searle, 2006: vii, 204). These values are challenged when the nurse is the healthcare provider who makes a medical error resulting in harm to the patient, family, systems and the profession (Benner *et al.*, 2002: 509).

Every nurse aims to provide safe patient care and no harm to the patient, but as highlighted in the Institute of Medicine report “*To Err is Human*” (Kohn *et al.*, 2000:2) every healthcare provider has the potential to make an error. How medical errors are prevented, reported, managed and disclosed to patients have become the focus of healthcare institutions and regulating bodies like the Institute for Healthcare Improvement (IHI) and Joint Commission on Accreditation (JCI) of Healthcare Organisations (Lamb *et al.*, 2003: 73).

2.3.2 The challenge for safe healthcare

The report “*To Err is Human*” has brought to light the severity of the result of errors by reporting between 44 000 to 98 000 preventable deaths that occur in healthcare in a year in the USA due to medical errors (Kohn *et al.*, 2000:1). This report has led to errors in healthcare being a global focus and safety measures emphasized due to morbidity and mortality outcomes (Lorenz, 2007:118; Jeffs, Law & Baker, 2007:16). Emphasis has been placed on the need to introduce strategies to address medical errors, with a four tier approach:

1. A national approach was identified which was to increase healthcare providers’ knowledge and safety awareness,
2. Mandatory error reporting systems and
3. Encouraging institutions to develop and participate in voluntary reporting systems to identify lessons learnt and problems that were identified and
4. Lastly to raise the performance standards for safety and implement safety systems and practices at the care delivery level (Kohn *et al.*, 2000: 6).

Healthcare organisations across the world are challenged to address patient outcomes at government level and need data which measure medical errors and their impacts on society; as well as healthcare providers to drive national and international policies, achieve accreditation, healthcare insurance payments and innovations to keep patients and families safe (Jeffs *et al.*, 2007:16). The move to a safety culture in healthcare is a priority, but many countries are challenged with socio-economic crises, political turmoil, global issues of natural disasters and brain drain due to competent professional migrating for more lucrative opportunities (Jeffs *et al.*, 2007:16).

2.3.3 Prevention and awareness of errors

The IHI identified a national and international need to improve healthcare on a voluntary basis. This led to the introduction of the “*100 Thousand Lives Campaign*” which is reported to have saved 128 000 lives in America alone. This success has led to the introduction of the “*5 Million Lives Campaign*” initiative with the aim of improving healthcare and decreasing risk for five million lives. It is not mandated for any institution to follow the guidelines but an invitation for voluntary participation through data submission is encouraged. The 5 Million campaign advocate universal application of best practices introduced as bundles for the identification of high alert medication, identification and use of pain medication (IHI, 2007).

The introduction of the “*International Patient Safety Goals*” (JCI, 2007) is an initiative which identifies how to reduce risk for the following potentially error prone situations in healthcare: “*identify patients correctly, improve effective communication, improve the safety of high alert medications, eliminate wrong site, wrong patient, wrong procedure surgery, reduce the risk of healthcare acquired infections and reduce the risk of patient harm resulting from falls*”. The reconciliation of medication on admission, transfer and discharge from hospital has been found to be effective but needs cooperation of clients and further improvements in implementation and evaluation as it is based on effective documentation and communication amongst healthcare providers (JCIA, 2007).

The Agency for Healthcare Research and Quality (AHRQ) is a government based organisation which was implemented to advance quality and safety initiatives for healthcare delivery through funding, research, evidence based practice and work environment review. The aim is to advance healthcare quality and safety in private and government organisations. The AHRQ has developed tools to measure the safety cultures of healthcare organisations which are used to gauge the extent of improvements needed for organisations and the need to introduce the just culture principles (AHRQ, 2004).

In the Middle East, healthcare safety is being emphasized and measures introduced but have a long way to go when compared to the rest of the world with regard to reporting and management of nursing errors. The fear of reprisal when an error is made, a culture of blame generally seen in the professional environment, a paternalistic approach which can dictate the employment contract and a culture of following orders without question are challenges which need to be overcome (Alsafi, Bahroon, Tamim, Al-Jahdali, Alzahrani & Alsayyari, 2011: 146).

This raises the question of how to implement a “*non-punitive*” or “*just culture*” in the Middle Eastern healthcare setting (Marx, 2001:3). When compared to South Africa, the United States of America and Europe, Saudi Arabia employs registered nurses, known as staff nurses from all parts of the world. These registered nurses all contribute different approaches to care delivery and have differences in perceptions of quality of care and patient safety (Almutairi, Glenn & McCarthy, 2012: 7).

2.3.4 Healthcare in Saudi Arabia

Healthcare in Saudi Arabia was structured under the Minister of Health (MOH) in 1950 and has seen much growth and development to provide primary, secondary and tertiary care (Al-Osimy, 1994:5-9). Healthcare is the accountability of the Minister of Health (MOH) who reports to the King as Saudi Arabia is governed by a monarch. There are both private and government structures which provide healthcare to the Saudi and expatriate communities. The Shari‘a law forms the basis of the constitution and the civil and penal codes (Wikipedia, accessed 2012). The Shari‘a is the Islamic legal system based on the Holy Qur`an and has five objectives, namely protecting life, safeguarding the freedom to believe, maintaining intellect, preserving human honour and dignity and protecting property (Lovering, 2008:30).

Healthcare is available to Saudi nationals at the government expense. There are both government and private healthcare facilities accountable to the MOH for standards of care delivery. The MOH monitors compliance of healthcare delivery and has implemented structures and processes being developed to promote the use of international and national accrediting bodies such as JCIA, MRP (ANCC, 2008) and others for quality assurance, e.g. the Board of Trustees of the Central Board of Accreditation for Healthcare Institutions (CBAHI) which is responsible for defining the national standards of health accreditation in Saudi Arabia (MOH, accessed 2012).

2.3.4.1 Healthcare regulation

The Saudi Council for Healthcare Specialities (SCHS) was established in 1992; commenced registration of members in January 2007 and oversees licensing exams for all healthcare

professions at present. Recognition of the role of the Saudi nurse through registration and licensure are partially met through the SCHS, which is responsible to register all healthcare professions (Tumulty, 2001: 289). Expatriate nurses require both registration with SCHS and an additional registration with the country of origin, based on organisational requirements.

There is no nursing council or a nurse practice act in Saudi Arabia which is different to countries like South Africa in which a nurse practice act, registration with defined accountabilities, responsibilities and autonomy are clearly identified to govern practice and safeguard the public. (Tumulty, 2001:286; South African Nursing Act, R33, and 2005:25). The South African public is assured of the commitment of the nursing profession through the South African Nursing Council (SANC) to register qualified nurses, hold peers accountable for acts and omissions, define the rights of nurses and encourage professional organisational membership for nurse support and guidance when faced with legal, ethical and practice dilemmas (Searle, 2006:82-93)

Practice standards are thus defined by each healthcare organisation within Saudi Arabia. The MOH would be accountable to investigate adverse events reported to their office and healthcare organisations would support and provide legal counsel for employees (verified with Legal Department, KFSH&RC-J).

The SANC acts to promote the status of the South African nursing profession which is a challenge for Saudi Arabia where the community views medicine as a better option in career choice. This view of nursing status is supported by the increased number of expatriate nurses employed to meet the healthcare needs of the Saudi population. However, Saudi nurses are pioneering ways to address these deficiencies and the recognition through salary adjustments and accomplishments of nursing within the healthcare setting (Tumulty, 2001: 289; Almalki, Fitzgerald & Clark, 2011: 309).

Professional societies and organisations need to be approved by the Ministry of Higher Education (MOHE) and as unions are not permitted by law, this is another unique aspect of employment and creates the need to define support for healthcare providers and their rights. The Saudi Nursing Association has been established in 2003 with the aim to advance the profession of nursing; however awareness is lacking (Almalki *et al.*, 2011:307).

2.3.4.2 Nursing in Saudi Arabia

Nursing was not recognized within the healthcare structure until 1987 with the creation of the General Committee, MOH. Formal academic training as a nurse was offered in 1960 with the creation of segregated male and female academic institutions for pursuing a nursing career

(Al-Osimy, 1994:26). However, male nurse education in Saudi Arabia remains limited to the diploma level as it is segregated from female education institutions (Lovering, 2008:46).

A weakness in the academic curriculum in addressing the didactic components of nursing and the need for bilingual competence in both English and Arabic are hurdles for the nursing profession to overcome (Al-Osimy, 1994:129-136). This has led to an increased focus on the Bachelor of Science in Nursing (BSN) offered at the university as opposed to a nursing diploma. This has been the trend in South Africa and North America which offer bridging programs to become degree qualified registered nurses as advocated through SANC's National Qualifications Framework and the Magnet Recognition Program (ANCC, 2008).

The insufficient number of Saudi nurses to meet the healthcare needs of the country has led to a reliance on a large expatriate workforce from numerous countries to fill this need (Almutairi *et al.*, 2012:2). This multicultural expatriate nursing workforce has numerous challenges which impact on patient safety, e.g. communication for those who do not speak Arabic, adjustments to cultural diversity, the need for cultural competence, different approaches to clinical practice which is negatively impacted by the differences in nationality and an unsafe clinical environment (Almalki *et al.*, 2011:307, Almutairi *et al.*, 2012:5-6).

Thus, communication together with the multidisciplinary team are important in how communication occurs and the identification of strategies to decrease potential conflict from miscommunication and cultural aspects of communication, e.g. a physician who speaks to a patient in Arabic about their plan of care, but unless reminded may not translate the discussion for non-Arabic nurses. Thus, the risks for errors and lost productivity hours are increased (Van Rooyen, Telford-Smith & Strümpher, 2010: 6-7).

2.3.5 Organisation culture

Organisation culture is defined "*as the accumulation of invisible, often unspoken ideas, values and approaches, seen in the way we do things around here*" which is driven by executive leadership and seen in strategic priorities, e.g. patient safety, collaborative practice, the work environment and the outcomes demonstrated (Clark, 2006:258). The recommendations of the IOM were for healthcare organisations to implement safety systems which are the accountability of the chief executive nursing officer and executive boards of the organisation. The safety systems would include "*a vision for safety practices, non-punitive systems for reporting and analyzing errors in the organisation, implement recognized safety principles, standardize and simplify systems which decrease the risks for errors and establish interdisciplinary training programs for end users*" (Kohn *et al.*, 2000:13).

The culture of the organisation would influence leaderships' approach in reporting adverse events, near misses, analysis and management of medical errors and shape direct care providers' behaviour when errors occur. A culture of blame leads to fear of a personal and professional nature with consequences of legal action which prevents the data being used in a positive manner to advocate a culture of learning (Jefferis *et al.*, 2007:17).

The cost of medical errors is another challenge for healthcare organisation as reported by Van Den Bos, Rustagi, Gray, Halford, Ziemkiewicz & Shreve (2011:599) who used insurance claims to estimate the cost of medical errors with patient harm. Van de Bos *et al.* (2011: 599-601) estimated the annual cost for medical errors with harm to be 17.1 billion US dollars just for the year 2008. The findings indicated ten errors accounted for two thirds of the total cost with pressure ulcers, post-operative infections and backache post-surgery being at the top of this list. The cost of medical errors is not just in economic outcomes but includes morbidity and mortality for patients and the cost to the organisation in employee outcomes (Kohn *et al.*, 2000:1-2).

2.3.5.1 The role of organisational leaders

The role of administrators and unit managers drive the culture of change in the prevention of medical errors and have "immense *power to influence cultural change* (Jefferis *et al.*, 2007:17). It is their responsibility to know why these errors occur and implement strategies for increased number of staff and client safety. This implies that errors must be reported and nurses must not try to hide errors for fear of punitive measures (Leape, Berwick, Clancy, Conway, Gluck, Guest, Lawrence, Morath, O'Leary, O'Neil, Pinakiewicz & Isacc, 2009: 424).

A study involving nurses, physicians and pharmacists reported that they experienced non-supportive responses and actions when reporting their medication errors to their supervisors, expressed as "*blame and reprimand prevailed*" (Wolf, 2000:283). In contrast, administrators cared for the clients, involved risk managers and other health care providers, reviewed policies and procedures and assumed the responsibility of correcting the medication error on behalf of the clients (Wolf, 2000:285). Cohen (2007:50) states that the "*willingness to change clinical practice needs to start at the top*". This is supported by the IHI, *5 Million Lives campaign* who added "*Get Boards on Board*" as one of their international initiatives in preventing errors recognizing the important role that leadership plays in error management and prevention.

Magnet Model (ANCC, 2008) advocates the empowerment of leaders to be transformational in approach to exemplary clinical practice; implementation of new knowledge into practice, empower direct care nurses, improve the work environment by providing the resources in

staffing, equipment, knowledge and vision to achieve excellent staff and patient outcomes. The component of the MRP model, transformational leaders advocates the identification of strategic initiatives which include end user input, visible accessible leaders and the partnership to accomplish change (Grant, Colello, Riehle & Dende, 2010: 330).

2.3.6 Just culture versus shame and blame culture

There has been a shift in the management of medical errors from a culture of “*shame and blame*” to a “*non-punitive approach*” over the past years (Mayo & Duncan, 2004:214; Potylycki, Kimmel, Ritter, Capuano, Gross, Reigel-Gross & Panik, 2006:370-371; JCI, 2007). Recently the “*Just Culture*” concept has been introduced into health care environments.

The concepts found within a just culture are the organisation culture of transparency about errors and the management of errors which is not based on individuals but on systems. Errors are used as learning opportunities and not to punish the individuals who make an error or who report. However, there needs to be a balance to manage the behavioural choices of the nurse which is not tied to performance evaluations.

Mayer & Cronin (2008: 428) cite Marx (2008) who has developed a Just Culture Algorithm which can be applied when managers need to make decisions on the management of errors and Reason (1990) has also developed a decision tree to determine culpability and unsafe practice. However, the application of these tools is not effective if the nurse managers are not educated on the use thereof and the approach to error management is consequently individually based (Mayer & Cronin, 2008: 428).

Alahmadi (2010: 20-21) in a study conducted in 13 hospitals in Riyadh, Saudi Arabia reported areas of strength in these organisations that were identified as organisational learning, continuous improvement, team work within units, feedback and communication about errors. Areas for improvement for most hospitals were under-reporting of errors, non-punitive response to errors, staffing and teamwork across hospital units. An important finding was that the majority of respondents thought that managers overlooked safety problems which continued to occur.

2.3.7 Systems and processes

The new concept of “*just culture*” proposed by Marx (2001:1-28) suggests a more realistic approach to medical errors, emphasizing changes in systems to support a decrease in errors and education of all healthcare providers in their responsibilities to their clients while knowing their rights as employees. Systems within the organisation need to be designed with the minimal risk for human error. This would include the work environment, data management systems, risk management and environmental influences (Marx, 2001:4, 16, 23).

Safety climate has been described to have the elements of “*receptiveness to and adoption of technologies, uptake of lower tech best practices intended to enhance safety including sound communication and collaboration; a non-punitive and open approach to reporting and analyzing errors and near misses*” (Clarke, 2006:260). Punitive cultures interfere with reporting of errors and corrective measures with silence seen as a deterrent to achieving short and long-term goals in patient safety. Managers are urged to encourage a climate of trust to encourage reporting and thus increase a safety culture (Chiang & Pepper, 2006:393).

The shift of focus from individuals to employee competence, environment and system assistance to decrease error risk has resulted in a change in healthcare provision (Benner *et al.*, 2002:510). Systems have been developed and introduced that take into account workflow, environment and staff needs to reduce the opportunity for errors. These systems include medication error reporting, electronic medical records, electronic physician order entry, reporting systems, bar-coding to decrease identification errors and checks and balances in workflow (Longo *et al.*, 2005:2862).

The IOM (Kohn *et al.*, 2000:11) recommend the implementation of patient safety programmes and monitoring of improvements which are an executive accountability and continue to keep up to date with systems and processes aimed at decreasing the risk for the occurrence of errors. The National Coordinating Council for Medication Error Reporting and Prevention (NCC MERP, 1998) proposed that medication errors may be related to professional practice; health care products; procedures; systems including prescribing; order communication; product labeling; packaging and nomenclature; compounding; dispensing; distribution; administration; education; monitoring and use”. This is supported Mayer & Cronin (2008: 428) who site Reason’s (1997) human theory and Marx’s (2008) just culture applications in the review with all the factors involved in errors as a system widely needed and trusted, transparent with a safe systems design.

Leape *et al.* (2009: 424) identified that though much progress has been made to address safety in healthcare, the missing components were “*a culture of trust, reporting, transparency and discipline*” which are challenging. Transparency is identified as a must, with the sharing of information to all levels of staff, patients and families and other organisations to learn from them while support is defined as the cumulative efforts of the people, systems and tools needed by the patients and care giver for safe quality care deliver “ (Leape *et al.*, 2009:425-426).

2.3.7.1 Error classification and identification

The RN at the frontline of healthcare, needs to have the ability to identify that an error has occurred and needs to be reported, which is the first step in the error management process (Hobgood *et al.*, 2005:138). However, there is no consensus in the definitions of errors as described in chapter one. Murphy *et al.*, (2007:890) state that a “standard and uniformly applied definition of medical errors does not exist” and describe “near misses as being characterized by potential error and not actual injury to patients”. This differs from Crigger`s (2004: 570) definition but all have common elements of what acts or omissions should be present. Nursing errors were defined based on taxonomy by Benner *et al.* (2002:512) and discussed in research but no definite definition is given.

This raises the question of how to address nursing errors when studies have not agreed on a definition and the need to educate nurses to gain competence to identify errors when they occur may be affected by this gap (Jefferis *et al.*, 2007:27). Errors in healthcare cover a wide range of needs for patients, nurses and the organisation. Thus error type, whether it reached the patient or not, if the outcome was classified as a sentinel are important to understand the needs of the organisation in terms of improvements; disclosure practices and reporting (Hobgood *et al.*, 2005:138). KFSH&RC-J has adopted the Pennsylvania Patient Safety Authority (2004) Harm Score Classification for medical errors with adaptations for the unique patient cultural needs of Saudi Arabia.

The aim of error classification is to assist employees in the identification and classification of errors, which serve as a guide in management options to nursing units, i.e. sentinel events, will be reported and reviewed within a seventy two hour time frame within KFSH&RC-J. Hobgood *et al.* (2005:144) concluded that mastering an error classification, though needed would be a challenge for experts and healthcare individuals in error management.

2.3.7.2 Error reporting and learning culture

Mayer & Cronin (2008: 429) defined a reporting culture as “fuels learning because staff feels safe from retribution and report information about safety concerns even if it involved human error”. Marx (2001:26) identified that a reporting culture is dependent on a learning culture, with a true establishment of a reporting culture when staff report their own violations in practice.

The first step in error prevention is being able to identify that an error has occurred and then to report the error to promote learning which would prevent a recurrence of the same error. The just culture approach to error reporting is a reporting culture which is dependent on a learning culture. The organisation develops reporting mechanisms which promote error

reporting with no retribution, thus healthcare providers who report errors will not be punished, i.e. a non-punitive approach to error reporting (Marx, 2001:3; Mayer & Cronin, 2008:429; Leape *et al.*, 2009:425).

Reporting of errors is dependent on “*the nurse’s ability to recognize that an error has occurred, belief that the errors warrants reporting, belief that the nurse has made an error and the willingness to overcome the embarrassment and fear of retaliation for having committed a medication administration error*” (Mayo & Duncan, 2004:210). This barrier to error identification negatively impacts the improvements needed to be implemented as organisations may not be aware of the problem with errors. In effect, to improve error reporting through error identification, nurses need to be educated on the identification of errors and use of uniform definitions “variation management” which would assist in this skill (Kohn *et al.*, 2000:7; Leape *et al.*, 2009: 426).

Nurses are the healthcare providers who spend the most time with patients and are thus able to impact the reduction of errors. The importance of this role was recognized by the IOM (2004), “*Keeping Patients Safe: Transforming the Work Environment of Nurses*” which collaborated to identify a national strategy to address the nursing work environment through identified strategies for improvement with a focus on nurses. These strategies were “*the basic components of all organisations organisational management, practices, workforce deployment practices, work design, and organisational culture*” (IOM, 2003: 3).

Nurses in direct contact with patients act as a “safety net” and thus are in the ideal position to prevent, discover and correct errors as proposed by Rogers, Dean, Hwang & Scott (2008:117). Rogers *et al.* (2008:118) identified that nurses were able to capture and correct medication and procedural errors well, but needed improvement in documentation of errors. Rogers *et al.* (2008: 121) concluded that there is a need for more research into “*identifying factors that enhance nurses’ efficiency to prevent, intercept and correct healthcare errors*”. The aim of error reporting is to assist in identifying systems that need to change, to be developed or improved in order to prevent the repeated occurrence of the same errors in the future (Kohn *et al.*, 2000:4; Marx, 2001:3; Mick *et al.*, 2007:499).

Once nurses are able to identify errors, they can then proceed to report the error. Levels of error reporting may be organisational which will include policies and procedures, state or provincial legal stipulations, national and international guidelines and standards (JCI, 2007). The IHI has recommended that organisations develop or implement a voluntary institutional error reporting system to encourage error reporting in order to use the data for development

of outcome based measures to improve patient safety (Cohen, 2007:52). KFSHRC-J has a voluntary institutional wide on-line error reporting system for all medical errors since 2002.

This recommendation is in support of the IOM strategy for improvement “identifying and learning from errors by developing a nationwide public mandatory reporting system and encouraging healthcare organisations and practitioners to develop and participate in voluntary reporting systems” (Kohn *et al.*, 2000:9). Mandatory reporting is focused on reporting severe error outcomes to national or government bodies, i.e. death or serious harm. (Kohn *et al.*, 2000: 9)

Error reporting would include “near miss/almost events” and adverse events with harm to the patient. Reporting of near misses is included for most institutions as part of the reporting requirements, but it is argued that the emphasis has been on errors which have occurred but not on the potential gain from near misses (Jeffs *et al.*, 2007: 17). Near misses measure the effectiveness and efficiency of the safety systems to identify risks, reporting trends, awareness of direct care providers, opportunities for improvement and an opportunity to celebrate successes. Thus, recommendations are to continue to report errors but to review the benefits which can be gained from near miss reporting and analysis (Kohn *et al.*, 2000:4; Marx, 2001:3; Leape *et al.*, 2009: 425).

However, studies have found that staff are willing to report adverse events as these cannot be concealed (Marx: 2001:4); will not report a near miss that has not resulted in harm to the patient and reporting is dependent on the approach and reaction of executives, managers and peers to the error, i.e. individual or system focused (Marx, 2001:25-26; Moody *et al.*, 2006:204; Leape *et al.*, 2009:425).

One of the responsibilities of the nursing role is medication administration which has been identified as one of the most preventable of errors (Elnour, Ellahham & Al Qassas, 2008: 178). Various initiatives have been implemented where medication error reporting has been promoted to encourage acknowledgement of errors and the challenge of moving to a culture of safety (Clarke, 2006:260). This is supported by Moody, *et al.* (2006: 204) who reported that “*lower direct care nursing hours correlate with higher numbers of nurses` reported medication errors and positive nurse leadership correlates to nurses` increased willingness to report errors*”.

However, error reporting remains a challenge and this may be influenced by many factors. A study by Throckmorton & Ecthegaray (2007:410) found that the majority of nurses were willing to report errors which ranged from near miss to severe outcomes, contrary to the general belief of nurse managers. Nurses’ willingness to report is thought to be due to the

shift in error reporting with the focus being on systems and processes, rather than on individuals.

Alsafi *et al.*, (2011:146) studying physician`s views on medical errors at a tertiary hospital in Saudi Arabia found that physicians who were not willing to report their colleagues observed medical errors but would view a severe patient outcome as an incentive to report. They reported an attitude of error concealment to avoid punishment.

The physicians agreed that there were ethical obligations in error reporting and believed that reporting served a valuable purpose. Confidentiality, protection from the consequences of reporting, organisational transparency, patient involvement and a non-punitive culture were reported as measures to improve error reporting in Saudi Arabia (Alsafi *et al.*, 2011:147).

2.3.7.3 The use of technology

Technology acceleration and a more aware and informed public make it imperative for healthcare organisations to be more focused on keeping clients safe, good patient outcomes and less tolerance of mistakes (Clarke, 2006:256). Technology created for point of care management and assisting in safer care delivery has changed the environment and the way in which nursing care is provided, i.e. introduction of nursing informatics which is the use of technology in patient care delivery and data management systems which support compliance monitoring for healthcare outcomes are readily available (Simpson, 2004:20).

Equipment is sophisticated, enabling nurses to provide care more efficiently while enabling staff to decrease the amount of time spent on non-nursing activities. However, this equipment may lack standardization and together with fatigue and workload increase the risks for errors as seen in pediatric intensive care units (Montgomery 2007:15). Technological advancement has seen the development of computerized order entry, on-line computerized data collection systems and processes which allow for easier access, reporting and generation of quality reports (Longo *et al.*, 2005: 2862; Elnour, et al., 2008:179).

This does not exclude manual reporting systems, but systems that are user friendly, easily accessible and time saving were found to play a role in reporting of errors (Mick, Wood & Massey; 2007:500). Rask, Hawley, Davis, Naylor & Thorpe (2006:120) found that the implementation of technology contributed to the success of an error reduction strategy. This advancement sees the increased need for nurses to gain competence and skills in a variety of technical and computerized applications for patient care delivery.

2.3.7.4 Work environment factors

The work environment is defined according to components which need to be present, based on Essentials of Magnetism (Kelly, McHugh & Aiken, 2011: 432) and IOM's (2004) report, *Keeping Patients Safe: Transforming the work environment for Nurses*. Factors which are reviewed to determine a supportive work environment are based on Reason's theory of human error (1990). A study comparing Magnet to Non-Magnet hospitals reaffirmed that Magnet hospitals have better work environments than non-magnet hospitals. The characteristics seen were better nurse staffing ratios which in turn lead to less burnout or dissatisfaction and more highly educated at the BSN level (Kelly *et al.*, 2011:432).

2.3.7.4.1 The Role of the Nurse Manager

Nurse Managers who are midlevel managers are recognized as pivotal to the care delivery provided to patients and the work environment for direct care nurses. They are the link between organisational priorities and outcomes to the point of care challenges faced by the front line providers. Thus, they would be responsible to advocate on behalf of the front line nurses but also provide feedback on the risks which organisational leaders need to address (Abualrub & Alghamdi, 2012: 668-670).

Alahmadi (2010:20) concluded that leadership is critical to the effectiveness of patient safety initiatives when respondents thought that managers overlooked reported risks. This is one of the key roles of the unit manager to identify risks with increased error occurrence and utilize a systems approach to address risks, potential and actual medical errors. Without this support, direct care providers lack the direction to act and the ability to make informed decisions which could impact on medical errors.

Nurse leaders are encouraged to adopt four measures to act in changing the culture from blame and under reporting to an open sustainable reporting and learning culture. These four measures are to

1. Create safe spaces to learn from errors and near misses,
2. Role model safety behaviors,
3. Create reciprocal accountability which involves legislation and
4. Registration for practice and design reporting and analysis tools for end user abilities (Jeffs *et al.*, 2007:27).

The MRP (2008) urges nurse managers to be transformational in approach, i.e. competent in their field of expertise, able to transform the environment to support direct care nurses and empower them through structures that give them a voice. The aim of transformation leaders is to encourage autonomous practice and accountability at the bedside which leads to for

demonstrated empirical outcomes for the patient, the employees and the organisation (Kelly *et al.*, 2011: 432). A study by Abualrub & Alghamdi (2012:676) showed that the effective nurse manager is the transformational leader, but a shortcoming is the identification of effective strategies to develop these characteristics.

2.3.7.4.2 *The healthy work environment*

Tang, Shei, Yu, Weil & Chen (2007:447-457) identified the intensive care units, operating rooms and emergency departments as the high error risk units, with the most severe outcomes for patients. Factors identified as contributing to increased risk were extensive workload, new staff not aware of policies, systems failure, prescription errors and patient's condition. Intensive care units have been found to have a higher incident of errors, reported at 89.3 medical errors in 1 000 patient days, with an estimated 3.3% contributing to patient deaths. (Alshrafi, 2011:146). This was supported by Al-Jeraisy *et al.* (2011:299) who found that one third of medication errors occurred in a pediatric intensive care unit as opposed to a general pediatrics unit in Saudi Arabia.

Other studies support the conclusion of high workload and complex care environment which play a major role in error occurrence (Moody *et al.*, 2006:203; Potylycki *et al.*, 2006:373). The Magnet Recognition Program (2008) is of the opinion that higher staff patient ratios increase the safety factor, but this continues to be an area for discussion. Healthy work environments are defined by Kramer & Schmalenberg (2008:56-57) as "productive, able to give quality care, satisfying and able to meet personal needs" and this can only be confirmed by direct care nurses.

Kramer & Schmalenberg (2008:57) found that though the attributes identified by nurses on units differed, one common factor was the leadership support received from their unit manager. In assessing clinical units with healthy work environment, they found the ambulatory, oncology, neonatal intensive care units to be the healthiest work environment. The units which needed the most improvement were the operating and post anesthesia and cardiovascular telemetry nursing units (Schmalenberg & Kramer, 2008:76).

Factors which contributed to a healthy work environment were perceptions of nursing quality. The 12 hour nursing work shift rated as best for quality care delivery, competent colleagues, interdisciplinary relationships and manager support. Education was not found to be significant in this study, though nurses with specialty certification rated quality and job satisfaction higher (Schmalenberg & Kramer, 2008:76).

The IOM (Kohn *et al.*, 2000:14) focus for the healthcare providers have been increasing communication between disciplines to understand the impact of the environment working in

and provide education in error reduction. Pharmacy expertise, especially the presence of a clinical pharmacist in high risk areas like critical care and staff education were identified as key components of multidisciplinary collaboration and communication which resulted in increased errors reporting and errors prevention (Elnour *et al.*, 2008:180-181).

These approaches are supported by Mick *et al.* (2007: 500) in regard to education of healthcare providers in identifying safety issues and focus on problem solving, while Murphy *et al.* (2007:891) proposed “ a model for confidential error communication “ with regard to encouraging error reporting and educating others from mistakes made.

2.3.7.4.3 Professional development

In an editorial review, Ootim (2002:29) states that novice nurses need assistance in acquiring the skills to decrease risks of medication errors, but senior staff are often neglected in their need for education and skill updates. Ootim (2002: 29) concludes that the causes of errors in nursing are complex and difficult to understand, but nurses` needs are to be considered within the environment of caring for both nurses and clients. Marx (2001: 25-26) and IOM (2000:11-12) advocates the introduction of educational programmes on medical errors which are advocated in research as seen above and should include education of the organisational approach to errors, the management of errors and disclosure and how to learn from errors. This would include reporting errors made by peers (Marx, 2001:25).

However, reporting colleagues` observed errors does present an ethical dilemma for physicians who do not view peer accountability their responsibility (Murphy *et al.*, 2007:892; Alshrafi, 2011:146) and there are currently no mandatory ethical guidelines for error disclosure for nurses or physicians with hospital executive leaders (Longo *et al.*, 2007: 892). Education and learning from errors that have occurred was found to be lacking in studies by Murphy *et al.* (2007: 890-896) and Antonow *et al.* (2000: 42-48).

Continuing medical education (CME) which has been a model for physicians to maintain expertise and competence in the specialty field is now being advocated in nursing as seen in the Magnet Recognition Program (ANCC, 2008), the South African Nursing Council's decision to change to this requirement for registration and the many universities offering certification and specialization in nursing. This is expanded to the introduction of the advanced practice role at the bedside of the patient which is encouraged, as this allows masters prepared experts with research and evidence based practice knowledge to be readily available to direct care nurses (ANCC, 2008).

Studies on nursing education and the effect on quality of care and patient safety have reported mixed results. Aiken, Clarke, Sloane, Lake & Cheney (2008:228) and Kelly *et al.*,

(2011:432) reported that three areas for work environment improvement were staffing ratios, an increased number of BSN or higher education qualification of RNs and an improved care delivery environment to the excellence standard of Magnet accredited hospitals. As reported above Schmalenberg & Kramer (2008) found no significance between education and quality of care.

2.3.8 Error management and disclosure

Patients' expectations are that healthcare providers will deliver the best quality of care available and in accordance with their professional regulation must be held accountable for their acts and omissions (Al-Mandhari *et al.*, 2008:1472). When these expectations result in unanticipated negative outcomes, how the error is managed and disclosed become the focus of the nurse and the manager (Lamb *et al.*, 2003:75; Spears, 2005:223). Traditionally the individual nurse making the error would be held responsible or culpable in a shame and blame approach in error management without a review into contributory factors like fatigue, shortage of staff, work environment and staff experience (Benner *et al.*, 2002:510; Spears, 2005:223). The manager will have multiple challenges in managing the error as she/he has the patient, her/his staff member and the healthcare team to prioritize and support (Spears, 2005:223).

Just culture advocates a balanced approach to error management, identifies the contributing system factors and accountability of healthcare professionals for behaviour. The four levels of human behaviour in error management are human error, negligent conduct, reckless conduct and knowing violations. An algorithm is available to assist managers to apply these definitions in practice when errors are investigated (to decrease recurrence) and staff members counselled (Marx, 2001:5).

Mayer & Cronin (2008: 428-429) are of the opinion that disciplinary measures are only applicable when recurrent errors continue after nurses have received post counselling and at risk are identified. Thus, disciplinary measures are dependent on how much the work environment supports a learning culture which improves a reporting culture, which are both dependent on the nurse manager and the organisation executives' approach to errors. Lack of administrative feedback and not recognizing the need for education about safety culture reinforces the view that reporting is not useful (Elder *et al.*, 2008:162).

The just culture approach to error management is to complete a review of errors in an effort to identify contributing factors which could be latent or active. The outcomes of medical errors for nurses may include disciplinary and legal actions (Benner *et al.*, 2002:510; Lamb *et al.*, 2003:80). The severity of disciplinary measures is dependent on the severity of patient

outcome. If the error was classified as a sentinel event or the outcome was a morbidity or mortality the outcome for the nurse may result in the most severe of disciplinary measures being taken (Lamb *et al.*, 2003:80).

Reporting of nursing errors in healthcare has received much attention in an effort to change nurses' perceptions of errors and disciplinary measures (Mick *et al.*, 2007:499, 502; Murphy *et al.*, 2007:890,892). They concluded that *"it is critical that leaders understand human and systems factors in error and develop approaches that provide rewards, recognition and feedback to support nurses who often serve as the final checkpoint to reduce errors that can harm or kill patients"* (Mick *et al.*, 2007:502).

Most hospitals in Saudi Arabia are USA philosophy driven as seen by the number accredited through the JCIA site (JACHO, 2001). However, there are many structural governing requirements that are still in the infancy stages. The Saudi Commission of Human Rights (NSHR, 2004) is only three years old and professional societies, in comparison with other countries have been a recent introduction nationally. The cultural aspects of Saudi Arabia are also unique in the method in which medical errors are viewed and managed. The tradition of blood money (diya) which is an acceptable option of payment to the patient or family in the event of an error, saving face in which accountability for acts and omissions is not viewed as acceptable by healthcare providers and the law and religion as part of decision making makes it a unique environment for managing errors (Shaik, 2009)

Disclosure of errors is not mandated as part of the Shariah law nor the medical professional society. Each institution follows hospital approved policies and procedures. In a review with KFSHRC-J's quality department, there is an adverse policy which includes sentinel events but there is neither a defined non-punitive approach nor how disciplinary measures are applied consistently throughout the organisation. Education on medical error management and risk assessment are not part of the education programme for direct care nurse, nor nurse managers.

Disclosure is the provision of information to customers, clients, patients and families and is seen as a marker of professionalism and occurs at the individual and organisational level (Dekker, 2007:47) Medication errors are now very public as highlighted in the Dana-Faber Cancer Institute incident of an error. Chemotherapy errors and public disclosure is mandated in some states of USA. Disclosure of errors is the moral and ethical obligation of the healthcare providers with severe errors being exposed in the course of management even without disclosure (Hebert *et al.*, 2001: 509-511).

Disclosure of errors is the accountability of each health care provider, the nurse to the physician if further treatment of a patient is needed, to report for system review and to inform the supervisor and peers for support and education purposes. But this presents a challenge when the organisation does not have a clear approach for error management and the emphasis on disclosure. The dispute of whose accountability it is to inform patients has been identified as that of physicians who have been reported to be reluctant to inform patients, which places nurses in ethical dilemmas (Herbert *et al.*, 2001:510-511).

Loss of trust in the health care provider and organisation are of particular focus for clients who depend on nurses to advocate for them and not expose them to harm (IOM, 2000:2). Aggrieved patients' response to this perception of deception would be to bring legal action against health care provider and/or the organisation (Hebert *et al.*, 2001:511; Murphy *et al.*, 2007: 892). Health care providers' response to errors is to hide, as the expectation is that errors are punished with the risk of malpractice suits, loss of license, contracts and benefits and self-esteem, so why would they disclose.

Disclosing errors may present opportunities for improvement but may also result in malpractice lawsuits and adverse outcomes for the health care providers in loss of their jobs, reputation and trust. An ethical dilemma exists for physicians when full disclosure is weighed in the balance of mandatory reporting to government organisations, malpractice suits and consequences for the health care provider therefore presenting a conflict of interest (Hebert *et al.*, 2001: 511; Murphy *et al.*, 2007: 892).

Medical errors were not reported in one Saudi Arabian hospital due to the fear of punishment, with punishment as defined by Alshrafi (2011:146) as disciplinary actions which could be salary deductions or termination of contracts taken by hospital administration. Disclosure of system errors are more important than individual errors as root cause analysis results may expose factors which present the opportunity to improve organisational systems to become more resilient and fault tolerant Murphy *et al.* (2007: 891). Murphy *et al.* (2007:895) conclude that the role of professional societies is to arbitrate the ethical dilemma between legal personal protection and the dissemination of error risk through a forum but none existent at present in Western Health Care and Saudi Arabia.

Health care organisations accredited through Joint Commission International are mandated to have a policy which addresses adverse events and disclose outcomes of care delivery to patients and families. Saudi Arabia has 39 hospitals which are JCI accredited and would fulfill this requirement (JCIA, 2011). In contrast, Alshrafi (2011:146) sites the Canadian Medical Association Code of ethics as not addressing disclosure of errors explicitly. The

standard for disclosure is not clearly defined or balanced within the legal environment of malpractice and the education of how this should be done.

2.3.9 Outcomes of errors

Errors can have severe outcomes for clients, employees and the organisation. Sirriyeh, Lawton, Gardner & Armitage (2010:116) report that there is a linear relationship between the severity of error and the emotional response of the nurse who made the error. Wu (2000:726) coined the term "*the second victim*" in response to the outcomes for health care provider's involvement and treatment when they have made an error.

The second victim is defined as "*are healthcare providers who are involved in an unanticipated adverse patient vent, in a medical error and/or a patient related injury and become victimized in the sense that the provider is traumatised by the event. Frequently, these individuals feel personally responsible for the patient outcomes. May feel as though they failed the patient, second guessing their clinical skills and knowledge base*" (Scott, Hirschinger, Cox, McCoig, Brandt & Hall, 2009:326).

Scot *et al.*, (2009:326-329) defined six stages of error recovery which "*are chaos and accident response, intrusive reflection, restoring personal integrity which involved identifying a trusted individual and seeking support; enduring the inquisition which may affect job security, licensure and litigation; obtaining emotional first aid which may be difficult if no trusting relationship and moving on which may be surviving, dropping out or moving on to new nursing unit*" Second victims reported both support and no support by peers, nurse managers and executives which affected their ability to cope and move forward (Scot *et al.*, 2009: 328-329).

Denham (2007:115-116) identified five rights of the second victim which form the acronym trust. These rights are "*treatment that is just, respect, understanding and compassion, supportive care and transparency and the opportunity to contribute to learning*".

Supportive care is not being abandoned by the nurse manager and nurse leaders, but care and support are provided. This includes organisations establishing viable programmes which are clearly defined for these healthcare providers who are at the sharp end of care delivery (Denham: 2007:114).

In summary, studies on error reporting, disclosure and management have advocated organisations to establish a safety culture which is supported by executive leadership to set the vision and implement actions plans for assessment and improvements in health care delivery. The important components of this vision would include the Just Culture approach to

medical errors. This would translate as individuals who are to be educated in safe health care practices, encouraged to report errors using a non-punitive approach and receive support from peers and nurse leaders when errors are made. The system of the organisation would be constantly reviewed to decrease errors and identify the contributing factors when errors are made (Mayer & Cronin, 2008: 429-430).

2.4 CONCEPTUAL/THEORETICAL FRAMEWORK

The conceptual framework designed below, figure 2.1 is based on the just culture principles which were identified by Marx (2001). The framework demonstrates the accountabilities of each level of care provider within the healthcare organisation and the need to partner together to achieve excellent patient outcomes and decrease errors in healthcare.

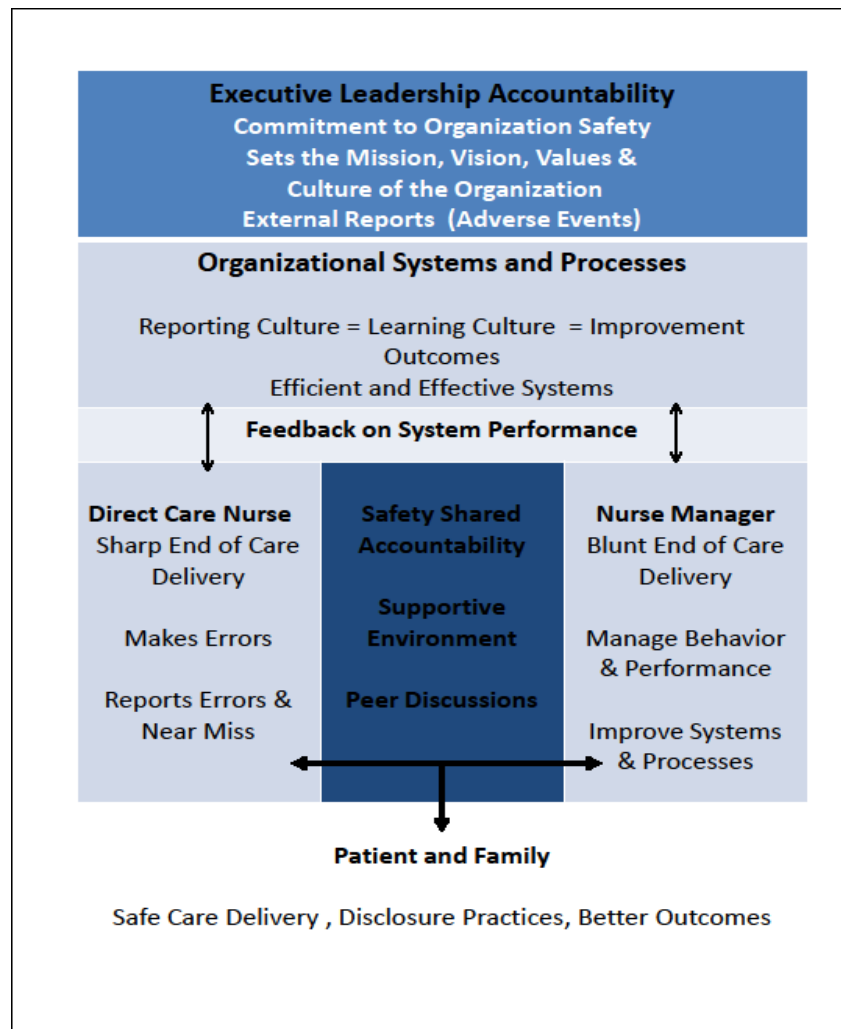


Figure 2.1: The Conceptual Framework designed by researcher based on Marx (2001) - F. Haines

2.4.1 Organisational leadership accountability

The first level of responsibility is the organisational leadership who is accountable to set the mission and vision, and place a value on safety within the culture of the work environment, therefore placed at the top of the conceptual framework. The ideal is all employees are responsible for safety and are expected to contribute to this from their perspective. This encourages buy-in to the concepts and places trust in leadership to transform the environment for both patient and employees (Botwinick, Bisognano & Haraden, 2006:1).

Executives need to role model expected behaviours and link with the middle managers and direct care employees. This is accomplished through walking rounds where executives speak to staff to gain their opinions and feedback. Feedback and communication methods are important. This places the accountability on staff to raise their concerns directly to executives and promotes open communication between two levels which would normally not be possible (Botwinick *et al.*, 2006: 8, 16). Thus, direct care staff and managers have a voice, feel that they are heard, and can commit to the mission, vision and values of the organisation. This inspires motivation and thus more satisfied staff (Reason, 2012: 60).

Reporters to accreditation bodies or to mandatory reporting quality improvement initiatives can thus be held accountable for safety which in turn continue to foster the trust of the public and community in their commitment to safe care delivery and reporting of adverse events. Partners with external quality health care initiatives and external mentors should be coached in improvement methodology and foster the commitment to use evidence based best practices to change the organisational culture (Botwinick *et al.*, 2006:10).

Set policies define clear expectations of the safety culture, which include education and training, near miss and error reporting, communication and feedback processes, advocate a learning culture which includes transparency, recognition and reward; disclosure policy and the approach to second victim support and care. Thus, executive leadership needs to use data to define the gaps and address these through improvements (Botwinick *et al.*, 2006: 5-6). The study explored factors of the organisation to determine the level of organisation commitment to decrease errors and establish how errors were managed.

2.4.2 Nurse manager accountability

This new concept of "*just culture*" proposed by Marx (2001:1-28) suggests a more realistic approach to medical errors, emphasizing changes in systems to support a decrease in errors and education of all health care providers in their responsibilities to their clients while knowing their rights as employees. The systems of a health care organisation are meant to decrease error risks and provide safe efficient care to the patient and family. Nevertheless,

also allow the employee to provide this care in an environment that fosters learning and accountability for actions and/or omissions (Marx, 2001: 25-26; Mayer & Cronin: 2008: 428).

The nurse manager is at the blunt end of care delivery in terms of safety and error risks, and is the link between the direct care provider and the organisation executives. This presents the opportunity to advocate for improvements and resources which affect patient and employee safety (Denham, 2007:114). However, nurse managers cannot effectively speak on behalf of the direct care nurse unless there is a partnership to work together to decrease risks and errors in health care. Assessment of risk is best evaluated by the end user and thus, the direct care employees at the sharp end of risks and error occurrence can provide valuable feedback for system improvements (Volgelmeier, Scott-Cawiezell & Miller, 2010: 289).

Thus, nurse managers encourage near miss and error reporting to evaluate the systems and processes of the nursing unit and advocate for improvements using this data as the benchmark. Therefore, direct care nurses are empowered to speak up on behalf of self and peers, be involved in decision making which affects their practice, quality, professional development and management of unit resources (ANCC, 2008). For this reason, the direct care nurse and nurse managers are placed on the same level in the framework above; because, even though their job functions differ they are partners in the approach to decrease error risks in the work environment and dependent on each fulfilling this role to each achieve effective outcomes.

The manager is dependent on feedback from direct care nurses to identify and address areas for improvements and problem solving with the direct care nurses on implementation plans. Vogelmeier *et al.* (2010: 289) identify this dependence as shared commitment, as just culture promotes shared accountability between the leaders and staff. In just culture, the nurse leaders are accountable for a supportive environment, to manage staff behaviours and address organisational concerns raised by staff for improvement. In return, staff provides feedback on experiences and observed practice or safety concerns which are error prone for improvement purposes, thus managers have a better understanding of the challenges faced at the point of care. (Vogelmeier *et al.*, 2010:289).

The most important component of error management is the recurrence of errors. Therefore if not reported, this cannot be addressed from a system perspective, while each human error which occurs due to system faults continues to receive discipline (Reason: 2012: 60).

Thus, this study explored nurse managers' perceptions on error reporting and management in nursing units within the organisation to determine if there is a difference between the perceptions of nurse managers and direct care nurses.

2.4.3 The direct care nurse accountability

Just culture identifies the direct care nurses' accountability to identify and report risks, therefore there is a need to foster a reporting culture which means that staff need to be educated in the expectation of near miss and error reporting and feedback will be used to improve systems and processes (Marx, 2001: 25-26). However, this reporting carries with it accountability to peers and to patients. Reason (2012: 62) states that no health care facility can expect to be blame free, but there needs to be a balance in the learning from errors and apply the open and fair approach i.e. just culture approach.

Direct care nurses are accountable to report a near miss and errors, nurse managers are accountable to investigate and define whether the error was an honest mistake (human error) or negligence, reckless conduct or intentional rule violations (Marx, 2001: 5-7). Marx (2001: 5-7) has provided specific outcomes which guide managers in the management of human behaviour.

When a human error is committed which is defined as "doing other than what should be done", the response is to console the nurse and work with her/him to make better choices but also review system factors which may have contributed to the error and address these. At-risk behaviour is the choice made which increases the risk which is believed to be justified by the nurse, but is not. The response to this would be to coach the nurse, with a closer review into the behaviour choices, group dynamics and system factors. At - risk behaviour is not seen as disciplined as this will cause reporting to discontinue (Marx, 2001: 13-19).

Reckless behaviour is a choice of consciously choosing to disregard a known risk and this warrants discipline. However, Mayer & Cronin (2008:429) advocate discipline for recurrent at-risk behaviour. The important component of the approach to error is just, i.e. matching the defined behaviour accordingly and moving away from severe patient outcomes leading to severe disciplinary action being applied.

The second component is fair, i.e. the approach is uniformly applied to all health care providers throughout the organisation (Marx, 2001:3-4; Reason, 2012:62). Leape *et al.* (2009: 425) identified the need for transparency which is defined as openly speaking about errors with peers and colleagues which encourages the learning culture and decreases the risk of error recurrence. This fosters trust, support and an environment of learning, where errors are recognized as risks for all health care providers.

Thus, this study explored the perceptions of direct care nurses to error reporting and the approach to error management within the organisation.

2.5 SUMMARY

It has been more than ten years since errors in health care were publically exposed and many proposed measures for change in healthcare advocated to manage errors. However, as seen in the literature progress in error reporting, disclosure and management continue to be challenges for safe health care delivery. The just culture approach to error reporting and management as opposed to the traditional approach of shame and blame promotes a change for health care organisations. The aim of a just culture approach is to improve systems and support nurses through behavioural management, and thus prevent repeated occurrences of errors. Important gaps in the approach to error management have been identified, e.g. disclosure practices.

This chapter has presented an overview of medical errors, the recommended prevention and management strategies and the factors which influence the outcomes of errors. The overview included the unique challenges faced in Saudi Arabia to provide safe health care in a multicultural environment.

In chapter three the methodology used to approach this study in detail will be discussed.

CHAPTER 3: RESEARCH METHODOLOGY

3.1 INTRODUCTION

Chapter two provided a detailed review of the literature which described the types of nursing errors, reporting and management of errors, as well as the roles of health care providers in the prevention and management of errors. This chapter will present the research methodology applied to describe the process of nursing error management of RNs within a tertiary hospital in Saudi Arabia.

3.2 STUDY SETTING

The nature and sensitivity of the topic of the study resulted in participation being limited to one tertiary health care organisation in Saudi Arabia, King Faisal Specialist Hospital & Research Centre (General Organisation)-Jeddah (KFSH&RC –J).

3.3 RESEARCH DESIGN

Burns and Grove (2007:38) define research design as the blue print for the conduct of a study that maximizes control over factors that could interfere with the desired outcome of the study. The purpose of the type of design directs the researcher in a logical process through the population and sample selection, instrument for measurement, data collection plans and analysis of results to answer the research question (Brink *et al.*, 2006:92).

The research design applied was a quantitative, descriptive approach to explore and describe error management in nursing amongst RNs working in a tertiary hospital in Saudi Arabia. Quantitative designs are experimental, non-experimental or non-traditional aimed at maximizing the validity of research findings (Brink *et al.*, 2006:93).

3.4 POPULATION AND SAMPLING

As the population was RNs employed at a tertiary hospital in Saudi Arabia who all had access to email, discussions were held with two research statisticians on whether to include the whole population. A power analysis was conducted to determine the adequacy of the sample size needed to be representative of the population. A power analysis has the capacity to detect differences or relationships that exist in the population (Burns & Grove, 2007:340).

The formula applied to arrive at a representative sample of the population of eligible RNs was: one group test for a proportion (normal approximation) adjusted for finite population. A

one group test with 0.050 two sided significance level will have 80% power to detect the difference between the null hypothesis proportion π_n , of 0.500 and the alternative proportion, π_A , of 0.600 when the sample size adjusted for a finite population of size $N=800$ is $n=157$. A representative sample was determined to be $N=200$ of the total RN population as the sample was adjusted for anticipated no returns of the questionnaire. This was a change based on the initial decision to use 25% of the total population of the three groups of RNs, i.e. Staff Nurses 1 & 2 (Professional Nurses in the South African context, therefore use of this term), Clinical Nurse Coordinators and Assistant/Head Nurses.

Another change was the adjustment for nationality and nursing specialty, with the application of 25% proportional allocation which increased the sample to $n=176$ for professional nurses. Proportion allocation was completed as Filipino and Indian RNs were more than 50% of the population; with other nationalities ranging from 10% to 20%. It was deemed important to use proportional allocation that regardless of percentage of nationality and specialty, all members of the eligible population had equal opportunity to be chosen in the random sample selection. The selection was completed by the Director, Research Director, KFSHRC-J and the researcher.

The sampling frame was reviewed in January 2011 and updates made based on changes of MSR lines. Thus, the following was the sampling frame used for data collection from 05 March to 31 March 2011. The professional nurse population of $N=696$ was as of March 2011 MSR; data collection was conducted from 05 March to 31 March 2011 as illustrated in table 3.1.

Simple random selection was conducted to identify the professional nurses' sample using a computerized table. Stratification was conducted based on nursing specialty and nationality for this sample. The stratification and random selection were determined using current classification of divisional councils Nursing Affairs to address nursing practice concerns, i.e. Adult Division, Ambulatory Division, Critical Care Division, Maternal/Child Division, Paediatrics Division and Procedures Areas Division. Nationality classification was based on the country of origin zoning system used by KFSH&RC-J Human Resources Department for recruitment of RNs, i.e. Saudi Arabian (Saudi), Western (USA, Canada, Europe, New Zealand & Australia), Middle Eastern (Jordan, Lebanon, Egypt), Philippians, Indians, Malaysian, Singaporean and South African.

Table 3.1: Professional Nurses (Staff Nurse 1 &2) Sampling Frame, March 2011

Nursing Division	Saudi	Western	Middle Eastern	South African	Indian	Malaysian	Filipino	Total
Critical Care Division	n= 4	n= 7	n= 21	n= 14	n= 23	n= 9	n= 51	N= 129
Mat/Child Division	n= 6	n= 4	n= 2	n= 15	n= 15	n= 3	n= 45	N= 90
Adult Division	n= 21	n= 20	n= 17	n= 20	n= 34	n= 4	n= 92	N= 208
Paediatrics Division	n= 7	n= 0	n= 10	n= 8	n= 8	n= 2	n= 54	N= 89
Procedure Areas Division	n= 4	n= 9	n= 5	n= 14	n= 15	n= 17	n= 38	N= 102
Ambulatory Division	n= 6	n= 5	n= 0	n= 3	n= 4	n= 2	n= 58	N= 78
Total Population (N)	N= 48	N= 45	N= 55	N= 74	N= 99	N= 37	N= 338	N=696
Sample (n) 25%	n=12	n=12	n=14	n=19	n=25	n= 9	n=85	N= 176

Clinical Nurse Coordinator (CNC) and Assistant/Head Nurses (Nurse Managers) population was smaller compared to the professional nurses population, i.e. N=20 – N=25. Thus, the decision was made to send questionnaires to all participants except for pilot study exclusions, which were two South African nurse managers familiar with the study and one Middle Eastern nurse manager who was in the process of resigning. The sample for CNCs and nurse managers are illustrated in table 3.2 below.

Table 3.2: CNCs' and Nurse Managers' Sampling Frame, March 2011

Job Title	Saudi	Western	Middle Eastern	South African	Indian	Malaysian	Filipino	Total
CNC Population (N)	N=4	N=3	N=10	N=2	N=1	N=0	N=1	N=19
CNC Sample (N)	n=4	n=3	n=10	n=2	n=1	n=0	n=1	n=19
Nurse Manager Population (N)	N=1	N=3	N=8	N=10	N=2	N=0	N=1	N=23
Nurse Manager Sample (N)	n=1	n=3	n=7	n=8	n=2	n=0	n=1	N=20

3.4.1 Inclusion criteria

The inclusion criterion for the study was:

- RNs assigned to patient care units providing direct clinical care with job titles of Staff Nurse 1 & 2 (Professional Nurses) and Clinical Nurse Coordinator
- Nurse Managers who are registered nurses with a twenty four accountability for a patient care unit with job title of Assistant Head Nurse/ Head Nurse.

3.4.2 Exclusion criteria

The exclusion criterion for the study was:

- RNs who were not assigned to patient care units and do not have direct patient contact, e.g. assigned in nurse education, coordinators, nursing supervisors, nursing informatics and executive job descriptions, i.e. Chief of Nursing, Programme Directors, Quality Manager, Nurse Recruiter and Products Coordinator
- Eligible RNs on vacation during data collection period
- RNs who participated in the pilot study
- RNs that were in the probation period (first three months of recruitment) at the time of data collection.

3.5 DATA COLLECTION TOOL /INSTRUMENTATION

Instrumentation was a questionnaire consisting of open - and closed -ended questions which were based on extensive literature review, previous research, input from experts and the researcher`s clinical experience.. The questionnaire was used seeing that error management is a sensitive topic with the aim of the study to describe the management of nursing errors

amongst RNs, thus a questionnaire was deemed to be the appropriate tool. However, as a questionnaire is defined as a self-reporting instrument, this does place limitations on the study (Burns & Grove, 2007: 382). The questionnaire was structured using open - and close - ended questions which were divided into the following four main sections:

3.5.1 Section A: Biographical Data

This section informed participants of the use of the biographical data to assist in the analysis and reinforced confidentiality. The questions sought to gain information on the participants' age, gender, nationality, language, years of experience, level of nursing education, primary work area, and retention on nursing unit and the hospital.

3.5.2 Section 2: Types of Errors and Feedback Processes

Section two questions presented the Harm Score Classification used by the organisation and requested participants to indicate the type of errors made by nurses on their units, their opinions of near misses and reporting same, examples of errors which had occurred on the nursing unit, if all the errors that have occurred on the nursing units had been reported and if not, to give reasons and resources staff available to them on the nursing units and within the organisation. Some of the questions listed the options available and included the choice of adding to the list.

3.5.3 Section 3: Error Reporting and Management

Section three included two Likert scales; one was section 3.1 which requested participants to complete fifty questions based on their agreement or disagreement. These questions were exploring the management of nursing errors amongst RNs on a variety of variables which are presented according to categories in chapter four. The second Likert scale was section 3.2 which was a total of thirteen (13) questions which explored factors affecting error management and the participants' agreement or disagreement with same.

3.5.4 Section 4: The Outcomes of Errors

Section four had a total of nine questions which asked participants to give their feedback on errors involved with, in which capacity, the examples of errors involved with, the classification of these errors, if the errors were managed fairly, if the nurse received fair treatment, the outcome of the error, what nurses expressed as their feelings after error management and to add any comments which they have with regard to error management.

The questionnaire was sent to all RNs by email requesting their participation in the study. This was followed by a visit from the researcher to provide hard copies of questionnaires as needed; envelopes for returned questionnaires and to answer any questions the participants had. An email reminder to participate was sent weekly and nurse managers were reminded at the weekly meeting of requested participation.

3.6 PILOT STUDY

A pilot study is defined as a smaller version of the study used to refine the methodology and data analysis (Burns & Grove, 2007:38). A pilot study was conducted using the draft questionnaire with 10% (n=20) of the study sample size. Method for pilot study was test-retest and excluded participants and results from the actual study.

The first pilot study was conducted in June 2010 and the data was reported to not be of much benefit by the statistician. Feedback received on the questionnaire was incorporated into the final questionnaire. The format and content of the questionnaire was changed based on feedback from the pilot study. Questions asked of the respondents was to critique the content for understanding as English was not the first language of all RNs employed at KFSH&RC-J and relevance of the questions, i.e. applicable to their job descriptions. The questionnaire was reviewed and re-structured based on this feedback.

A change made to the questionnaire was to decrease the number of open-ended questions and include these in the Likert scale structured format. Retest was completed in September 2010 under similar conditions as the planned data collection methodology. The results of the pilot study were used to finalize the questionnaire and data collection plan for the study. The data obtained in the pilot study has been excluded from the final analysis.

3.7 RELIABILITY AND VALIDITY/TRUSTWORTHINESS

Reliability is concerned with the measurement technique and accounts for characteristics such as dependability, consistency accuracy and comparability. Validity is the determination of how well the instrument measures the concept or variable being examined (Burns & Grove, 2007: 365).

To test reliability and validity, a pilot study was completed under similar conditions as the study to test the instrument and revisions were made based on results and feedback. Experts in nursing, risk and quality management were consulted to assist with content validation of the individual questions. A statistician was consulted with the questionnaire design and has guided the researcher through this process.

The pilot study results were analysed through preparation of the data and a review of similar available instruments in literature, i.e. Safety Culture Questionnaire of the Agency for Healthcare Research and Quality (AHRQ, 2004). To allow aggregation of the different survey questions, the "average positive response" on the questions of section 3.1 was calculated for each respondent and for each question. Using a 5-point Likert Scale the scores were distinguished and counted as follows: Strongly Disagree (1), Disagree (2), Neutral (3), Agree (4) and Strongly Agree (5). Negative worded questions were reversed in

their scoring. Table 3.3 below presents a summary of the reliability tests completed by the statistician.

Cronbach Alpha is a statistical procedure applied when pencil and paper scales are used for data collection and determines the alpha coefficient value. The Cronbach Alpha is unacceptable if below 0.70; 0.7 is marginally acceptable and a range of 0.8-0.89 is sufficiently reliable for the study (Burns & Grove, 2007:404). Internal consistency reliabilities were examined for sections 3.1: Error Reporting and Management on a whole, its subsections, as well as 3.2: Factors affecting Error Management of the questionnaire.

Since items were worded in both positive and negative directions, negatively worded items were first reverse coded so that a higher score would indicate a more positive response in all cases. Because most of the subsections of section 3.1 were calculated with Cronbach's Alpha < 0.7, further analysis was based on the complete section or on the individual questions. This did not affect the reliability of the tests as a whole which met the criteria of a power analysis greater than 8 as seen in table 3.3 below.

Table 3.3: Summary of Cronbach Alpha Tests

Sections of the Questionnaire	Cronbach's Alpha
Section 3.1: Error Reporting and Management	0.8425
Error reporting (Q3.1.1, Q3.1.5, Q3.1.7, Q3.1.14, 3.1.20)	0.5950
Feedback and communication (Q3.1.11, Q3.1.21, Q3.1.23, Q3.1.25 reversed)	0.3286
Non-punitive: Q3.1.8, Q3.1.12, Q3.1.16 reversed, Q3.1.17 reversed, Q3.1.18, Q3.1.19, Q3.1.26, Q3.1.46	0.7541
Organisation Systems and Processes: Q3.1.4, Q3.1.13, Q3.1.27, Q3.1.28, Q3.1.36, Q3.1.40 reversed, Q3.1.43, Q3.1.45 reversed, Q3.1.50	0.4085
Error disclosure: Q3.1.33, Q3.1. 34 reversed, Q3.1.35, Q3.1.37, Q3.1.39	0.3373
Error outcome: Q3.1.24r, Q3.1.29 reversed, Q3.1.30 reversed, Q3.1.31reversed, Q3.1.32, Q3.1.42reversed, Q3.1.47, Q3.1.48)	0.4992
Work Environment: Q3.1.3, Q3.1.9, Q3.1.10, Q3.1. 41, Q3.1.44, Q3.1.50	0.3262
Education: Q3.1.2r, Q3.1.6, Q3.1.15, Q3.1.22, Q3.1.38	0.4975
Section 3.2: Factors affecting Error Management	0.7199

Validity of the questionnaire was determined through assessing the content validity of the instrument. Content validity measures the adequacy of the questionnaire to measure the

concepts important to the study (Burns & Grove, 2007:382). This was accomplished through literature review, expert review by the supervisor and two experts in the field of error management and completion of a pilot study. The questionnaire was reviewed by a Risk Management Specialist and the Deputy Director, Quality Management Department, KFSH&RC-J in 2010

The questionnaire was adapted from the Agency for Healthcare Research and Quality (AHRQ, 2004) Safety Culture questionnaire and additional questions added which needed to be included for exploration of management of errors by RNs. The questionnaire was assessed by a statistician and changes were made based on feedback received.

3.8 DATA COLLECTION PROCESS

A data plan was presented in chapter one which outlines the steps to follow. As the pilot study and finalizing questionnaire needed to be completed before data collection, this was delayed and data collection was conducted 05 to 31 March 2011. A sample framework, the Manpower Status Report (MSR) was used for simple random selection. An email was sent to all respondents requesting participation in the study, which included the questionnaire accompanied by a letter of introduction which explained the reasons for the research, voluntary participation, submission process, consent to participate and confidentiality of the returns. Returns were to be sent to the researcher or her assistant (secretary) by the internal mail mechanism or on-line email as preferred.

This was followed by a visit by the researcher to the nursing units to deliver hard copies of the questionnaire as needed; return envelopes and answer participants' questions. A reminder of research participation was sent out by email on a weekly basis to participants and Assistant/Head nurses were reminded of their requested participation in the nurse management weekly meeting.

Questionnaire returns were **N=131**(61%) from the distributed numbers of **N=215** (n=176 Professional Nurses; n=20 Nurse Managers; n=19 Clinical Nurse Coordinators) with N=84 (39%) no response. The non-response rate could not be explored for reasons as returns were confidential. However, the sensitive nature of the topic being explored may be a contributing factor as this was a self-reporting questionnaire and the participants may not have felt comfortable in disclosing data (Almutary & Lewis; 2012:119).

3.9 DATA ANALYSIS

Analysis techniques conducted with quantitative exploratory research designs aimed at describing a phenomena included descriptive and inferential analysis which are used to form conclusions, implications for nursing, explore significance of the findings, generalization which may be applied and suggest further research (Burns & Grove, 2007: 42). The data was summarized, cleaned and analysed by the researcher with the assistance of a statistician using the Statistical Program for Social Studies (SPSS) computer program and the EXCEL program. The data was tabulated and will be presented by frequencies, graphic presentation and cross tabulation.

As the study included three groups of RNs' responses on error management, statistical associations were completed between different variables using inferential statistics. The definitions of each of the tests completed are presented below:

Alpha(α) known as the level of statistical significance or the cut-off point is the probability level at which the results of statistical analysis are judged to indicate a statistical difference between the groups (Burns & Grove, 2007: 407).

Chi-Square test of independence is used to analyze nominal data to determine significant differences between observed frequencies within the data and frequencies that are expected, thus determining whether two variables are independent or related and only significant results are reported (Burns & Grove, 2007: 420, 532).

Correlational analysis provides two pieces of information about the data, the nature of the relationship which may be positive or negative between two variables and the magnitude (or strength) of the relationship, with normally symmetrical outcomes (Burns & Grove, 2007: 423).

Fisher Exact two-sided test is a two-tailed test of significance, an analysis technique used for non-directional hypothesis when the researcher assumes that an extreme score can occur in either tail of the normal curve (Burns & Grove, 2007:558).

Frequency distribution is a statistical procedure that lists all possible measures of a variable and tallies each datum on the listing. There are two types of frequency distribution, grouped (data presented in tables for continuous variables) and ungrouped (table developed to present all numerical values obtained for discrete data) (Burns & Grove, 2007: 413, 541).

Two sided t-test is a parametric analysis technique used to determine significant differences between measures of two samples (Burns & Grove, 2007: 558).

Regression Analysis is defined as a statistical procedure that utilizes the value of one or more known variables to predict the value of one variable. A scatterplot diagram of the raw data values is used to determine the regression line which best fits the method of least squares. This statistical analysis may use multiple variables and the outcomes is known as the regression coefficient (Burns & Grove, 2007: 426-427)

3.10 SUMMARY

In this chapter, the researchers described the methodology used in the approach to this study. The different steps in the methodology design were described and how each was completed. The following chapter will describe the procedures used in data analyses and interpretation of the data collected.

CHAPTER 4: RESULTS

4.1 INTRODUCTION

The previous chapters presented the research methodology used to conduct the study. This chapter will present the data collected, an analysis and interpretation of the data based on the objectives of the study and include a discussion of the findings based on previous research.

4.2 PRESENTING THE STUDY FINDINGS

The data was tabulated using the computer program Statistical Package for Social Sciences (SPSS) by a statistician working with the researcher. The data is presented in the form of frequency tables and graphs using the EXCEL program to analyze the data. The level of significance for Chi-Square, Fisher's exact test and Regression Analysis was set at $\alpha = 0.05$. Alpha (α) known as the level of statistical significance or the cut-off point is the probability level at which the results of statistical analysis are judged to indicate a statistical difference between the groups (Burns & Grove, 2007: 407).

The data is presented using the study objectives as the outline of the questionnaire and their link to each of the study objectives. The term Professional Nurse which is the registered nurse title used in the South African context will be used for Staff Nurse 1 & 2. The term Nurse Leaders will be used for the Clinical Nurse Coordinator (CNC) and Assistant/Head Nurses unless specifically indicated by these job titles. As CNCs are viewed by professional nurses as nurse managers due to the delegation of nurse manager duties when on vacation, the results for these two groups will be combined unless a need to report all three groups is identified.

Data for the Likert scale will be presented in the three categories of Disagree, Neutral and Agree. Where reasons are provided as part of an answer to the questions, these would be collated into categories identified from the data. Section three of the questionnaire used the Likert scale to gain RNs feedback towards error reporting and management.

The Likert Scale questions were grouped into categories and will be reported according to these identified aspects of nursing errors in health care. The questions were grouped into the following categories:

- Error Reporting
- Direct Care Feedback and Communication Process
- Non-Punitive Approach
- Organisational Systems and Processes

- Unit Environment Factors
- Educational Preparation
- Patient and Nurse Disclosure of Errors
- Patient and Nurse Error Outcomes

These categories will be discussed as they pertain to each of the objectives of the study. The objectives for the study were to

- identify the nursing related errors occurring
- determine the current process of reporting nursing errors
- describe the management of nursing errors
- explore the factors impacting on the management of nursing errors.

4.2.1 Questionnaire returns

Question 1.12: Please indicate your nursing job title in the hospital (N=131)

The population was RNs who held the titles of Staff Nurse 1 & 2 (Professional Nurses), Clinical Nurse Coordinators and Assistant/Head Nurses. The sampling frame for Professional Nurses (Staff Nurses1 & 2) was N=696 (25%), Clinical Nurse Coordinators was N=19 (100%) and Assistant/Head Nurses was N= 23 (n=87%).

Respondents were N=131/215 (60.93%), with Professional Nurses n=112/176 (63.64%), Clinical Nurse Coordinators were n=10/19 (52.63%) and Assistant/Head Nurses were n=9/20 (45%) as depicted in table 4.1 below. The number of returns for the Assistant/Head Nurses which was below 50% is a limitation of the study, but does not prevent the completion of data analysis. Creating the Nurse Leaders group of Clinical Nurse Coordinator and Assistant/Head Nurse increased returns to N=19 (48.72%). The response of 60.93% is acceptable for reliable data results as more than half of the respondents have shared their perceptions on error management (Burns & Grove, 2007: 382).

Table 4.1: Percentage of Returns

Sampling Frame	Returns/response	Percentage
Assistant/Head Nurses	n= 9 /20	45%
Clinical Nurse Coordinators.	n= 10 /19	53.63%
Staff Nurses 1&2	n=112 /176	63.64%
Total Returns	N=131/215	60.93%

4.2.2 Demographical/biographical data

Table 4.2 presents a summary of the demographical/biographical data which included the questions of age, gender, nationality, language, years of experience, level of nursing education, primary work area, and retention on nursing unit and the hospital. Chi-Square test, t-tests and regression analysis were completed to test for correlations between the

demographical data and the various questions of exploring RNs' perceptions of error management.

Table 4.2: Summary of Demographical/Biographical Data

Demographics	Professional Nurses		Nurse Leaders	
Age	Count	Frequency	Count	Frequency
< 25 years	n=2	0.02	n=0	0.00
25-35 years	n=38	0.34	n=6	0.32
36-45 years	n=38	0.34	n=7	0.37
46-55 years	n=22	0.20	n=5	0.26
55-65 years	n=10	0.09	n=1	0.05
> 65 years	n=1	0.01	n=0	0.00
Gender	Count	Frequency	Count	Frequency
Female	n=102	0.92	n=13	0.68
Male	n=9	0.08	n=6	0.32
Nationality	Count	Frequency	Count	Frequency
Saudi	n=7	0.06	n=0	0.00
Western	n=11	0.10	n=3	0.16
Middle Eastern	n=7	0.06	n=9	0.47
South African	n=17	0.15	n=5	0.26
Indian	n=9	0.08	n=0	0.00
Malaysian	n=7	0.06	n=0	0.00
Filipino	n=52	0.47	n=2	0.11
First language	Count	Frequency	Count	Frequency
English	n=16	0.14	n=6	0.32
Arabic	n=14	0.13	n=9	0.47
Other	n=81	0.73	n=4	0.21
Education	Count	Frequency	Count	Frequency
Basic Nursing Diploma	n=22	0.20	n=4	0.21
Basic Nursing Degree	n=73	0.66	n=9	0.47
Post Basic Specialization	n=14	0.13	n=6	0.32
Master's Degree, Nursing	n=2	0.02	n=0	0.00
Doctorate in Nursing	n=0	0.00	n=0	0.00

Demographics	Professional Nurses		Nurse Leaders	
Primary work area	Count	Frequency	Count	Frequency
Adult Division	n=32	0.29	n=1	0.05
Mat/Child Division	n=15	0.14	n=5	0.26
Critical Care Division	n=19	0.17	n=5	0.26
Procedure Areas Division	n=23	0.21	n=2	0.11
Pediatrics Division	n=10	0.09	n=4	0.21
Ambulatory Care Division	n=12	0.11	n=2	0.11
Working in area of experience	Count	Frequency	Count	Frequency
Yes	n=103	0.93	n=14	0.74
No	n=8	0.07	n=5	0.26
Working in current unit	Count	Frequency	Count	Frequency
< 1 year	n=9	0.08	n=2	0.11
1 - 5 years	n=51	0.46	n=7	0.37
> 5 years	n=52	0.46	n=10	0.53
Working in hospital	Count	Frequency	Count	Frequency
< 1 year	n=8	0.07	n=1	0.05
1 - 5 years	n=51	0.46	n=5	0.26
> 5 years	n=52	0.47	n=13	0.68
Experience as RN	Years		Years	
Median	15		16	
Mean	14.8		17.6	
Standard deviation	8.96		8.68	

Question 1.1: Age (N= 130)

Received N=130 returns, with n=1 professional nurse excluded as she did not complete the question. Table 4.2 above demonstrates that the majority of RNs were within the 36-45 year age range, with both nurse leaders and professional nurses' mean age 40.3 – 40.5 years, with no significance between the two groups of RNs, $p=0.93$ (t-test). Promotion was reported by 15.79% (n=3) within the 25-35 year age range and only 5% (n=1) nurse leader was found in the 55-65 year age range.

Younger nurse leaders in the organisation were mentored into these roles and the organisation has a succession plan offering positions for promotion as a career development opportunity. Employees aged sixty years and above were accepted based on an exception

and retirement age of sixty five years old. The age of RNs was not significantly correlated with the average positive response of questions in section 3.1 and section 3.2, $p=0.153$ (regression analysis).

Mwachofi et al., (2009:277) in a study completed in Saudi Arabia reported a significance of age on RNs' overall perception of hospital quality which included reporting medication errors, with older nurses less likely to have positive perceptions. In contrast a study in Taiwan found that the nurse demographics, i.e. "*age, educational background, working experience, experience of having made a medication errors and failure to report*" were not associated with barriers to reporting errors (Chiang & Pepper, 2006: 397).

Question 1.2: Gender (N = 130)

Received N=130 returns, with n=1 professional nurse excluded as she did not complete the question. Table 4.2 above demonstrates that the majority of respondents were female 86% (n=112) but there was a significant difference in the gender of nurse leaders; $p=0.003$ (Chi-square test) despite the frequency of male nurse leaders 32% (n=6) being lower than female nurse leaders 68% (n=13).

Van Rooyen *et al.*, (2010: 5-7) identified gender discrimination, interaction and segregation which included the limitations of male nurses providing care to female patients as challenges for South African nurses' adaptation to the healthcare environment of Saudi Arabia. Male nurse leaders may be challenged within this culturally restricted environment when addressing performance of RNs in error reporting and management, while female nurses may be hampered in their communication with males as they may fear discrimination (Tumulty, 2001: 288).

RN population of males was N=11/39 nurse leaders ($p=0.791$) and N=43/696 professional nurses ($p=0.668$), with no bias in the selection of the sample in respect to gender as seen in p- values of the chi-square test. In correlation to reporting and management of nursing errors; there was no significant difference of gender as a factor, $p=-0.086$ (regression analysis).

Question 1.3: Nationality (N =129)

Received N=129 returns, with n=2 professional nurses excluded as they did not complete the question. Saudi Arabia is dependent on an expatriate workforce with only 29% of the total nursing workforce being Saudi nationals (Almalki *et al.*, 2011: 304). The use of an expatriate workforce was seen in the majority of RNs 95% (n=122) response; with 5% (n=7) of professional nurses of Saudi nationality, see table 4.2 above.

Table 4.2 above presents the nationality frequency distribution for both groups of RNs. The majority of professional nurses 47% (n=52) were of Filipino nationality and the remaining nationalities ranged from 6% (n=7) - 15% (n=17). The majority of nurse leaders 47% (n=9) were of Middle Eastern nationality, with South African 26% (n=5); Western 16% (n=3) and Filipino 11% (n=2). There were n=0 respondents for Saudi, Indian and Malaysian nurse leaders which may have added richness to the study. There was no nationality bias within the sample as proportional allocation was completed with professional nurses sample selection and all nurse leaders were selected as participants except for exclusions.

Regression analysis results suggested that an average positive response of sections 3.1 (error reporting and management) and 3.2 (factors impacting on errors) correlated with Middle Eastern nationality, $p=0.044$. This result indicated that these respondents were on average slightly more negative in their perceptions than the other respondents. In contrast, Almutairi *et al.* (2012: 5-6) found the Middle Eastern nurses were more positive in their perception of clinical safety culture and report a significant difference in the perceptions of safety across the different nationalities in the multicultural work environment of Saudi Arabia.

A study completed in five hospitals in Riyadh, Saudi Arabia does mention the diversity of the work force, the recruitment strategy changes of the western world to a more diverse nationality pool but does not discuss the impact on nursing errors (Mwachofi *et al.*, 2009:279).

Question 1.4: Language (N =131)

Received N=131 returns. Table 4.2 presents the frequency of first language spoken with Arabic (n=23) and English (n=22) within the same range; 17% and “other” 66% (n=86) the majority. Nurse leaders 47% (n=9) spoke Arabic while professional nurses 73% (n=82) spoke a different first language to Arabic and English which were the official languages of communication for the organisation. There was no significant difference between the two groups of RNs; $p=0.6133$ (Chi-square test) or a correlation to nursing error management in regression analysis results; $p=0.744$.

This divergence of first language response suggests that the question of language may impact on communication factors in nursing errors. The different accents, interpretations and the need to inform nurses who are non-Arabic speaking of discussions and decisions made for patient care delivery are identified risks in the healthcare setting (Van Rooyen *et al.*, 2010: 6). The work environment and communication are highlighted as factors which impact nursing errors and patient safety (Alahmadi, 2010: 21; Almutairi *et al.* 2012: 6; Sammer & James; 2012: 5). The language barrier was identified as a factor in objective four, table 4.9 in

which 39% (n=48) of RNs agreed to this gap in communicating error disclosure to patients, which is supported by Van Rooyen *et al.*, (2010: 6). Language as a factor was negatively associated with positive score on patient safety, $p=0.02$ (regression analysis).

Question 1.5: Nursing Education (N =130)

Received N=130 returns, with n=1 professional nurse excluded as she not complete the question. The majority of RNs (63%) held a Bachelor Degree in Nursing (BSN) qualification; professional nurses 66% (n=73) and nurse leaders 47% (n=9). RNs with highest qualification as a Diploma in Nursing 20% (n=26), Master's Degree 2% (n=2) professional nurses only, Post Basic Specialization 15% (n=20) and no doctoral degrees at this level of nursing. Nurse leaders 32% (n=6) held additional postgraduate diploma qualifications. There was no significance between the two groups of RNs; $p=0.1449$ (chi-square test) nor on regression analysis with error reporting, error management and factors.

RNs (100%) of Saudi (n=11) and Filipino (n=53) nationality held BSN qualifications as this is the only level of basic nursing education offered in the Philippines and KFSHRC-J only recruits BSN graduates to fill RNs positions of Saudi nationality. Diploma qualifications were seen in the Western, South African, Malaysian and Indian nationalities, as per table 4.2 above.

The impact of nursing education on nursing errors and safety culture has mixed results in previous studies, see chapter 2: Aiken *et al.* (2008); Schmalenberg & Kramer (2008) and Kelly *et al.* (2011).

Question 1.6: Experience as a Registered Nurse (N = 130)

Received N=130 returns, with n=1 professional nurse excluded as she did not complete the question. RNs' median number of years of experience ranged 15-16 years for both professional nurses and nurse leaders, with a slightly lower mean 14.8 – 17.6 years. There is no significant difference in the mean years of experience between the two groups of RNs; $p=0.219$ (t-test) nor on regression analysis.

Chiang and Pepper (2006:397) found no correlation between nurses' experience and barriers to reporting medication administration errors, reasoning that Taiwan has younger nurse population and thus less experienced when compared to international cohorts. However, Mayo and Duncan (2004: 215) report a weak correlation between number of errors reported and years of experience, thus improvements in error reporting are a priority for all nurses. Throckmorton and Etchegaray (2007: 408-409) found that nurses with less experience were less likely to report errors resulting in minor injuries.

Question 1.7: Nursing Specialty (N=130)

The Nursing Affairs Department, KFSH&RC-J has a shared governance council structure defined within the Professional Practice Model (PPM) which has divided each of the care delivery units into divisions. Shared Governance is a concept which has been defined by Porter O`Grady (1987: 282) as a structure which empowers nurses at the direct care level to participate in decision making and encourages the principles of ownership, equity, partnership and accountability.

The nursing divisions were based on the type of patient populations served and practice standards applicable within the division to encourage autonomous nursing practice at the direct care nurse level. These six divisions were Adult, Ambulatory, Critical Care, Maternal/Child, Pediatrics and Procedure Areas as summarized in table 4.2 above. Received N=130 returns, with n=1 professional nurse excluded as she did not complete the question.

The Adult Nursing Division had the highest number of professional nurse respondents 29% (n=32), followed by the Procedures Nursing Division 21% (n=23) with all other nursing divisions ranging from 9% (n=10) – 17% (n=19). Nurse leaders had equal distribution 26% (n=5) for Maternal/Child and Critical Care Nursing Division, while other nursing divisions ranged from 5% (n=1) – 21% (n=4). The majority of RNs 89% (n=113) were employed within their nursing trained specialty and promotion 4% (n= 5), professional development 5% (n=6), transfer requests 2% (n=2) and no post available 2% (n=2) were reasons for not being assigned to their division of nursing specialty.

Regression analysis results suggested that an average positive response of section 3.1: error reporting and management; and 3.2 exploring factors correlated with Adult Nursing Division, $p=0.036$. This result indicates that the RNs in Adult Nursing Division were on average slightly more negative in comparison with the others respondents. This may be due to the majority of professional nurses being assigned to this nursing division, thus more experience with errors at the point of care or the work environment have increased risks when compared to other nursing divisions.

Intensive care units have been found to have a higher incidence of errors, reported at 89.3 medical errors in 1 000 patient days, with an estimated 3.3% contributing to patient deaths (Alshrafi, 2011:146). This was supported by Al-Jeraisy *et al.* (2011: 298) who found that one third of medication errors occurred in a pediatric intensive care unit as opposed to a general pediatrics unit in Saudi Arabia. Other studies support the conclusion of high workload and complex care environment which play a major role in error occurrence (Moody *et al.*, 2006:203; Potylycki *et al.*, 2006:373).

Question 1.10: How long have you worked in your current unit and Question 1.11: How long have you worked in this hospital (N = 130)

Received N=130 returns, with n=1 professional nurse excluded as she did not complete the question. Table 4.2 above shows that 47% (n=50) of professional nurses have been employed in the hospital and on their particular units for more than five years. Nurse leaders 68% (n=13) have been employed in the hospital for more than five years and employed in their units 53% (n=10). This is partially in agreement with Almalki *et al.* (2011:309) who report that experienced expatriate nurses' turnover once have obtained skills and abilities to work in developed countries.

Nurse retention is seen to contribute to the prevention of errors as nurses have gained familiarity with systems and processes but have also been seen to promote an attitude of knowing the system thus the increased risk taking and reliance on memory. Ootim (2002: 29) states that novice nurses need assistance in acquiring the skills to decrease risks of medication errors, but senior staff are often neglected in their need for education and skill updates. New graduates and experienced new professional nurses in the orientation period were excluded from the study.

Thus RNs who reported less than one year employment would be the new nurses to the organisation, with at least three months experience for Saudi nationals and two or more years of experience for expatriate RNs. There was no significant difference between nursing experience or retention with the reporting and management of errors (sections 3.1 and 3.2).

4.2.3 Objective to identify the nursing related errors occurring

Objective one was to identify the nursing related errors occurring within the organisation. The approach taken to capture this data was to use the harm score currently utilized within the organisation and identify the most frequent type of errors that have occurred based on feedback from the Quality Management Department, KFSH&RC-J. Thus, the use of two experts from this department to review the questionnaire was deemed appropriate.

The harm score, based on Pennsylvania University Score (2004) was listed and respondents were requested to identify the type of errors encountered during their employment at KFSHRC-J which would range from 2000 (establishment of the organisation) to 2011. This section will report on types of errors based on the harm score, near miss classification and reporting, examples of errors, reasons for errors reported or not reported and resources available to registered nurses at the unit level.

The harm score classification of errors is defined as follows:

1. No Error: Circumstances or events that have the capacity to cause error, but no errors has occurred, e.g. two look alike medications are stored together and noted by the charge nurse on rounds.
2. Error, No Harm/Did not reaches the patient: An error occurred but the error did not reach the patient, e.g. physician prescribed the incorrect dose of a medication which was noted by the registered nurse on her review of the prescription and corrected with the physician.
3. Error, No Harm/ Reached the patient: An error has occurred and reached patient with no harm which was assessed by monitoring, e.g. registered nurse administered pethidene 50 mg intravenously instead of the prescribed intramuscular. The patient received the correct medication through the wrong route and needed to be monitored to ensure that there was no harm from this error.
4. Error, Harm/ Not a Sentinel Event : An error occurred that may have contributed to or resulted in temporary harm to the patient and required intervention, permanent harm with prolonged hospitalization, e.g. patient had an instrument left in after surgery even though the surgical count was completed
5. Error, Sentinel Event: An unexpected occurrence involving death, serious physical or psychological injury or the risk thereof, and any event that might cause embarrassment or risk to the hospital with potential legal ramifications and/or media inquiries or coverage. The phrase “or the risk thereof” includes any process variation for which a recurrence would carry a significant chance of a serious adverse outcome. Such events are called “sentinel” because they signal the need for immediate investigation and response. Serious injury include an unanticipated death or major permanent loss of limb or function, not related to the natural cause of the patient’s illness or underlying condition; infant abduction or discharge to the wrong family; patient suicide in hospital; rape of a patient, staff or visitor; significant hemolytic transfusion reaction involving administration of blood or blood products having major blood group incompatibilities; surgery on the wrong patient or body part and significant medication errors
6. Error: Death: Errors which are classified as a sentinel but the outcome was death of the patient

Question 2.1: Indicate the type of error (s) made by nurses in your unit (Indicate all that apply) (N=131)

Received N=131 returns and table 4.3 presents the frequency of reported experience in error classified according to the harm score which included the majority of both groups of RNs;

82% (n=92) - 95% (n=18). There was no significant difference between the number of errors and the two groups of RNs as seen in table 4.3 below; $p=0.304$ (Fisher's exact test).

Table 4.3: Frequency of Errors

Error Classification	Errors (n)	No Errors (n)	Total
Professional Nurses	n=92 (82%)	n=20 (18%)	N=112
Nurse Leaders	n=18 (95%)	n=1(5%)	N=19
Fisher's exact test	0.304		

Table 4.4 below demonstrates the most frequently reported classification of errors by job title. The nurse leader response of no error experienced was assigned in the Ambulatory Nursing Division. This is an acceptable response as Out-patient in contrast to In-patient nursing units may not experience as many errors.

Professional nurses experience with no errors ranged from Ambulatory 4.8% (n=5), Paediatrics 2% (n=2), Adult 5.3% (n=6), Maternal/Child 0.8% (n=1), Procedures 5.3% (n=6) and Critical Care 2% (n=2) divisions of nursing, with a range of retention in nursing units from less than one year to more than five years. The question did not request respondents to indicate a time frame for when the error was experienced. This may be a limitation.

RNs classified a total of n=128 errors experienced on the nursing units. Professional nurses 35% (n=39) and nurse leaders 42% (n=8) both had the highest response to classification 3: Error/s, No Harm, Reach the patient and classification. This was followed by classification 2: Error/s, No Harm, Do not reach the patient for professional nurses 30% (n=33). Nurse leaders next classification 5: Error/s Harm: Not a sentinel event 37% (n=7). The results are in contrast to previous studies which have reported nurses more willing to report errors which have severe adverse outcomes for the patient (Marx, 2001: 4; Alahmadi, 2010: 19).

Nurse leader's responses may be a demonstration of the accountability of their job title responsibilities and the investigative process of the organisation. Classification 6: Error/s, Death was reported in the Critical Care nursing division 2% (n=2) by professional nurses of Middle Eastern and South African nationality with more than five years of experience in the organisation and possessing post basic specialization, but none in the nurse leaders group.

Critical Care nursing units are identified as high risk units which require more vigilance on the part of nursing and the need to allocate more resources, e.g. clinical pharmacists to these divisions. Kaushal, Bates, Abramson, Soukup & Goldmann (2008:1260) concluded that more serious medication errors occurred on the paediatric ICU compared to general medical and surgical paediatric units. The addition of a fulltime clinical pharmacist to the ICU substantially

decreased the serious medication errors in the ICUs but a part time pharmacist in the general paediatrics units was not as effective (Kaushal *et al.*, 2008:1260).

Table 4.4: Job Title and Error Classification frequency

Error(s) Classification	Professional Nurses N=112	Professional Nurses (Frequency)	Nurse Leaders N=19	Nurse Leaders (Frequency)
No Error	n=20	0.17	n=1	0.05
Error/s , No Harm, Do not reach the patient	n=33	0.29	n=3	0.16
Error/s , No Harm, Reach the patient	n=39	0.35	n=8	0.42
Error/s , Harm, Not a Sentinel Event	n=11	0.10	n=0	0.00
Error/s , Harm, Classified a Sentinel Event	n=7	0.06	n=7	0.37
Error/s, Death	n=2	0.02	n=0	0.00
Total Errors	N=92		N=36	
Fisher's exact test:	0.036			

Table 4.4 above demonstrates a significant difference between the frequency of professional nurses' and nurse leaders' classification of errors, $p=0.03$ (Fisher's exact test). The p-value means that there is a significant difference in the number of different errors classified. Thus, either the two groups report different errors, or the two groups classify the same errors differently. Thus one can conclude that the majority of RNs employed in the organisation were aware of the classifications of errors; that all types of errors had occurred on the nursing units and therefore these RNs were able to share valuable experiences on the reporting and management of errors.

Question 2.2: Is a near miss an error? (N=130) and Question 2.3: Does a near miss require reporting? (N=130)

As discussed in chapter two, potential errors have been defined by numerous terms in literature, i.e. near miss, close call (Chard, 2010:143). For KFSH&RC-J, the list provided with the questionnaire classifies no error, but does not indicate if this is a near miss, which may have been helpful to respondents.

Received N=130 returns with n=1 professional nurse excluded as she did not answer the question. The majority of RNs in both groups agree that a near miss is an error, nurse

leaders 74% (n=14) and professional nurses 78% (n=87) in agreement with a near miss being an error as seen in figure 4.1 below. There was no significant difference that nurse leaders and professional nurses interpret a near miss as an error differently, $p=0.738$ (Fisher's exact test).

However, a near miss is not classified as an error as seen in the Pennsylvania classification of no errors (2004) and other studies (Murphy *et al.*, 2007:890). Chard (2010:136,143) reports similar confusion for nurses in identification of a near miss (or close call) and a need for universal definitions in errors. RNs 14% (n=16) professional nurses and 16% (n=3) nurse leaders correctly identified these errors which demonstrates the need for education of both groups of RNs in error identification.

The majority of RNs 80% (n=89) and nurse leaders 89% (n=17) correctly identified that a near miss needs to be reported, thus demonstrating the recognition of the importance this data plays in error prevention. There was no significant difference between the two groups of RNS on their perception of near miss reporting, $p=0.703$ (Fisher's exact test).

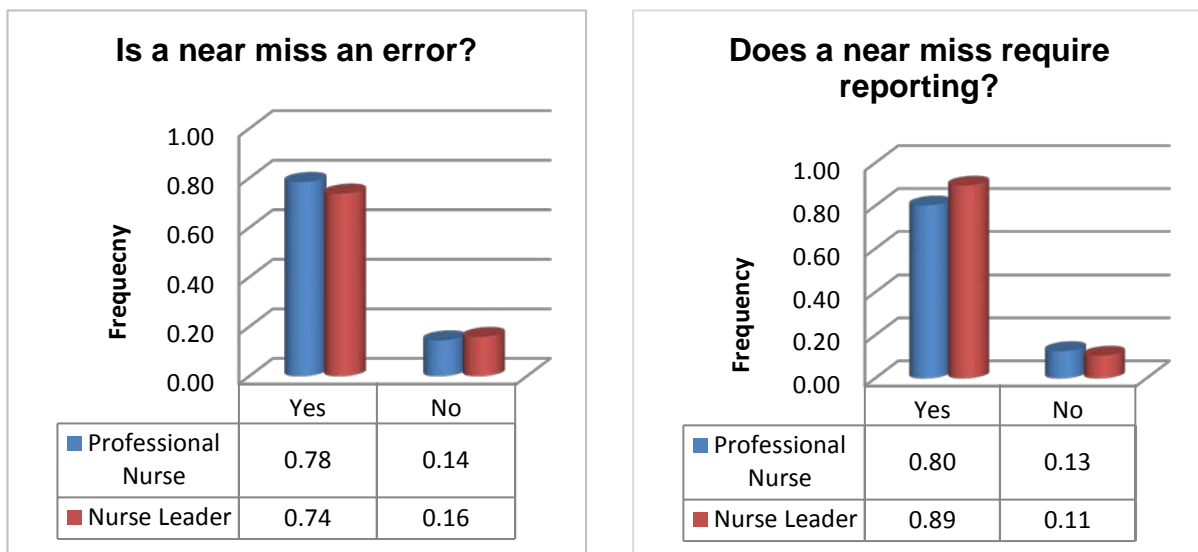


Figure 4.1: Near Miss identification and reporting

Reporting of a near miss is in agreement with the advocated process to use near misses to improve error prevention and evaluate organisation systems (Kohn *et al.*, 2000: 4). RNs 9% (n=10) did not know about near miss identification, and 16% (n=24) did not know about near miss reporting. The results raise the question of reinforcement of the approach to a near miss, the flow of information and communication between nurse leaders and professional nurses' knowledge of the processes of near miss management in the organisation as 11%

(n=2) of nurse leaders either do not know that near miss is not an error but needs to be reported.

Question 2.4: Give Examples of the type of errors that have occurred in your unit (Indicate all that apply) (N=129)

Received N=129 returns, with n=2 professional nurse exclusions due to discrepancies in the link between no error (question 2.1) and error examples (question 2.4.) Examples of errors which have occurred on nursing units are summarized below in table 4.5. RNs identified N=197 examples of errors which had occurred on nursing units in which they worked with a divergent response of highest occurring examples; professional nurses identifying medication errors as the most frequently occurring 20% (n=40) and nurse managers identifying incorrect identification, 6% (n=12).

Table 4.5: Examples of Errors on Nursing Units

Error Examples	Professional Nurses N=110	Professional Nurses (Frequency)	Nurse Leaders N=19	Nurse Leaders (Frequency)
2.4.1. Incorrect Identification, e.g. medication given to the incorrect patient	n=28	0.28	n=12	0.67
2.4.2. Cultural implications, e.g. shaved the religious man`s (matawa) beard by accident	n=7	0.07	n=0	0.00
2.4.3. Narcotic, e.g. Narcotic missing at count	n=20	0.20	n=7	0.39
2.4.4. Procedural, e.g. time out procedure not completed which led to an error	n=9	0.09	n=1	0.06
2.4.5. Medication, e.g. wrong medication given to patient	n=40	0.40	n=8	0.44
2.4.6. Communication, e.g. telephone order written in the wrong patient file, resulted in wrong orders carried out	n=15	0.15	n=0	0.00
2.4.7. Error of commission, e.g. due to incorrect identification, wrong patient received the preparation for surgery	n=2	0.02	n=0	0.00

2.4.8. Error of omission, e.g. failure to report critical laboratory results	n=17	0.17	n=3	0.17
2.4.9. Other ((Please indicate):	n=24	0.24	n=4	0.22
Total Examples of Errors	N= 162		N=35	
Fisher's exact test:	0.225			

However, medication 17 % (n=8), narcotics 39% (n=7) and critical lab results (omission errors) 44% (n=3) were identified by nurse leaders as most occurring examples. This is in agreement with previous studies which report medication as the most frequently reported nursing error (Kohn *et al.*, 2000: 2; Mayo & Duncan, 2004: 209; Chiang & Pepper, 2006: 393).

Nurses are direct caregivers administering at least 50 medications per shift, and with “*medication errors reported to account for 10% to 18% of total hospital injuries*”, which places nurses at the highest risk for medication errors (Mayo & Duncan, 2004:209). Nurses are reported to intercept 86% of errors in the ordering, transcription and administration stages of medication treatment process (Chiang & Pepper, 2006:393). Medication administration plays such an important measure on client outcomes that in some countries registered nurses are mandated upon employment to complete competence testing through written examination in areas of medication and critical thinking (King Faisal Specialist Hospital & Research Center, 2000; National Council Licensing Examination, USA).

Professional nurses identified cultural, procedural, commission and communication examples of errors. However, nurse leaders did not identify these examples or had a very low response, 6% (n=1), see table 4.5. The results demonstrate that nurse leaders may not be aware of all errors which occur in the units; however the most common example is that of medication or the serious adverse events risks with narcotics as their focus. In contrast the professional nurses are aware of most errors in their units, but there may be a gap in the reporting of these errors as nurse leaders may not be informed.

Nurse leaders` lack of knowledge of the number of reported errors is supported by Alahmadi (2010:20) who reported a lack of manager accountability to address safety concerns. Under reporting of errors was identified for improvement and has been identified in other studies to be a factor which is linked to leadership response to errors (Mick *et al*, 2007: 502; Chard, 2010:142-143).

The examples of errors identified as “other” 12% (n=24); RNs identified no examples of errors; pharmacy dispensing errors; documentation errors in the computerized systems for

medication and nursing documentation; laboratory specimen labelling and non-compliance with internal policies and procedures, e.g. broken narcotic ampule, wrong baby roomed in with mom, accidental removal of central venous catheter or endotracheal tube.

The nursing divisions reported medication errors which included narcotics as the most frequently occurring error examples in the nursing units assigned, with the Adult Nursing Division 23% (n=49) and Critical Care Division 32% (n=68) the most errors reported. The Ambulatory Division reported the least errors 7% (n=14). The correlation discussed in question 1.7 of the Adult Division of Nursing being slightly more negative in response to error reporting and management may be due to more experience with errors occurring in this division.

There was no significant difference between the two groups of RNs examples of types of errors which occurred in the nursing units, $p= 0.225$ (Fisher's exact test). The above RNs' perceptions are confirmed in question 4.3 which explored the examples of errors in which RNs were identified as being involved in.

Question 2.5: Do you think that all errors that had occurred on your unit were reported (N= 130)

Received N=130 returns, with n=1 professional nurse excluded as she did not complete the question. Figure 4.2 below presents an almost equal distribution for agree for professional nurses 48% (n=52) and nurse leaders 47% (n=9) that all errors occurring in the nursing units in which they worked were reported. However, the majority of RNs 53% (n=67) disagreed or did not know if all errors occurring in the nursing units in which they worked were reported.

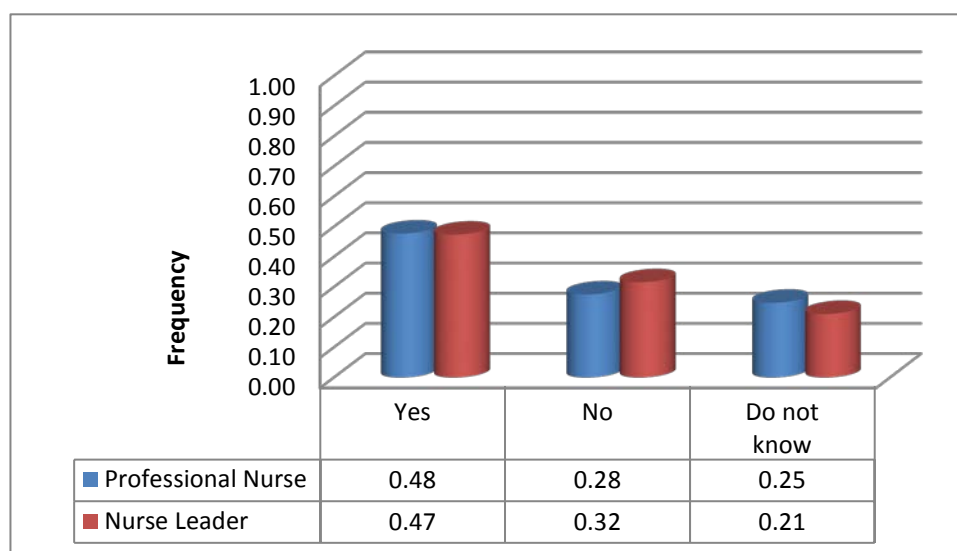


Figure 4.2: All Errors reported

The addition, of the reasons given for not reporting was a shame and blame culture, fear of the outcome for the nurse and the reaction of the team which added weight to this response. Studies have identified under reporting of errors as a problem, which is dependent on the approach to error reporting and management. Two contrasting studies, by Throckmorton and Ecthegaray (2007: 411) found that the majority of nurses were willing to report errors of all classifications, from a near miss to the most severe of outcomes. Ultimately, the work environment and approach if punitive did affect error reporting. Chiang and Pepper (2006: 395) identified barriers to medication error reporting and fear, was the main factor followed by leadership attitude to errors especially feedback and recognition.

There was no significant difference between the two groups of RNs' perceptions of all errors being reported, $p=0.901$ (Fisher's exact test). However, this does support the research problem of fear and blame being a factor negatively influencing reporting nursing errors within the clinical environment. This is confirmed by the low response rates to non-punitive approach in error reporting, see table 4.9.

Question 2.6: Indicate resources staff available to you, give reason/s why (N=130)

Received N=130 returns, with n=1 professional nurse excluded as she did not complete the question. Professional nurses identified charge nurses 82% (n=90), unit colleagues 75% (n=83), clinical nurse coordinator 62% (n=68) and nurse manager 61% (n=67) as the resource staff most available, table 4.6 below. This demonstrated a supportive environment as professional nurses identified both peers and direct supervisors who would be available to precept new staff, provide education on systems and processes and encourage RNs to report errors with an understanding of the challenges in care delivery.

Nurse leaders identified the direct supervisor, the programme director 74% (n=14) as the most supportive as a resource with second resource being nursing quality 63% (n=12) responsible to monitor, support and provide feedback on the process of error reporting and management. This was appropriate as the nurse leaders would liaise with this department for investigative processes. Colleagues on another unit, which are peers were identified as next frequently occurring, 53% (n=10). Studies have reported nurse manager and executive responses to errors as a major factor in achieving success in error reporting and management (Chiang & Pepper, 2006:395; Mick *et al.*, 2007:502; Throckmorton & Ecthegaray, 2007: 411; Chard, 2010:142-143).

The intensity of emotional responses of RNs to errors was found to be related to severity of the error, the team response and manager reactions. This would include the support provided to report errors and to allow "second victims", i.e. healthcare providers who make

errors to reach reconciliation with their actions. This process is identified in six phases and includes peer and nurse leader support, see chapter two (Scott *et al.*, 2009:326-330). There was a highly significant difference between the two groups of RNs responses to resource staff available, $p < 0.0001$, (Chi-square test).

Table 4.6: Resource Staff Available

Resources Staff Available	Professional Nurses N=111	Professional Nurses (Frequency)	Nurse Leaders N=19	Nurse Leaders (Frequency)
Unit Colleagues	n=83	0.75	n=6	0.32
Charge Nurse	n=90	0.82	n=5	0.26
Clinical Nurse Coordinator	n=68	0.62	n=5	0.26
Assistant/Head Nurse	n=67	0.61	n=9	0.47
Program Director	n=12	0.11	n=14	0.74
Nursing Quality	n=11	0.10	n=12	0.63
Colleagues on another unit	n=20	0.18	n=10	0.53
Assistant Chief of Nursing	n=7	0.06	n=5	0.26
Chief of Nursing	n=7	0.06	n=4	0.21
Others (Please indicate): Pharmacy, Quality Management Department	n=10	0.09	n=5	0.26
Chi-square test	p < 0.0001			

The two executives within Nursing Affairs Department, Assistant 16% (n=12) and Chief of Nursing Affairs 14% (n=10) had almost equal distribution of response from both groups of RNs. The Chief of Nursing, the highest level of nursing accountability in the organisation was also positively associated with the average positive response in regression analysis results, $p=0.03$.

Marx (2001: 25) charges healthcare executives *“to review the disciplinary policy whether these are supportive or detrimental to the safety system initiatives and advocate a balanced approach to learning from errors versus punishment”*. Mayer and Cronin (2008: 428-430) identify that organisational leaders set the tone for a culture of safety which promotes learning cultures, reporting cultures and ultimately a just culture. The role of executive leadership positively influencing the safety culture at the direct care level has been reported as lacking in previous studies (Spears, 2005: 223; Al-Mandhari *et al.*, 2008: 1473; Anooshem, Ahmadi, Faghiadeh & Vaismoradi, 2008: 289; Wilson *et al.*, 2008: 366).

4.2.4 Objective to determine the current process of reporting nursing errors

This objective of the research study was to determine the current process of reporting nursing errors and included communication and feedback processes on errors reported. Determining these processes was achieved through a review of the error process flowchart of KFSH&RC-J with the risk manager. The questions asked of participants were aimed at ascertaining whether they were aware of the defined processes, were able to apply this process, if there were any barriers in reporting, communicating feedback and how the environment impacted on reporting.

4.2.4.1 Error reporting

The Likert scale questions for error reporting are summarized below in table 4.7. Professional nurses only, ranging from n=2 - n=3 were excluded from the results as they did not complete the questions.

The agreement with error reporting and the benefits of reporting for nurse leaders and professional nurses was seen in question 3.1.1, question 3.1.5, question 3.1.7, question 3.1.14 and question 3.1.20 to be the views of 49.61% (n=63) - 88.18% (n=112), with the highest percentage reported for error reporting helping to decrease the risks in the workplace. Question 3.1.5: Nurses in the unit always report errors as they occur 50% (n=64) had the lowest agreement of the five questions for error reporting. The reported disagreement was 20% (n=26) and neutral 30% (n=38), which is more than half of RNs 51% (n=64). This perception is supported in question 2.5 above.

Table 4.7: Rationale for Error Reporting

Likert Scale	3.1.1= Nurses are able to identify when an error has occurred that requires reporting (N= 129)	3.1.5= The nurses in the unit always report errors as they occur (N=128)	3.1.7= The reporting of errors benefits the patient and his/her family (N=128)	3.1.14= It is easy to report errors in our hospital (N=128)	3.1.20= Error reporting helps to decrease the risks in the workplace (N=128)
Disagree	n=7	n=26	n=7	n=11	n=4
Neutral	n=9	n=38	n=19	n=19	n=9
Agree	n=113	n=64	n=102	n=98	n=115
Average					
Positive Response	87.6%	50.0%	79.7%	76.6%	89.9%

Although RNs are able to identify errors, are aware of the benefits to the work environment and the patient to reporting errors and the process is reported as relatively easy to report, not all errors which occur in units are reported as they occur. Professional nurses disagreed or did not know 12% (n=13) of RNs being able to identify errors which need reporting (Q3.1.1), however 16% (n=3) nurse leaders disagreed or did not know. This gap for nurse leaders is of concern in the process for error reporting which is an expectation of their job accountability.

RNs always reporting errors as they occur (Q3.1.5) had an equal distribution for agree and disagree for nurse leaders' response, 37% (n=7) however, 26% (n=5) remained neutral. Both groups of RNs had a high neutral response, 26% (n= 5) – 30% (n=33), which questions the sharing of their honest opinions about always reporting errors; with 17% (n=19) professional nurses in disagreement. Benefits of error reporting to the patient (Q3.1.7) were not recognized by 16% (n=3) - 21% (n= 23) of nurse leaders and professional nurses, which identified the need for education in the aspects of patient care monitoring patient which is a RN responsibility (Benner *et al.*, 2002: 509).

The effectiveness and efficiency of the system and reporting processes need to include end-user feedback and question 3.1.14 identified gaps which need to be addressed. Professional nurses 27% (n=29) rate the systems and processes not easy to use or may not know. However 5% (n=1) nurse leader did not know. Risk management is a key driver of work environment safety and the aim of error reporting is a proactive management approach with the goal to prevent errors rather than management. Risk is defined as "*the notion that an individual, family or group, school or neighbourhood, or organisation is likely to experience a negative outcome*" (Lorenz, 2007:116). Risk assessment is a key responsibility of a nurse leader, thus 21% (n=4) disagree and neutral responses for question 3.1.14 are not acceptable for this job position.

There was no significant difference found on Fisher's exact test completed on all five questions between the two groups of RNs perceptions of error reporting.

4.2.4.2 Direct care feedback and communication process

An important component of the error reporting process is feedback to the end-user as to the root cause analysis to identify and reduce risks and the outcomes for patient and nurse. Lack of administrative feedback and not recognizing the need for education about safety culture reinforces the view that reporting is not useful (Chiang & Pepper, 2006:395; Elder *et al.*, 2008:162). The Likert scale questions to gain the perceptions of feedback and communication processes on errors are summarized below in table 4.8.

Feedback about errors being discussed in the unit as part of the commitment to improve the environment and safety (Q3.1.21) had the highest positive percentage 74.2% (n=95) and the lowest 42.5% (n=54) was that error reports are kept in nurses confidential files during the investigative process (Q3.1.25). Question 3.1.11 and question 3.1.25 in which perceptions were gained on the use of error reports and the assumption that these reports will be used to blame individual nurses both demonstrate distribution of RNs responses to reports never kept in confidential files 48% (n=62) and only during the investigative process 43% (n= 54).

Table 4.8: Feedback and Communication

Likert Scale	Q3.1.11= Error reports are never kept in the nurse's confidential file (N=128)	Q3.1.21= Feedback about errors is discussed in the unit as part of the commitment to improving the environment of safety for patients and staff (N=128)	Q3.1.23= Nurses are informed about the number of errors which occur in their units (N=127)	Q3.1.25 =Error reports are kept in the nurse's confidential file during the investigation of an error (N=127)
Disagree	n=34	n=11	n=33	n=30
Neutral	n=32	n=22	n=27	n=43
Agree	n=62	n=95	n=67	n=54
Average Positive response	48.4%	74.2%	52.8%	42.5%
Fisher`s exact test	0.022			0.021

Thus 24% (n=30) - 27% (n=34) of RNs perceive this a practice of nurse leaders, while 25% (n=32) - 34% (n=43) of RNs may not have felt comfortable providing their perceptions. Nurse leaders 37% (n=7) - 68% (n=13) agreed to this practice and 11% (n=2) remained neutral.

Thus, some leaders may not be aware of the process of where the documents should be stored. However, 50% (n=54) - 62% (n=67) professional nurses disagree or do not provide their perception. Both question 3.1.11 and question 3.1.25 were found to have significant differences between the two groups of RNs, $p=0.022$ (Fisher`s exact test) and $p=0.021$ (Fisher`s exact test) respectively. Thus, there is a need to explore the practice of error documentation, as these two groups of RNs do not confirm the practices or are reluctant to share the true practice of nurse managers due to fear.

Errors are encouraged to be discussed within the nursing units to be used as learning opportunities, encourage disclosure and increase preventative measures; question 3.1.21 explored these aspects with the majority of RNs 74% (n=95) in agreement, and 26% (n=33) in disagreement. However in contrast, RNs report that they are only informed of 53% (n=67) of errors which occur in the unit (Q3.1.23.), with 47% (n=60) of RNs either disagreeing or not aware of these reports. Of these 42% (n=8) nurse leaders agreed with perception or were unwilling to comment.

The divergence of these perceptions does identify a need to review the effectiveness and efficiency of the error reporting process which demonstrates a lack of clarity for expectations on feedback and communication.

4.2.5 Objective to describe the management of nursing errors

This objective was to describe the management of nursing errors. The objective was accomplished using the Likert scale questions to gain RNs responses towards nursing error management. Respondents were asked to provide their disagreement or agreement with statements with the structures, processes which are advocated to be present and the management of error outcomes.

The Likert Scale questions were grouped into categories and will be reported according to these identified aspects of errors in healthcare which are:

- 4.2.5.1. The Non-Punitive Approach
- 4.2.5.2. Organisational Systems and Processes
- 4.2.5.3. Unit Environment Factors
- 4.2.5.4. Educational Preparation
- 4.2.5.5. Patient and Nurse Disclosure of Errors
- 4.2.5.6. Patient and Nurse Error Outcomes

Each of these categories will be discussed separately with a summarized presentation of the variables which compose the RNs responses.

4.2.5.1 *The non-punitive approach*

Marx (2001:4) identifies a non-punitive work environment as the elimination of punitive error reporting systems which make it safe for employees to report errors as they occur "*which is aimed at improving the reporting culture of an organisation to identify the extent of errors occurrence and implement improvements to manage these*". Marx (2001:3) recognizes that there are consequences for errors and thus cannot advocate a "*no blame*" approach as health care providers need to be held accountable in a balanced approach of learning and discipline.

The Likert scale questions which addressed the non-punitive approach are summarized below in table 4.9. Exclusions were limited to professional nurses who did not complete the questions, with a range $n=3$ - $n=5$. Eight questions explored the non-punitive approach for error reporting and management, with the average positive response rated very low ranging from 31.7% ($n=40$) - 51.6% ($n=66$). This identifies a need to address the concept of non-punitive and just culture principles within the organisation and supports the research problem that approximately 50% of RNs are afraid to report errors as they fear being blamed for the outcomes.

Question 3.1.8 explored the concept of no blame, with 51% of RNs aware of a no blame policy and 22% ($n=28$) - 27% ($n=35$) of RNs in disagreement or were not clear on the concept. There is a need for clarity on the definition of “*no blame*” as Marx (2001:3) advocates a balanced approach to error management. Error reporting is the process in which no blame can be applied; however the consequences of errors when found to be compounded by multiple factors may require the individual behaviour components addressed through counselling. An equal distribution of nurse leaders agreed and disagreed 42% ($n=8$), 16% ($n=3$) remaining neutral, however 53% ($n=57$) of professional nurses were aware of a no blame policy which makes error reporting easier; with 48% ($n=52$) in disagreement or unaware thereof.

The majority of RNs felt comfortable questioning practice applications when needed 52% ($n=66$). The divergent response is seen in the disagreement of nurse leaders 74% ($n=7$) both for disagree and neutral who are of the opinion that RNs are afraid to ask questions when something does not seem right (Q3.2.12), with a significant difference between the two groups of RNs, $p=0.04$ (Fisher`s exact test).

The expectation for RNs is to function as independent and dependent practitioners, with clearly defined autonomy, responsibilities and authority to accomplish these functions, which Benner *et al.* (2002:510) defines as “*practice responsibility*.” However, KFSH&RC-J has a very diverse workforce as seen in table 4.2, with demographical results above. Saudi Arabia is challenged without a nursing practice act which places unique responsibilities for nurse leaders in their role of unit manager to ensure that nursing standards and autonomous practice are of one standard.

Non-punitive policies are clearly defined in our hospital, which means that no-one will know about the error being reported. Question 3.1.19 had an average positive response of 33.6% ($n=43$) which is low; thus 58% ($n=11$) nurse leaders and 67% ($n=74$) professional nurses

identify that the concept of non-punitive is either not known, not clearly defined or the understanding that no-one will know about the error does not apply.

There was a significant difference between these two groups of RNs as seen in $p=0.035$ (Fisher's exact test). More professional nurses disagreed with this question than nurse leaders, which reinforces the lack of a non-punitive environment for error reporting, and supports the research question of fear and blame.

RNs had the lowest average positive response, 31.7% ($n=40$) for question 3.1.46; Nursing errors are not held against the nurse who made the error. Professional nurses 70% ($n=75$) and 58% ($n=11$) nurse leaders were in agreement or did not share perceptions that individual nurses do experience blame and shame when errors are made.

Table 4.9: Rationale for Non-Punitive Approach

Likert Scale	Agree	Neutral	Disagree	Average Positive Response
3.1.8=The hospital has a no blame policy, which makes it easy for nurses to report errors (N=128)	n=65	n=35	n=28	50.8
3.1.12=Nurses are unafraid to ask questions when something does not seem right (N=128)	n=66	n=30	n=32	51.6
3.1.16 =The nurse who makes an error will NOT report it, because he/she is afraid of the outcome (N=128)	n=39	n=32	n=57	44.5
3.1.17=Nurses will NOT report errors made by colleagues, as they are afraid that they will be blamed (N=128)	n=32	n=42	n=54	42.2
3.1.18=There is a non-punitive policy for error reporting in the hospital (N=128)	n=52	n=51	n=25	40.6
3.1.19=Non-punitive is clearly defined in our hospital, which means that no-one will know about the error being reported (N=128)	n=43	n=45	n=40	33.6
3.1.26=The non-punitive policy for our hospital is known to all staff in my unit (N=127)	n=51	n=47	n=29	40.2
3.1.46=Nursing errors are not held against the nurse who made the error (N=126)	n=40	n=44	n=42	31.7

Question 4.8: After the error was reported and managed, the nurse involved expressed that she felt... (N=117), correlated to Nurses Experience

Section four explored nurses' feelings when involved with an error and the management of this error. Figure 4.3 below presents the frequency responses of RNs by nursing specialty, question 4.8.7 and question 4.8.9.

RNs responding from their experience with errors, 32% (n=12) affirmed feeling unsupported and blamed for the error (question 4.8.7: not supported and blamed) fairly distributed for all nursing divisions except Ambulatory n=0 and Paediatrics 14% (n=3). Question 4.8.9 (not treated fairly) was affirmed by 13 % (n=8) during the error management process; with n=0 responses from Ambulatory and Paediatric Divisions.

There was no significant difference between question 4.8.7 ($p=0.573$); question 4.8.9 ($p=0.851$) and the two groups of RNs. This supports the research question that although the majority of RNs (68%) felt supported during the error reporting and management process, there are RNs who fear being blamed and treatment unfairly in the management of errors. This is supported by Denham (2007:114) who identified the concept of TRUST, the five rights of the second victim which include fair and just treatment as the first right.

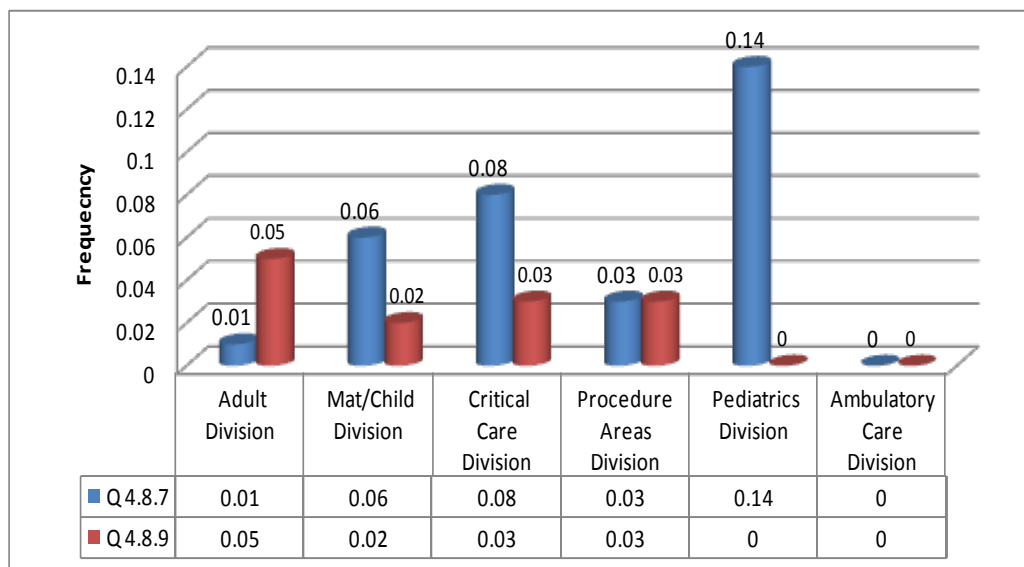


Figure 4.3: Error Involvement by Nursing Speciality

Figure 4.4 below presents the RNs' experience with errors by nationality. Saudi RNs, 13% (n=2) felt equally unsupported, blamed and not treated fairly with the highest positive response rate; closely followed by Middle Eastern RNs, 11% (n=2). Not supported and blamed (Q 4.8.7) was rated higher by Western 8% (n=2), Middle Eastern 11% (n=2) and Indian 6% (n=1) than being treated fairly (Q 4.8.9).

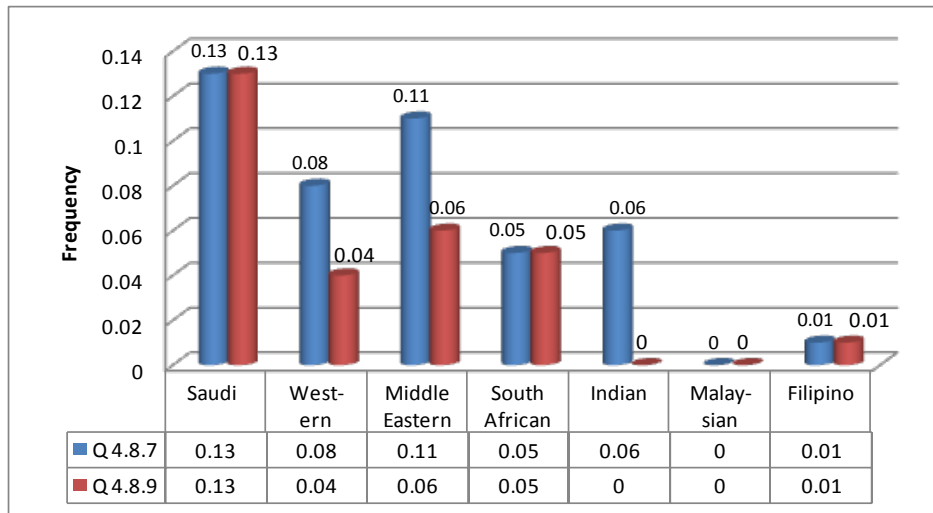


Figure 4.4: Nurses Experience per Nationality

The higher rating by the Saudi nationals may be attributed to not being bound by an expatriate contract, which is seen as being in jeopardy if error outcomes are severe (Almutary & Lewis, 2012:125). However, other RNs may not have felt secure in sharing their honest experience as this was a self-reporting questionnaire and 3% (n=7) professional nurses and 11% (n=5) nurse leaders considered this outcome applicable (Burns & Grove, 2007: 382).

4.2.5.2 Organisational systems and processes

The Just Culture approach to error management needs to be a balance between the individual performance and support, while implementing systems and process which identify and decrease risks, decrease the potential for errors and monitor improvements to prevent future occurrences (Reason 2000: 60; Marx, 2001: 3-4; Mayer & Cronin, 2008: 427).

The Likert scale questions which focused on the organisational systems and processes are summarized below in table 4.10. A total of nine questions explored RNs' responses on systems and processes established for the reporting and management of errors. Exclusions for professional nurses ranged from n=3 - n=5, with question 3.1.43 only excluding n=1 nurse leader as these RNs did not complete the questions.

Table 4.10: Rationale for Organisation Systems and Processes

Likert Scale	Agree	Neutral	Disagree	Average Positive Response
3.1.4 = There is a defined process in the hospital for error reporting and management (N= 128)	n=113	n=13	n=2	70.3%
3.1.13 =The same process is applied throughout the hospital for reporting errors (N=128)	n=90	n=29	n=9	88.3%
3.1.27 =There is a process on how errors are to be investigated and this is known to all nursing staff (N=127)	n=77	n=25	n=25	60.6%
3.1.28 = An identified process exists that informs all nurses on how the disciplinary measures are applied when nursing errors are made (N=127)	n=80	n=25	n=22	63.0%
3.1.36 = All errors that occur are investigated by a multidisciplinary team (126)	n=74	n=34	n=18	58.7%
3.1.40 = Nurses who make errors are treated differently from other health care providers who make errors (N=126)	n=26	n=31	n=69	54.8%
3.1.43 = When errors are investigated, the focus is the system of the hospital (N=125)	n=61	n=44	n=20	48.8%
3.1.45 =Investigations of errors are focused on the individual who made the error (126)	n=46	n=29	n=51	40.5%
3.1.49 = The hospital is working hard to prevent errors from happening (N=126)	n=96	n=25	n=5	76.2%

RNs highly agreed 70.3% (n=113) with a defined process for error reporting and management (Q3.1.4) which is unilaterally applied throughout the organisation for reporting of errors (Q3.1.13), 88.3% (n=90). Professional nurses had no disagreement with an effective error reporting and management system but did have 12% (n=13) who did not share their responses. However, nurse leaders were very clear in their agreement with 89% (n=17) and 11% (n=2) in disagreement. Nurse leaders' evaluation would be based on a systems approach as these RNs would be more versed with the organisational systems due to job functions but professional nurses' opinion would be based on their individual experience with errors.

In contrast, only 54% (n=69) of RNs agreed with question 3.1.40 (Nurses who make errors are treated differently from other health care providers who make errors, reversed). Only 18% (n=20) of professional nurses and 32% (n=6) of nurse leaders agreed that RNs were

treated the same as other healthcare providers when errors are made, which supports the research question of shame and blame preventing RNs from reporting. However, RNs may hold this perception due to the increased risk for errors for this group of healthcare providers being in contact with patients on a twenty four basis (IOM, 2004).

Therefore, the commitment of the organisation to decrease risks for errors in the workplace is important in implementing systems and process. The hospital is working hard to prevent errors from happening (Q3.1. 49) scored high 76.2% agreement from both groups of RNs (n=96) which indicates that there are initiatives either in place or being introduced to address error prevention, e.g. the organisation is JCI accredited, is a member of IHI and on the journey to Magnet Excellence (ANCC, 2008).

The positive response decreases for the investigative processes (Q3.1. 40.) 54.8% (n=26) and (Q3.1.28) 63% (n=80). Investigative processes of error reporting and management were known by RNs (Q3.1.27) 60.6% (n=77), with 20 % (n=25) remaining neutral or disagreed. Professional nurses and nurse leaders 37% (n=7) - 40% (n=43) identified a lack of understanding and/ or knowledge of the investigative processes. However, whether all errors are investigated by a multidisciplinary team (Q 3.1.36) saw 58.7% (n=74) of RNs in agreement, 41% (n=52) in disagreement or did not know.

This confirms the lack of understanding of the investigative processes as multidisciplinary teams are convened as needed and are based on the application of the harm score classification. Multidisciplinary teams are utilized to gain an understanding from an organisational perspective of all links within the culture of safety and the risks involved (Benner *et al.*, 2002: 511; Al Jeraisy *et al.*, 2011: 298).

A component of the organisational system and processes is to address RNs performance, thus question 3.1.28 (An identified process exists that informs all nurses on how the disciplinary measures are applied when nursing errors are made) average positive response of 63% (n=80), with 17% (n=22) in disagreement and 20% (n=25) of RNs unclear on the process.

Professional nurses who did not understand the disciplinary process application were lower 35% (n=38) than nurse leaders 47% (n=9). Thus, a challenging aspect of managing RN performance for nurse leaders is the application of disciplinary measures identified by approximately half of nurse leaders.

The lowest positive responses 48% (n=61) was the differentiation of a system approach (Q3.1.43) versus individual approach (Q3.1.45, reversed) 40.5% (n=51). Professional nurses

53% (n=57) and nurse leaders 37% (n=7) disagreed or were unclear of the approach to error management being system focused, while 60% (n=75) of RNs (66% professional nurses and 47 % of nurse leaders) were of the opinion or unclear that error investigations are focused on the individual RN than the system.

None of the above results had significant differences between both groups of RNs responses on organisational systems and processes based on Fisher`s exact test completed. RNs perceive the organisation to have an effective error reporting system, they may lack understanding of the investigative processes but perceive that the organisation is structured with systems and processes which do not support a balanced approach to errors, i.e. there are components of both the system and individual approaches to error management which need to be clearly defined. Thus, there is a need to review the approach to error reporting and management of the organisation.

4.2.5.3 Work environment factors

The nursing work environment has been identified as an important component to help improve the decreasing of errors, as seen in the IOM (2004) report, *“Keeping Patients Safe: Transforming the Work Environment of Nurses”*. This report has identified the need *“to create a balance between production efficiency and reliability (safety), creating and sustaining trust; managing change and end users involvement in decision making related to work design practices to create a learning organisation”* (IOM, 2004: 3-4).

The six Likert questions used to gain the responses of how nurse managers and professional nurses view their nursing work environment are summarized below in table 4.11.

Exclusions of professional nurses ranged from n=3 - n=6; with n=1 nurse leader for question 3.1.9 excluded as these RNs did not complete the questions.

Table 4.11: Rationale for Work Environment

Likert Scale	Agree	Neutral	Disagree	Average Positive Response
3.1.3 =Nurses who report errors are supported by senior nursing staff in our unit (N=128)	n=86	n=28	n=14	67.2%
3.1.9 =Nurses are encouraged by their unit colleagues to report errors (N=127)	n=87	n=25	n=15	68.5%
3.1.10 =Nurses in the unit feel free to report negative behaviour of nursing colleagues (N=128)	n=55	n=42	n=31	43.0%
3.1.41=When an error is made, the nurse first meets with the manager to discuss the circumstances leading to the error (N=125)	n=97	n=15	n=13	77.6%
3.1.44 =It is easy to support the patient and the nurse when an error had been made (N=126)	n=34	n=52	n=40	27.0%
3.1.50 =I work in a unit where it is difficult to make errors (126)	n=29	n=38	n=59	23.0%

Positive average responses were highest 77.6% (n= 97) for question 3.1.41 (When an error is made, the nurse first meets with the manager to discuss the circumstances leading to the error); 68% (n=87) for question 3.1.9 (Nurses are encouraged by their unit colleagues to report errors) and 67.2% (n=86) for question 3.1.3 (Nurses who report errors are supported by senior nursing staff on our unit). This confirms that the nurse leaders are informed of errors; aware of the errors which are reported on the nursing units in which they work; the investigative process is completed by nurse leaders and RNs received support from both colleagues and direct supervisors when errors are reported, see question 2.6 above.

However, in contrast question 3.1.9 with question 3.1.10 (Nurses on the unit feel free to report negative behaviour of nursing colleagues) only 43% (n=55) responded in agreement. There was a divergent response from the two groups of RNs; nurse leaders agreed 32% (n=6); disagreed 47% (n=9) and neutral 21 % (n=4), while professional nurses agreed 45% (n=49); disagreed 20% (n=22) and neutral 35% (n=38). Thus, the high neutral response, greater than disagree confirms the hesitance of providing feedback.

RNs may be encouraged to report errors, but the freedom to report negative behaviour of a peer is not routinely applied in nursing practice. There was significant difference in the two groups of RNs to question 3.1.10; $p=0.049$ (Fisher's exact test). Studies have shown that error reporting, coping with error involvement and recovery from the occurrence is strongly

linked to the support received from peers (Mayo & Duncan, 2004: 214; Chiang & Pepper, 2006: 396-397).

The average positive response 27% (n= 34) for question 3.1.44 (It is easy to support the patient and the nurse when an error had been made) was very low. Thus, RNs identified that it is not easy to support the patient and the nurse, disagree 32% (n=40) with the neutral response the highest at 42% (n=52). This was identified most by professional nurses who had the highest response 43% (n=46) neutral and 33% (n=35) disagree as this may be a choice in their job accountability. However, nurse leaders are expected to fulfil both functions of patient and nurse support, the response of 26% disagree (n=5), 32% (n= 6) neutral and 42% (n= 8) agree demonstrate that for less than half of the nurse leaders this is easy to achieve, but for the majority of nurse leaders 58%, this is a challenge.

The average positive response 23 % (n= 29) for question 3.1.50 (I work in a unit where it is difficult to make errors) demonstrates that 47% (n=59) of RNs identify there is need for improvement in the nursing units in which they work; while 30% (n=38) were unsure of assessing for potential errors. There was a divergent response from the two groups of RNs with nurse leaders 63% (n=12) and 44% (n= 47) of professional nurses identifying their units in need of improvements, while 16% - 33% (n=3 - n=47) of RNs remained neutral and 21% (n=4) - 23% (n=25) agreed.

Kramer & Schmalenberg (2008:56-57) state that only direct care nurses can confirm if the work environment is supportive or not and this is described in chapter two.

4.2.5.4 Education

Mayer and Cronin (2008: 429) define a learning culture as “active improvement efforts are directed at system redesign” while Marx (2001: 25-26) states that “the learning culture in which employees know that sharing their violations will educate others of the risks and prevent future error occurrences will promote self-reporting of violations, thus accomplishing a reporting culture”. Benner *et al.* (2002: 510) identified that “experiential learning” should occur when medication errors were reviewed and discussed so as to identify a taxonomy of nursing errors with the aim of “developing strategies for nursing education and practice environment”.

The five Likert scale questions which explored RNs’ responses of error reporting and management focused on education preparation, are summarized below in table 4.12.

The average positive response was highest 89.9% (Q3.1.2) which was negatively worded, thus 90% (n=116) in disagreement indicated that RNs do need to know about error classification, 89% (n=98) professional nurses and 95% (n=18) nurse leaders.

Professional nurses only 5% (n=7) were in agreement; 5% neutral (n=6). Thus, both groups of RNs identified the need for education with regard to the harm scoring and error classification. The nurse leader with a neutral response raises a concern as patient safety and guiding staff in identifying professional developmental needs is part of the job description of a nurse leader.

Nurse leaders' job descriptions hold them accountable for the quality of nursing practice on a twenty hour basis, being ultimately responsible for all care delivery in their assigned department. Professional nurses are accountable for the delivery of safe patient care based on their assignment and direct reporting, e.g. new staff member, preceptor, charge nurse and peer-to-peer tasks. Thus, professional nurses have an accountability to attend education opportunities provided, maintain competence, adhere to policies of the organisation while nurse leaders ensure that these opportunities are provided and address non-compliant behaviour and performance, see chapter two: Role of the Nurse Manager.

Table 4.12: Rationale for Education Preparation

Likert Scale	Disagree	Agree	Neutral	Average Positive Response
3.1.2=Nurses do not need to know about error classification (N=129)	n=116	n=7	n =6	89.9%
3.1.6= Error classification is the responsibility of nursing quality staff members (N=128)	n = 26	n = 69	n =33	53.95
3.1.15=Nurses have received education about the error reporting and management processes (N=128)	n=15	n=93	n=20	72.7%
3.1.22=Nurses know the difference between an error and negligence (117)	n=13	n=82	n=22	72.4%
3.1.38= Errors that occur are used as learning opportunities to prevent the error from happening again (N=126)	n=5	n=105	n=16	83.3%

When comparing question 3.1.2 with question 3.1.6, the high response to needing education error classification is reversed as a responsibility of another department with 54% (n=69) in agreement, 26% (n=33) neutral and 20% (n=26) in disagreement. This may be due to the

process of the department of Nursing Practice, Quality and Research coordinating the review of errors made and Quality Management Department assigning the harm score through the SRS. Thus professional nurses and nurse leaders identify the need for their own professional development in this concept, but recognize the need to involve experts to assist in unit level improvements (Wu & Steckelberg, 2012:267).

Agreement with having received education about the error reporting and management processes (Q3.1.15) 73% (n=93) of RNs in agreement with 72% (n=83) professional nurses and 79% (n=15) nurse leaders. However, 16% (n=20) of RNs remained neutral; 12% (n=16) professional nurses and 21% (n=4) nurse leaders. Professional nurses only disagreed with this question, 14% (n=15). Nurse leaders confirmed that they have received education on error reporting and management but it would be of interest to explore the reasons for neutral responses. Thus, 26% of direct care providers who are at the “*sharp end*” of healthcare delivery need education on error reporting and management (Denham, 2007: 114).

This is in contrast to question 3.1.22 in which 72% (n= 92) of RNs reported being able to know the difference between an error and negligence, with a divergent response between professional nurses 77% (n=83) and nurse leaders 47% (n=9).

Nurse leaders in disagreement 32% (n=6) and 21% (n=4) neutral, which raises a concern in that nurse leaders may recognize the need for education, but this may not be shared with staff nurses or nurse leaders which may be lacking in this regard. Professional nurses' disagreement 6% (n=7) and neutral 17% (n=18) which may mean that 23% of professional nurses are realistic in their approach to identifying the difference in errors and negligence. However, professional nurses' responses identify that there are gaps which need to be addressed through a robust education plan to classify, report and manage different errors.

There was significant difference between nurses knowing the difference between an error and negligence in professional nurses and nurse leaders positions; $p= 0.003$ (Fisher's exact test). There is a clear difference between the two groups on whether they think nurses know the difference between an error and negligence. Apparently, 77% of the professional nurses themselves agree, but only 48% of the nurse leaders agree. Negligence is defined in chapter two.

Marx (2001: 3) advocated that errors as they occur are used as learning experiences to prevent recurrence (Q3.1.38); with the majority of RNs in agreement 83% (n=105). However 4% (n=5) - 13% (n=16) of RNs remained neutral or were in disagreement. None of the nurse leaders were in disagreement n=0, however 5% (n=5) - 14% (n=15) disagreed or remained neutral. These results demonstrated that nurse leaders perceive their approach to errors as a learning experience, but 19% of professional nurses may not agree. Studies advocate that using errors in a positive manner and as an educational opportunity, rather than a shame

and blame approach may improve professional nurses' compliance with reporting and disclosure of all errors instead of the severe outcomes errors only (Mayo & Duncan, 2004: 214; Chiang & Pepper, 2006: 397; Denham, 2007:116; Throckmorton & Ecthegaray, 2007: 411).

4.2.5.5 Patient and nurse disclosure of errors

Disclosure is defined as "the provision of information to customers, clients, patients and families and is seen as a marker of professionalism and occurs at the individual and organisational level" (Dekker, 2007:47). The responses` of RNs towards the disclosure of errors was approached by determining questions based on the outcomes for the professional nurse and nurse leaders when an error was made and the disclosure approach observed in practice.

The five Likert scale questions which explored RNs' responses of patient and nurse disclosure of errors are presented below in table 4.13. Exclusions were professional nurses, with a range of n=5 to n=6 as not complete the questions. There were no significant differences between these questions and the two groups of RNs as seen by the Fisher exact tests completed.

Table 4.13: Rationale for Patient and Nurse Error Disclosure

Likert Scale	Agree	Neutral	Disagree	Average Positive Response
3.1.33=Nurses receive education on how to disclose errors to patient, which includes taking responsibility for actions and apologizing to patients (N=126)	n=46	n=34	n=46	36.5%
3.1.34=Nurses may apologize to the patient and family for errors, as they are afraid of the consequences of their actions (N=126)	n=29	n=53	n=44	34.9%
3.1.35=The nurse who made the error discusses the outcome with his/her colleagues (N=126)	n=44	n=37	n=45	34.9%
3.1.37=The patient and family are always informed when an error has been made (N=126)	n=29	n=43	n=54	23.0%
3.1.39=It is the physician`s role to inform the patient and family when an error has occurred (N=125)	n=67	n=32	n=26	53.6%

The average positive responses for the questions on disclosure were very low, ranging from 53.6% for question 3.1.39 (It is the physician's role to inform the patient and family when an error has occurred) to the lowest 23% for question 3.1.37 (The patient and family are always informed when an error has been made). Question 3.1.39 (It is the physician's role to inform the patient and family when an error has occurred) saw both groups of RNs in agreement 51% (n=13) - 68% (n=54) as highest, disagreement was 20% (n=5) - 26% (n=21).

The results demonstrate that RNs are not clear on the process of error disclosure which may be seen as a combined responsibility with physicians.

Question 3.1.37 (The patient and family are always informed when an error has been made) results of both groups of RNs agree that there is a lack of information given to the patients when an error is made, agree 16% (n=3) - 24% (n=29) with nurse leaders the lowest responders. However, equal number of nurse leaders 42% (n=8) disagreed and remained neutral, which may be a reluctance to disclose sensitive information of the organisation.

Question 3.1.34 (Nurses may apologize to the patient and family for errors, as they are afraid of the consequences of their actions) was reversed scored and 34.9% (n=44) RNs agreed that apologies may be driven by fear of consequences. However, 42% (n=53) were neutral as the highest response, with 23% (n=29) disagreed. The two groups of RNs responses were divergent, with professional nurses highest response 46% neutral (n=49) and agreement 33% (n=35); while nurse leaders 47% (n=9) in agreement and 37% (n=6) in disagreement. The responses of RNs demonstrate that fear of outcomes may be a driving factor in disclosure as seen in question 3.1.37 patients and families are not always informed of the errors which occur, but as most RNs did not share their perceptions cannot draw adequate conclusions.

Question 3.1.33 (Nurses receive education on how to disclose errors to patient, which includes taking responsibility for actions and apologizing to patients) had a low agreement response 36.5% (n=46) which identifies another component for the education plan identified as a gap in the organisation. Both professional nurses 36% (n=39) and nurse leaders 37% (n=7) were ambivalent in identifying this need with equal distribution for agree, disagree and neutral with this question. Neutral response was 27% (n=29) professional nurses and 26% (n=5) nurse leaders, which demonstrate that RNs are lacking in knowledge of the disclosure practices of the organisation.

Question 3.1.35 (The nurse who made the error discusses the outcome with his/her colleagues), RNs in agreement was very low 34.9% (n=44), disagreement was 36% (n=45) and neutral 29% (n=37). Both professional nurses 36% (n=38) - 36% (n=39) and nurse

leaders 32% (n=6) were ambivalent in nurse error disclosure with equal distribution for both agree and disagree with this question, with neutral range of 28% (n=30) - 37% (n=7).

There are confidentiality restrictions for the nurse leaders to disclose error outcomes which apply to professional nurses' performance, however an approach of using errors to prevent further occurrence is encouraged.

Disclosure of errors in nursing is an area which needs to be addressed from both the perspectives of professional nurses and the nurse leaders' awareness and accountability as results show none of the RNs were confident of the defined practices of error disclosure within the organisation.

4.2.5.6 Patient and nurse outcome of errors

Patients experience a variety of outcomes as a result of errors, some with no harm and others with severe outcomes, including death. Literature has identified the healthcare provider who makes the errors as the second victim, who lives with the consequences of the error made (Wu, 2000:726; Scott *et al.*, 2009:325). Sirriyeh *et al.* (2010: 51) stated that a systematic review identified the *"barriers to healthcare providers receiving support were negative attitudes in culture of organisation, threat of professional loss and lack on institutional support"*.

The approach taken to gain the responses of RNs about patient and nurse outcomes was to complete Likert scale questions followed by question 4.1 - question 4.8 which requested RNs who have been involved with errors to describe their experiences. The eight Likert scale questions which explored RNs and patient outcomes with errors are summarized below in table 4.14. Exclusions ranged from n=4 - n=5 of professional nurses only who did not complete the questions. There was no significant difference between the two groups of RNs and all questions based on the Fisher's exact test completed.

Table 4.14: Rationale for Patient and Nurse Outcomes

Likert Scale	Agree	Neutral	Disagree	Average Positive Response
3.1.24=If a patient is injured because of a nursing error, the nurse who made the error is sent home (N=127)	n=28	n=41	n=58	45.7%
3.1.29=If a nurse makes an error while caring for an important person(VIP patient), the nurse will be/ is sent home (N=127)	n=22	n=41	n=64	50.4%
3.1.30=Nurses who make errors are always disciplined (N=127)	n=46	n=46	n=35	27.6%
3.1.31=The manager receives disciplinary action for errors made by nurses in the unit as patient safety is his/her responsibility (N=127)	n=53	n=31	n=43	33.9%
3.1.32=It is acceptable to hold the nurse accountable for her actions and give disciplinary action when an error is made (N=127)	n=72	n=34	n=21	56.7%
3.1.42 = If a patient dies because of a nursing error, the nurse who made the error is sent home (N=126)	n=58	n=45	n=23	18.3%
3.1.47=The outcome to the patient, whether it is good or bad does NOT affect the outcome of the disciplinary action received by the nurse (N=126)	ns=24	n=48	n=54	19.0%
3.1.48=It is an easy process to define the disciplinary measures applicable to nursing errors (N=126)	n=43	n=40	n=43	34.1%

The highest positive response 56.7% (n=72) was question 3.1.32 (It is acceptable to hold the nurse accountable for her actions and give disciplinary action when an error is made) with the lowest score 19% (n=24) was question 3.1.47 (The outcome to the patient, whether it is good or bad does NOT affect the outcome of the disciplinary action received by the nurse).

Question 3.1.32 saw nurse leaders and professional nurses agreeing 55% (n=59) - 68% (n=13) with the accountability and performance management for nursing actions, but was lower for professional nurses. However, 16% (n=3) -17% (n=18) of both groups disagreed with this question and 21 % (n=3) - 27% (n=31) of both groups remained ambivalent.

This identifies 43% of RNs with no clear definitions of accountabilities in error management and disciplinary applications for nursing care delivery at the bed side and leadership level.

Question 3.1.47 saw both groups of RNs in disagreement as the highest response was 43% (n=44) - 53% (n=10), however professional nurses had an almost equal result for neutral 38% (n= 43).

Nurse leaders agree and neutral responses were almost the same 21% (n=4) - 26% (n=5). The conclusion from the results is that the patient outcome from an error influences the level / severity of the disciplinary action applied, but the level of influence cannot be concluded as 38% (n=48%) of RNs did not provide their perceptions.

Question 3.1.24 (If a patient is injured because of a nursing error, the nurse who made the error is sent home) which explored one of the most severe outcomes for a nurse in Saudi Arabia with error outcomes, saw an average positive response 45.7% (n=58 as was reversed scored). Thus 42% (n=45) - 68% (n=13) of professional nurse and nurse leaders are of the opinion that a nurse will not be sent home if a patient is injured. However, 16% (n=3) - 23% (n=20) of both groups of RNs think that the nurse will be sent home and 16% (n=3) - 35% (n=38) of RNs did not provide their perceptions by remaining neutral.

Higher scores for agreement and neutral were seen in the professional nurse group, but there was no significance between the two groups of RNs based on the Fisher`s exact test completed.

Question 3.1.29 (If a nurse makes and error while caring for an important person (VIP patient), the nurse will be/ is sent home) had an agreement of 50.4% (n=64) disagreement as reversed scored). The agreement of 50% (n=51) - 68% (n=13) of both groups of RNs shows a lower response for professional nurses who feel that a nurse will not be sent home if an error is made involving a VIP. However, 32% (n=41) of RNs remained neutral and 17% (n= 22) of RNs agreed. The high neutral may be due to some RNs who may not have experience with caring for a VIP; however the 11% (n=2) agreement of nurse leaders is of concern. The question identifies unique circumstances which need to be considered in the nursing work environment which can influences care delivery and the increased risk for errors.

Question 3.1.30 (Nurses who make errors are always disciplined) was reversed scored and agreement 27.6% (n=35, disagreement) with 24% (n=26) - 28% (n= 9) for both groups of RNs. Professional nurses 38% (n=41) and nurses leaders 26% (n=5) both had equal distribution for agree and neutral scores. Thus 36% of RNs hold the opinion that nurses do not always receive discipline for errors made, but the same number of RNs did not provide their perceptions. This may be due to no involvement with errors which required discipline, do not know the discipline procedure or did not want to disclose information.

Question 3.1.31 (The manager receives disciplinary action for errors made by nurses on the unit as patient safety is his/her responsibility) agreement was 33.9% (n=43) disagreement as reversed scored) with 32% (n=6) - 34% (n=37) for nurse leaders and professional nurses. RNs 41% (n=44) – 47% (n= 9) were aware that nurse leaders were disciplined for actions of professional nurses, but 21% (n=27) - 24% (n=4) did not provide their perceptions. Thus, the majority of RNs, 66.1% are not clear of the disciplinary process which impact on nurse leaders' performance.

Average positive agreement 34.1% for question 3.1.48 (It is an easy process to define the disciplinary measures applicable to nursing errors) with almost equal distribution for RNs' responses for agree and disagree 34% (n=43) and 32% (n=40) neutral. This ambivalence was seen in professional nurses agree 32% (n=34), neutral 34% (n=36) and disagree 35% (n=37), while nurse leaders scored slightly higher for agree 47% (n=9), 32% (n=6) disagree and 21% (n=4) neutral. RNs are ambivalent in defining the process of application of disciplinary measures as being easy, however nurse leaders seem to be more aware of the process.

There were no significant differences between these questions and the two groups of RNs based on the Fisher's exact test completed.

Section four of the questionnaire explored RNs' responses after being involved with an error and could thus link this to their unique experience. For most of the questions for section four, the exclusions were high. However, in question 4.9 the reasons are provided in that professional nurses 39% (n=13) and 20% (n=1) nurse leader (from the Ambulatory Division) reported no experience with errors, thus did not complete the questions for involvement with errors.

Question 4.1: Your involvement with nursing errors has been... (N=126)

Received N=126 returns, with n=5 professional nurses who did not complete the question. Figure 4.5 below presents RNs' involvement with errors, directly involved with errors 32% (n=40), with 27% (n=29) - 58% (n=11) for professional nurses and nurse leaders. However, professional nurses had no involvement with errors as highest score 32% (n=34) and indirect involvement 30% (n=32). It is interesting that 16% (n=3) of nurse leaders had no involvement with errors; however errors were reported on all primary work areas.

Not wanting to disclose information was the choice of 11% (n=2) of nurse leaders and 11% (n= 12) professional nurses. There was significant difference between the two groups of RNs' indication of error involvement and job title, $p=0.046$ (Fisher's exact test). This may be due to professional nurses that are clinically assigned; the expectation would be that there would be

more involvement with errors while nurse leaders as supervisors are only aware of those reported.

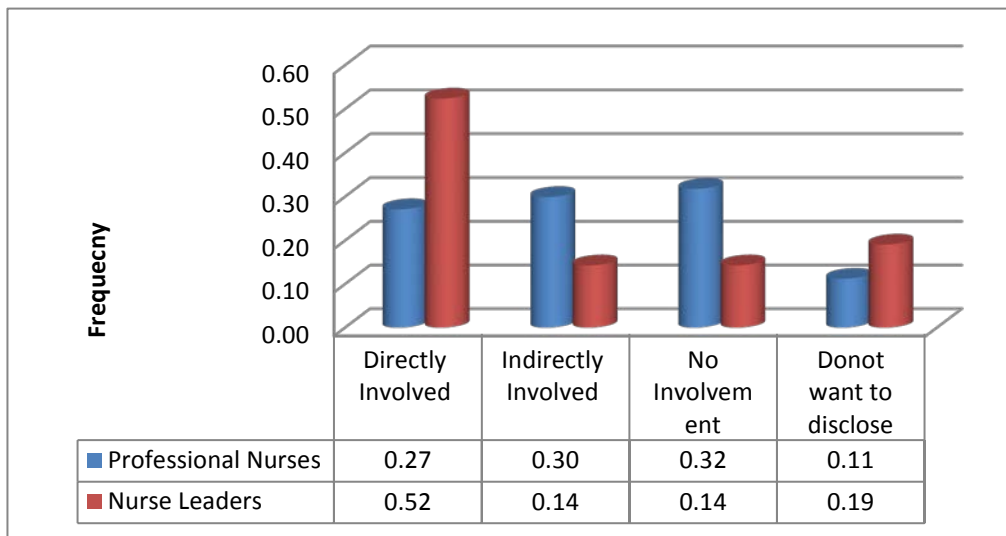


Figure 4.5: Error Involvement by Job Title

There was no significant difference between nurses` years of experience and error involvement; $p=0.52$ (Fisher`s exact test); working with the assumption that with increased years of experience it is more likely that a nurse would become involved in an error.

RN involved with errors by nationality is summarized below in table 4.15. The nationality with the highest frequency for direct error involvement was 63% ($n=5$) Indian nurses, 50% ($n=8$) Middle Eastern nurses, 40% ($n=3$) Saudi nurses and other nationalities ranged from 23% ($n=2$) - 30% ($n=12$). There was no significant difference between nationality and error involvement; $p=0.287$ (Fisher`s exact test). Western and Saudi nurses were willing to share information, however all other nationalities had RNs 6% ($n=1$) - 43% ($n=5$) who were not willing to disclose their involvement with errors.

Table 4.15: RN involvement with Errors by Nationality

Demographics: Nationality	Directly involved with errors	Indirectly involved with errors	No involvement with errors	Do not want to disclose information
Saudi	n=3	n=2	n=2	n=0
Western	n=4	n=5	n=4	n=0
Middle Eastern	n=8	n=5	n=2	n=1
South African	n=5	n=7	n=6	n=4
Indian	n=5	n=1	n=1	n=1
Malaysian	n=2	n=1	n=1	n=3
Filipino	n=12	n=13	n=21	n=5
Singaporean	n=0	n=0	n=0	n=0

Two-sided Fisher's exact test: $p = 0.2866$

Table 4.16 below presents a summary of RNs' involvement with errors by Nursing Specialty. The nursing speciality with the highest frequency for direct error involvement was the Paediatrics Division 54% (n=7) and Critical Care 42% (n=10), with the other divisions ranging from 15% (n=2) - 30% (n=9). The Ambulatory Division had the highest response for no involvement with errors 46 % (n=6) followed by the Adult Division 37% (n=11). The other divisions ranged from 20% (n=3) - 28% (n=7).

There was no significant difference between error involvement and nursing specialty, $p=0.4312$ (Fisher's exact test). Error rates with severe outcomes were highest in the intensive care units, operating rooms and emergency departments compared to other specialties (Kaushal *et al.*, 2008:1260).

Table 4.16: RN involvement with errors by Nursing Specialty

Demographics: Specialty	Directly involved with errors	Indirectly involved with errors	No Involvement with errors	Do not want to disclose information
Adult Division	n=9	n=9	n=11	n=1
Mat/Child Division	n=6	n=7	n=4	n=3
Critical Care Division	n=10	n=5	n=6	n=3
Procedure Areas Division	n=5	n=9	n=7	n=4
Pediatrics Division	n=7	n=3	n=3	n=0
Ambulatory Care Division	n=2	n=2	n=6	n=3

Two-sided Fisher's exact test: $p = 0.4312$

Question 4.2: If involved with errors, indicate in what capacity (Indicate all that apply) (N=98)

Received N= 98 returns, with 33 exclusions, n=2 nurse leaders and n=31 professional nurses who did not complete the question. Table 4.17 below presents a summary of the capacity in which RNs have been involved with errors. Professional nurses 3% (n=4) - 4% (n=6) who indicated the capacity of nurse manager or clinical nurse coordinator would be delegated these responsibilities of the job title when nurse manger/ clinical nurse coordinator are on vacation.

Table 4.17: Capacity in Errors Occurring

Job Title	Professional Nurses	Nurse Leaders
Manager	n=4	n=4
Clinical Nurse Coordinator	n=6	n=1
Charge Nurse	n=43	n=0
Nurse making the error	n=31	n=0
Colleague	n=30	n=0
Friend	n=4	n=4
Preceptor	n=5	n=2
Nurse completing check with colleague	n=17	n=0
Audit Process	n=4	n=4
Case Review/ Investigative Process of a Peer	n=10	n=9

Two sided Fisher's exact test $p < 0.001$

The highest response for professional nurses was in the capacity of a charge nurse 28% (n=43); with nurses making the error 20% (n=31) and colleagues 19 % (n=30) following. Nurse leaders identified highest response as Case Review/ Investigative Process of a Peer 38% (n=9), with manager, friend and audit process equal in following response 17% (n=4). There was highly significant difference between capacity of error involvement and the two groups of RNs; $p < 0.001$ (Fisher`s exact test).

Denham (2007:114) identifies the sharp and blunt ends of healthcare delivery, where sharp ends are the direct contact with patients and present the highest risk. However, blunt ends are the system processes and outcomes which are needed to decrease the sharp end risks. Thus, the above presents the focus of accountabilities which have experienced errors from these perspectives.

Question 4.3: Indicate the examples of error (s) you were involved with (Indicate all that apply) (N=108)

Received N=108 returns with 23 exclusions, n=2 nurse leaders and n=21 professional nurses who did not complete the question. RNs identified 195 examples of errors involved in which were similar to question 2.5 examples of errors reported, with nurse leaders 24% (n=46) and professional nurses 76% (n=149).

There was no significant difference between the error examples involved in professional nurses' and nurse leaders' positions, $p=0.066$ (Fisher's exact test); nationality, $p=0.32$ (Chi-square test) and nursing specialty, $p=0.71$ (Chi-square test). Table 4.16 above demonstrates the examples of errors which were reported in nursing specialties based on the six practice areas of the nursing units within the organisation.

Question 4.4: The error/s was classified as ... (Indicate all that apply) (N=96)

Received N=96 returns with n=35 exclusions, n=3 nurse leaders and n=32 professional nurses who did not complete the question. Figure 4.6 below presents the errors involved in by job title which were classified according to the Pennsylvania Harm Score (2004). RNs reported experience with a total of N=139 errors; 76% (n=106) professional nurses and 24% (n=33) nurse leaders.

The errors which were not classified were 12% (n=16) experienced mostly by professional nurses. Errors which were classified no harm, did not reach the patient were experienced by 17% (n=11) - 24% (n=50) of RNs, with classification errors/ no harm, reached the patient 15% (n=32) - 18% (n= 12) as the next highest response for RNs.

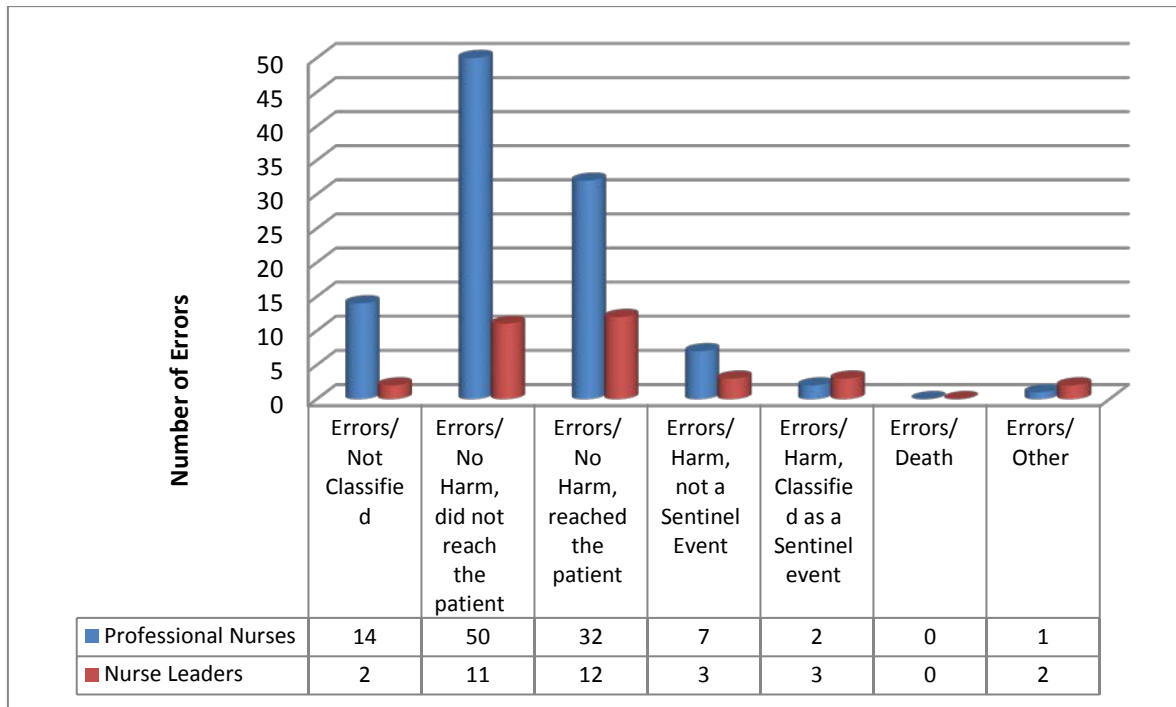


Figure 4.6: Error Classification vs Job Title

Sentinel event classification was experienced by 1% (n=2) - 5% (n=3) of RNs, which were reported in the Adult Division 1% (n=2); Maternal/Child Division 1% (n=2) and Paediatrics 1% (n=1). No experience with Error/ death classification was reported, which is in contrast to question 2.4 which included this classification in the examples of errors reported; however these RNs may have chosen not to complete this question and are counted in the exclusions. There was no significant difference between the error classification in which involved in and professional nurses' and nurse leaders' positions; $p= 0.084$ (Fisher's exact test).

Question 4.5: Do you think that the error/s was (were) managed fairly? (N=107)

Received N=107 returns with 24 exclusions; with n=3 nurse leaders and n=21 professional nurses who did not complete this question. The frequency of RNs responses to error being managed fairly is displayed in figure 4.7 below. The majority of RNs 62% (n=66) agreed that errors had been managed fairly, with a distribution of 57% (n=52) professional nurses and 88% (n=14) nurse leaders. However, 38% (n=41) of RNs disagreed (n=9) or did not know / were unsure (n=32) about receiving fair management of the error.

Professional nurses had the lowest score for agreement, but responses were higher than nurse leaders for disagreement 34% (n=31) and did not know / were unsure 9% (n=8). There was significance difference between the two groups of RNs, $p= 0.0407$ (Fisher's exact test). Reasons supplied for views of RNs identified the investigative process needs to be applied which reviews all contributing factors.

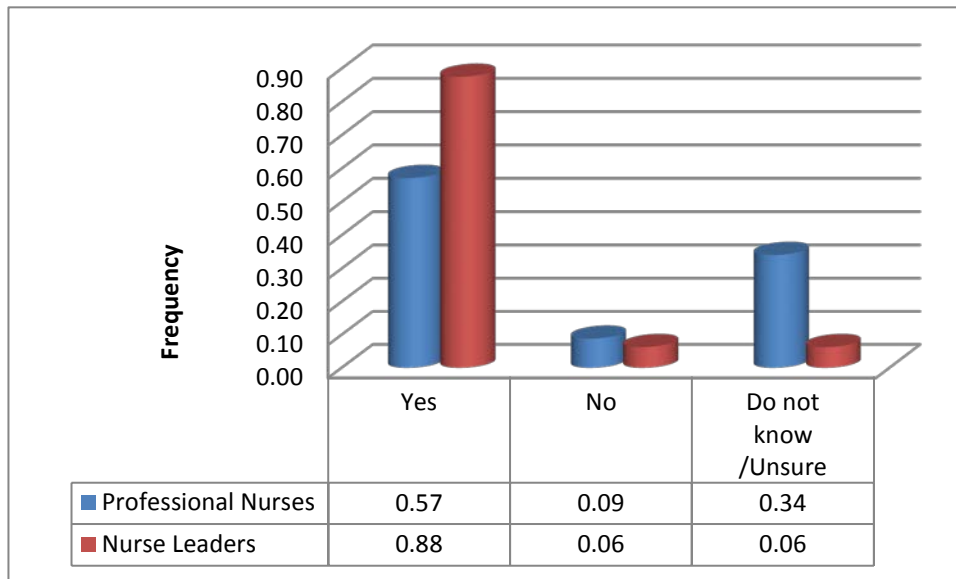


Figure 4.7: Error Management by Job Title

Thus the majority of nurse leaders agreed fair management was received, but only half of professional nurses agreed with this perception. Denham (2007: 114) stated that *“the just culture principle is fairness to the workers who make errors and effective in reducing risks”* and describes five rights of the healthcare provider when human errors occur. These include treatment that is just and support by manager and peers to prevent the abandonment of the healthcare provider as they work through the error occurrence. Leape *et al.* (2009: 425) identifies five components which are needed to improve the safety of healthcare organisation which include transparency.

Question 4.6: The nurse (s) who had made the errors/s received fair treatment (N=110)

Received N=110 returns with 21 exclusions; n=2 nurse leaders and n=19 professional nurses who did not complete this question. The frequency of RNs’ responses to the nurse who made the error being managed fairly is displayed in figure 4.8 below.

The majority of RNs 60 % (n= 66) agreed that the nurse who made the error received fair treatment. Nurse leaders agreement 82% (n=14), with 6% (n=1) disagreement and 12% (n=2) do not know/unsure. However, professional nurses agreement response was 52% (n=48); with 37% (n= 34) do not know/unsure and 12% (n= 11) in disagreement. There was no significant difference between the two groups of RNs and their response to question 4.6, $p=0.065$ (Fisher’s exact test).

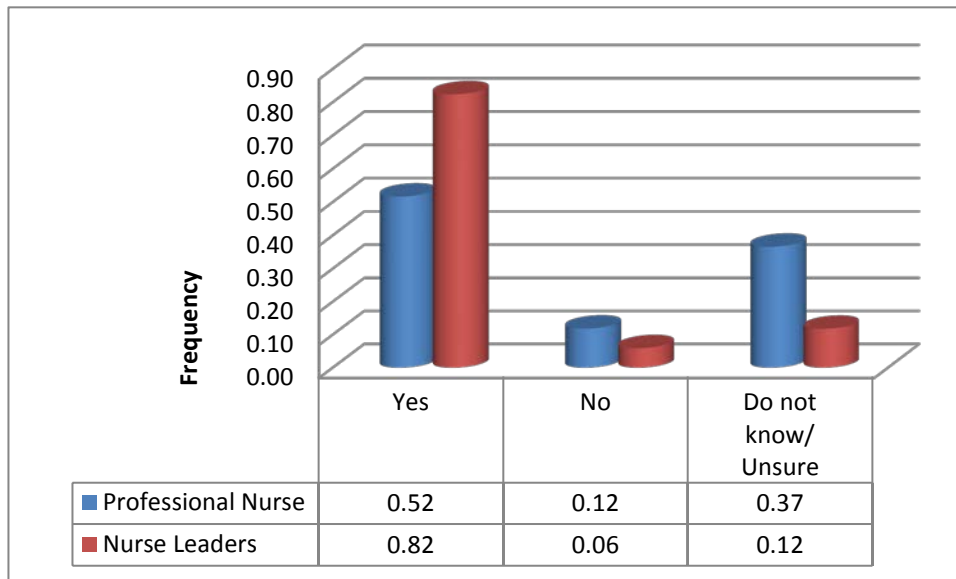


Figure 4.8: Fair Treatment received by RN

Reasons for responses which added weight to this question were the application of the same process to all staff in a similar manner, the need to be treated with respect and confidentiality maintained, investigations should include a review of all contributing factors and plans to address the deficiencies, committees should trust nurses, not be individually focused as they sometimes feel "*We should create a victim for the error and send them home*" was one RN's response.

The results demonstrate nurse leaders' awareness of the application of the error management process, however there is a gap for professional nurses, thus the need to explore education on error management. An additional need is the application of concepts which cannot be adequately quantified like fair, which may be interpreted in a different manner by each RN. However, RNs as stated above would like to see the application of processes uniformly throughout the organisation. Chard (2010:142) reports a strong link between a judgmental nurse management response and the RNs defensive approach in practice. Respondents in the study affirmed a supportive managerial response in error management.

Question 4.7: Indicate the outcome of the error/s for the nurse, clinical nurse coordinator /manager and comment as applicable (N=112)

Received N=112 returns with n=19 professional nurse exclusions as they did not complete this question. A total of n= 327 outcomes of errors were identified by RNs; 22% (n= 72) nurse leaders and 78% (n=255) by professional nurses. The outcomes were categorized into educational needs, disciplinary actions and severe outcomes. There was no significant difference between nurse leaders and professional nurses' responses to error outcomes, $p=0.2188$ (Fisher's exact test).

Outcomes for the nurses who make errors have been reported in studies to range from no change, performance review, identifying education skills and abilities which are lacking, and disciplinary actions within organisations; independent nursing boards / other government agency investigations; suspension, termination and legal suits against nurse and/or the organisation (Marx, 2001: 1- 25; Benner *et al.*, 2002: 510; Scott *et al.*, 2009:328).

Figure 4.9 below demonstrates that an equal number of professional nurses and nurse leaders 19% (n=14) - 20% (n= 51) have identified the need for education and competence to be a factor which influences errors and the need to improve on this measure. Professional nurses 5% (n=13) identified that they do not know the outcome of errors which may be due to the confidential approach of addressing error outcomes.

RNs in nursing specialties who received developmental plans was the Adult Nursing Division the highest 18% (n=14), and the Ambulatory and Procedure Nursing Division the lowest 6% (n=2). RNs across all nursing divisions identified being placed on a developmental plan; ranging 12% (n=9) Critical Care Nursing Division to 17% (n=6) Paediatrics Nursing Division. Procedure Nursing Division was highest 25% (n=15) Maternal/Child 16% (n=9) the lowest, with the range between for other nursing divisions that identified individual nurses needs for education and competency.

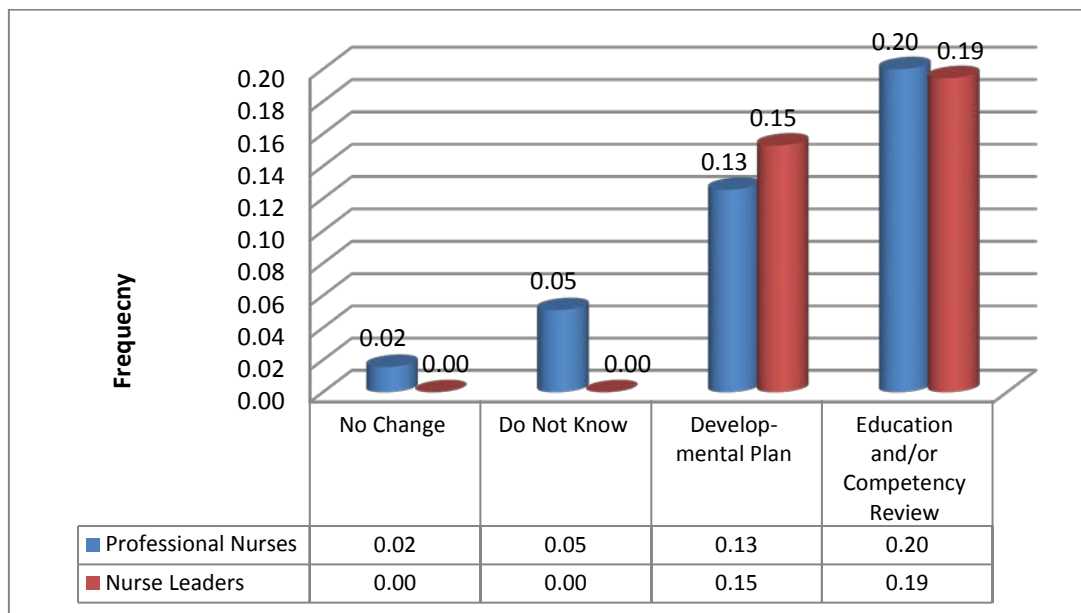


Figure 4.9: Educational Outcomes

RNs had experience with developmental plans Malaysian 38% (n=1); Middle Eastern 19% (n=11); Western 17% (n=4); Filipino 13% (n=18); Saudi 12% (n=3); Indian 10% (n=2) and lowest was South African 9% (n=4). Education and Competence review was Malaysian 23%

(n=6) the highest and all other nationalities ranging from 17 % (n=4), Western to 21% (n=9) South African and Indian 21% (n=4).

Employee performance in the organisation is reviewed by the nurse manager who decides the most appropriate disciplinary action applicable, which may be in consultation with the immediate supervisor. Only written disciplinary action is sent as part of the nurses` performance documents to the Human Resources Department. The disciplinary approach includes the nurse manager receiving discipline due to professional nurses` actions which resulted in an error, with some professional nurses 3% (n=4) aware of this application. Based on the job description, nurse managers hold ultimate accountability for the nursing unit which include outcomes for patients and nursing care provided. A significant positive relationship was found between the average positive responses in section 3.1 with the outcome of an error to be disciplined by the manager; $p=0.022$.

Figure 4.10 below presents the disciplinary outcomes of errors with the progression from counselling, the highest response 32 % (professional nurses n=50 nurse leaders n=12); to a final written warning 5% (professional nurses n=4; nurse leaders n=3) being the approach applied throughout the organisation.

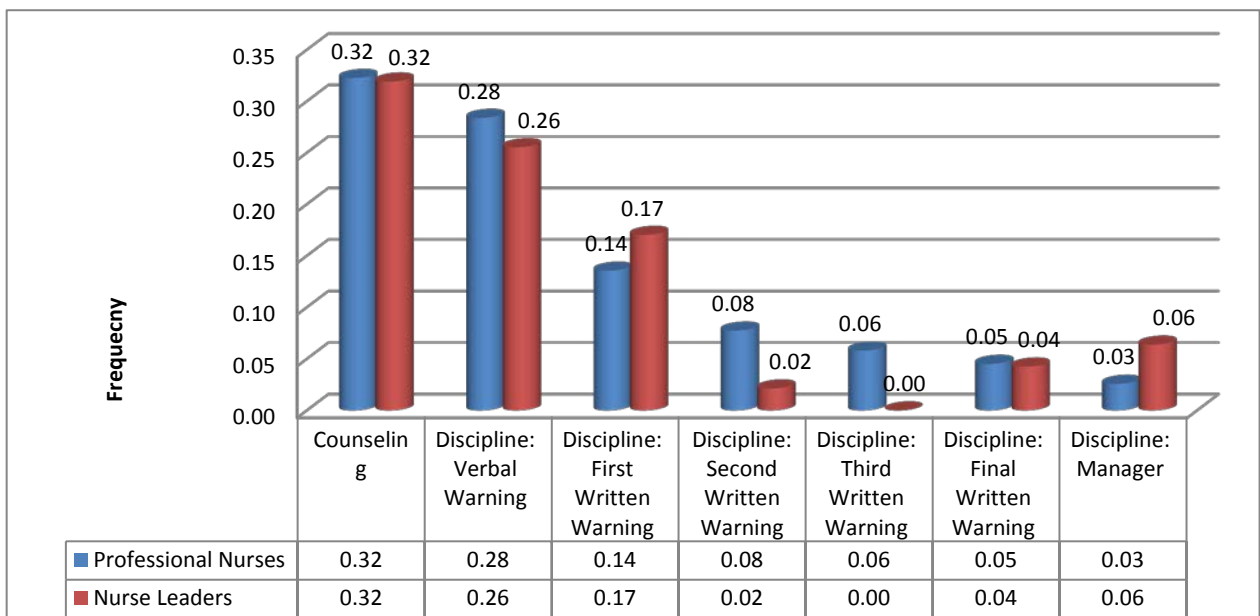


Figure 4.10: Disciplinary Outcomes

Both nurse leaders and professional nurses reported counselling as the most frequently applied disciplinary outcome, followed by verbal warning 28% (n=44) and nurse leaders 26% (n=12); first written warning 14% (n=21) professional nurses 17% (n=8) nurse leaders; second written warning 8% (n=12) professional nurses and 2% (n=1) nurse leaders; and

final written warning 5% (n=7) and nurse leaders 4% (n=2). Only professional nurses reported 6% third written warning as an outcome of making an error.

Thus, professional nurses experienced/were aware of a total of n=143 disciplinary outcomes, and nurse managers n=38.

The nurse manager also receives discipline for the input & outcomes in the nursing unit which are the accountability of the nurse manager on a twenty four hour basis. RNs professional nurses 3% (n=4) and 6% (n=3) nurse leaders had experienced/were aware that there was discipline applicable to nurse manager.

Figure 4.11 below presents the severe outcomes of errors which RNs experienced. Professional nurses had experience with equal numbers of suspension, demotion and dismissal 13% (n=1); 25% (n=2) termination and other 38% (n=3) scored higher responses. Nurse leaders had an equal frequency for suspension and dismissal 17% (n=1); termination 33% (n=2) and "other" 33% (n=2) which were all higher than professional nurses' responses.

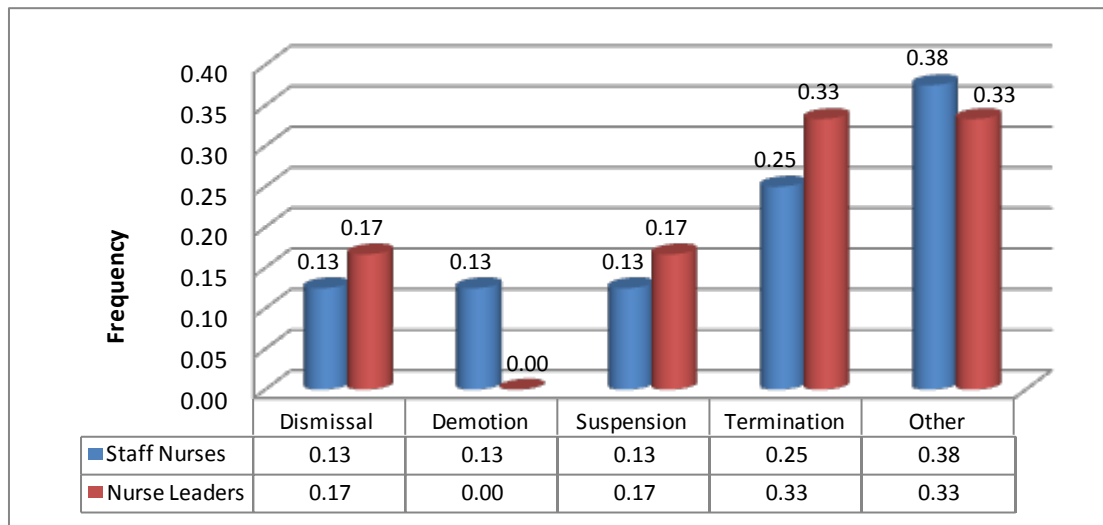


Figure 4.11: Severe Error Outcomes

A demotion within the organisation would be a job description change from RN to an unlicensed nurse. A licensed practical nurse is not an option as this position does not exist in the organisation. Suspension is applicable for a length of time with dismissal which is the nurses' choice to resign and termination an action of the organisation to terminate the nurses' contract.

A total of 3% (n=9) severe outcomes were reported for errors within the Critical Care Division reporting 1% (n=1) dismissal, 1% (n=1) suspension and 3% (n=2) termination.

Other terminations were 1% (n=1) in Paediatrics and Adult divisions; 2% (n=1) suspension in Procedures Division, 1% (n=1) demotion in Adult Division and 5% (n=1) in Maternal/Child Division. All the severe outcomes of errors were reported by expatriate staff, with Middle Eastern RNs who reported one dismissal and suspension, 2% (n=1) and 5% (n=3) terminations and Saudi RNs had none.

Question 4.7.15: (Do not know) was identified by 5% (n=13) of professional nurses only who recognized that they were not aware of the outcomes of the errors in which involved. Question 4.7.16 (Other: Please indicate) was identified by 1% (n=2) - 3% (n=3) of RNs; with RNs identifying that disciplinary outcome is dependent on the number of occurrences of the same error, near miss due to another department involved, not applicable and the review of an internal policy and procedure.

Question 4.8: After the error had been reported and managed, the nurse involved expressed that he/she felt... (Indicate all that apply) (N=117)

Received N=117 returns, with n=14 professional nurses excluded as did not complete this question. Table 4.2.5.6.5 below presents a summary of RNs' expression after the error was reported and managed.

RNs responding from their experience with errors confirmed the perception of feeling good about reporting the error (Q4.8.1) 35% (n= 42) and good that patient could receive the care needed (Q4.8.2) 27% (n=32) which was an equal distribution for all nursing divisions and across all nationalities with 24 % (n=4) Indians highest and Middle Eastern 3% (n=1).

However, only 21% (n= 24) RNs felt better and could receive support (Q4.8.3) and 19% (n= 22) felt supported and could work through the event (Q 4.8.6). Procedures Nursing Division was the most supported 14% (n=8); Ambulatory 13% (n=3) and Maternal/Child 13 % (n=6) which were very poorly rated. Malaysian RNs were highest responders 11% (n=2) and South Africans RNs lowest 5% (n=4).

Trust for colleagues and senior staff was identified as lacking as seen in responses 14% (n=8) trusted colleagues, will continue to report errors (Q4.8.10) and 21% (n=12) trusted senior staff and will continue to report errors (Q4.8.13.). Saudi 7% (n=1) and South African 5% (n=2) were highest responders for these two questions with Indian and Malaysian RNs n=0. Trust for peers and nurse leaders have been identified as an important component of the work environment. Denham (2007: 114) sites the definition of trust by Covey & Merrill (2006): *"trust is vital in any system and is considered a confidence composed of competency and integrity"*.

Therefore, peers' and leaders' response to an error can affect the level of trust which the nurse places in them to treat them in a just and fair manner. Trust affects productivity, quality and inversely cost, thus promoting a trusting environment at the point of care is vital for safety and care delivery (Denham, 2007:115). Denham (2007:107) identified the acronym TRUST which identified the five rights of the second victim, as the treatment of erring by healthcare providers which is traditionally a shame and blame approach, which includes abandonment and thus violates the trust placed in the organisation to care for them.

RNs 16% (n=19) felt devastated for having made the error (Q4.8.4), with a fair distribution for all nursing divisions except n=0 for Ambulatory Division. Seeing oneself as a poor nurse, unable to trust self with patient care (Q4.8.8) as expressed by 4% (n=3) within the Adult and Maternal/Child divisions.

These results are supported by Sirriyeh et al. (2010:51) who concluded that *“psychological repercussions may include negative states of shame, self-doubt, anxiety and guilt”*; with the potential for balanced *“positive outcomes of increased assertiveness, confidence and improved colleague relationships reported”* but identify the need for further exploration of coping in the short and long term; support structures available or outcomes beyond the immediate event and the development of tools which would meet this need. This further need is seen by the number of respondents who did not reply to these comments, only 16% (n=19) were willing to share these types of experiences.

RNs who were relieved at no longer keeping a secret of the error (Q4.8.5) was expressed by 8% (n=9) distributed within all divisions except for Pediatrics and Ambulatory. Chard (2010: 139 -142) investigating emotional responses of nurses concluded that positive perceived senior staff responses, accepting error responsibility and seeking social support resulted in constructive changes in nursing practice, while negative perceived senior staff responses and error escape avoidance predicted defensive changes. Scot et al. (2009: 326-330) identified six phases of recovery for a second victim.

Table 4.18 below presents the frequency of RNs' identified need for education and training in error management (Q4.8.11) was identified in 21% (n=24) RNs.

Maternal/Child Nursing Division 15% (n=7) and Paediatrics Nursing Division 14% (n=3) the highest nursing divisions agreement and Ambulatory nursing division with no identified need, n=0. Understanding and agreeing with the application of the disciplinary process (Q4.8.12) was expressed by 27% (n=32) RNs; Ambulatory Nursing Division 17% (n=4) and Adult Nursing Division 16% (n=7) as the highest agreement.

Table 4.18: Registered Nurses Expressions

RN Expression with Error Outcomes	Frequency Nurse Leaders (N=19)	Frequency Professional Nurses (N=98)	Outcome Total
Good about reporting the error	n=5	n=36	n=41
Good, patient received the care needed	n=2	n=30	n=32
Better and could receive support	n=2	n=22	n=24
Devastated that could have made this error	n=6	n=13	n=19
Relieved that no longer keeping a secret	n=2	n=7	n=9
Supported and could work through the event	n=2	n=20	n=22
Not supported and blamed	n=5	n=7	n=12
Bad nurse, not able to trust self with patient care	n=0	n=3	n=3
Not treated fairly	n=1	n=7	n=8
Trusted colleagues, will continue to report errors	n=2	n=6	n=8
Needed to receive education and training	n=8	n=16	n=24
Understood and agreed with the disciplinary process	n=5	n=27	n=32
Trusted senior staff and will continue to report errors	n=2	n=10	n=12
Do not know	n=3	n=19	n=22
Other	n=1	n=2	n=3

Not knowing how nurses feel and what their needs would be (Q4.8.14) was expressed by 20% (n=23). This is a fair number of nurses who do not know about the numerous aspects explored about error reporting and error management. Other categories (Q4.8.15) 3% (n=4) which were identified as not applicable.

Question 4.9: Share your experiences with errors and comment on error management in the hospital (N=38)

Received N=38 comments; 13% (n=5) nurse leaders and 87% (n=33) professional nurses. Professional nurses 39% (n=13) and 20% (n=1) nurse leader (from the Ambulatory Division) reported no experience with errors, some with reasons given as “low census in the unit makes it very difficult to have errors”; “no major errors happened before except that communication barrier that leads to misinterpretation” “Luckily I was never involved, so I do

not know. I did not witness any and I cannot comment on rumors.” However, this identifies in some aspect that RNs consider only major errors need to be reported.

Comments from RNs, 63% (n=24) involved with errors were assigned to categories using the Just Culture approach of system versus individual approach of error reporting and management.

Question 4.9: Error Reporting Process Category

The error reporting process was identified and known to RNs, 88% (n=5 nurse leaders and n=16 professional nurses). The RNs gave both positive and negative comments about reporting errors with the process of error reporting was said to be clear, however feedback on the number, type and outcomes need to be provided to the nursing units on a quarterly basis. Feedback and communication about errors reported serve to acknowledge the importance of error reporting, link the nurse manager and direct care nurses in partnering to review system factors, and plan for improvements using outcomes data (Potylycki et al., 2006: 375; Mick et al., 2007: 501, Montgomery, 2007: 15 ; Leape et al., 2009: 425).

Question 4.9: Fear of Reporting Category

Fear in error reporting has been identified in numerous studies (Mayo & Duncan 2004:214; Chiang & Pepper, 2006:398; Scot *et al.*, 2009: 329; Sirriyeh *et al.*, 2010:51; Alsafi *et al.*, 2011:146) and is impacted by the response of nurse leaders, managers and peers to errors reported. Fear of reporting is influenced by the systems of the organisation which either support a reporting culture through non-punitive error reporting or shame or blame individuals for errors made.

RNs 33% (nurse leaders n=1, professional nurses n=7) identified fear of reporting and the outcomes of the errors as reasons for not reporting errors. Some of the comments were:

- “I think reporting of errors is a healthy practice although that some of the staff still feel that they will be blamed and maybe it is better if they are not reporting the incident and covering for each other”
- “Staff however continue to need encouragement to use the on-line system (SRS) as they fear they will be punished for reporting the incident will improve systems within the hospitals”
- “Don` t believe that the whole error reporting system is aiming to predict errors and trying to improve patients care. Believe that it is only for show”
- “Mostly errors that get reported are errors of colleagues which are not self-reported cases. Necessary support is given depending on situation or circumstances under

which errors occurred e.g. if errors occurred out of negligence little support is granted, but vice versa more support is granted”

- “There is also lip service to a "culture of safety" of course it's the official line the hospital claims, yet you hear on a daily basis "I am going to write on SRS on you". This is never addressed by my unit or other units from middle management and I have never seen upper management correct this. There is also difficulty with cultures as cover ups happen between nurses of the same culture, while those same nurses seek out errors of nurses from other cultures. The nurse who makes mistakes are less likely to report errors in fear of tit for tat”

Question 4.9: Collegial response to Error Category

Collegial (peer) response to error has been found in studies to impact nurses' attitudes to error reporting (Chiang & Pepper, 2006:398; Potylycki *et al.*, 2006:375) how they cope with the error occurrence and their recovery (Mayo & Duncan, 2004:214; Leape *et al.*, 2009: 425; Scot *et al.*, 2009:327,330; Chard, 2010:139). Peers have been identified as an important support available to nurses and this is confirmed in this study as well, see question 2, with resource staff available.

Professional nurses 20% (n=4) identified the contribution of collegial response and misunderstanding in communication as contributing factors which affects errors on the nursing units.

- Communication between new nurse and preceptor led to an error. Negative response from preceptor “I misheard when she told me just to give half of the syringe and I gave it all. I told her I had given it all and she was so angry and shouting at me. So we informed our charge nurse and the head nurse, and entered into the system. I signed disciplinary action and I gave an in-service for all the staff “
- “Also misunderstood the question if it's not your own language add to error, no harm”
- Responsibility to Peers/Colleagues: “If there is errors seen or witnessed go to the nurse concerned and verify and then follow the proper channels of authority”
- “Then presentation for the unit demanded of nurse based on the case review. A humiliating and unnecessary exercise for the nurse who was mortified enough by the experience of having made an error in the first place. So much for non-punitive action!”

Question 4.9: Contributing Factors Category

The contributing factors to errors are important as these identify the system or latent factors which may not be seen at the time of occurrence but on investigation. Thus, work environment factors, interdisciplinary interactions and open communication are suggested to

be improved to reduce risks for errors. However, nurses need to provide feedback on system efficiency and effectiveness through error reporting to identify system factors and prevent recurrence of similar errors (Mayo & Duncan, 2004: 215; Moody *et al.*, 2006: 204).

Professional nurses; 20% (n=4) through their examples identified other departments and systems contributing to nursing errors and the classification of near miss as an area for improvement. These included pharmacy dispensing errors, equipment availability, introduction of information technology system delays; and changes in procedures which require updated policies and procedures with one RN's response being: "The way the hospital classifies near misses and errors means that the majority of errors falls on the nurses' shoulder, i.e. pharmacy does not put the correct amount and the nurse catches it. This is a near miss, but I see it as an error as two people did not do their job properly; the technician drawing up the medication and the pharmacist checking the medication".

Question 4.9: Education Category

Education in error reporting and management is needed as nurses need to be trained in error identification, reporting processes and management. Then nurses need to be open to discuss and learn from errors as they occur (Marx, 2001:3; Mayo & Duncan, 2004:215; Hobgood *et al.*, 2005:144; Alahmadi, 2009: 20; Leape *et al.*, 2009:425).

One professional nurse commented on a verbal insult which led to termination of the RN as an error, identifying the need for education in error identification. Professional nurses, 35% (n=9) and nurse leaders, 50% (n=2) identified educational needs which would improve error reporting, management and outcomes.

- "In-service education on errors would be beneficial to all nurses on the units, not only managers and nurses who are involved. Through my experience as CNC, staff education and reassurance in regards to the hospital reason of reporting system and the rules and regulations that related to the process if investigation and the disciplinary actions is highly required and recommended. From errors we will learn and patient safety is our Goal. Need to remove anonymity"
- "All errors need investigation, clarification and identification for causes and should be looked into with positive solutions, education and review nursing practice and procedure in order to be free from errors, not only to the concerned nurse but all nurses in the unit"

Question 4.9: Investigative Processes Category

The investigative process of errors is a system approach to errors and should include the multidisciplinary team especially risk managers to review contributing factors. However, this is impacted by the nurse manager approach to error management (Moody *et al.*, 2006:204; Scot *et al.*, 2009: 328). Nurse Managers would benefit from applying a decision tree

(Reason, 1997) or algorithm (Marx, 2008) to assist the investigative process and decision making on outcomes (Mayo & Cronin, 2008: 428).

Professional nurses, 75% (n=15) and nurse leaders, 50% (n=2) identified the need for clarity in the investigative processes; with RNs advocating the use of just culture for analyzing the cause of the error; investigations to be completed in professional manner and not discussed outside the nursing unit and staff input as described by one RN "Also, there is no request from staff for input as to why the error occurred or how it could have been prevented. That would mean we are looking at the system not just the individual".

Question 4.9: Outcomes of Errors Category

Error outcomes are feared by health care professionals as these may be linked to loss of professional trust in self and others, inability to overcome the error occurrence and long term consequences (Mayo & Duncan, 2004:216; Chard, 2010:140). Thus, organisations are urged to develop programs which would promote non-punitive error reporting, open communication in errors occurrences, support for the second victim with no abandonment and a just and fair approach to addressing human behaviour (Marx, 2001:3; Mayer & Cronin, 2008: 429; Leape *et al.*, 2009:425; Scot *et al.*, 2009:328).

Professional nurses 35 % (n=9) shared the outcome of the errors in which they were involved, which were both positive and negative. Some of the comments were

1. "A colleague who had a medication error was given a disciplinary first warning and before that discussed with Clinical Nurse Coordinator and the Head nurse"
2. "The error reported helped the unit to find ways of preventing it from happening again and the management always stands with the nurses to support and encourage the reporting. In some cases errors are treated not fairly as some will do some errors with major (sentinel) outcomes for the patient's life but not sent home and others are sent home having been involved in minor errors without harm being done to the patient. So biases and favouritism would not be excluded at the end".
3. "This totally changed nurse's attitude towards reporting errors as the whole experience was devastating for her on top of being humiliating and undermining. The nurse was able to see that practice could always be improved and engaged the other staff in preventing similar occurrences for themselves in spite of her own humiliation and their knowledge of her error. She has said she will never report anything again".

These comments confirm question 3.1.28 and question 3.1.48 on disciplinary application which is not a clear process; however the confidentiality aspects of decisions may not be known to all professional nurses in the unit. Thus, there is a need for education on the processes and limitations for nurse leaders.

4.2.6 Objective to explore the factors impacting on the management of nursing errors

This objective was to explore the factors impacting on the management of nursing errors. This was accomplished with a review of the factors identified from literature and those which may be applicable from the cultural perspective were added to the Likert scale with three categories of agree, neutral and disagree. Question 3.2.1 – question 3.2.13 are summarized according to the categories identified above. All questions were negatively worded, thus were not reversed scored to obtain the average positive response.

4.2.6.1 Error reporting and feedback

The questions which explored factors which affect error reporting and feedback are presented below in table 4.19. Three factors were explored for this topic understanding the process for errors reporting and management, documentation required and feedback processes. Exclusions were only for professional nurses ranging from n=7 - n=8 who did not respond to these questions. The Fisher`s exact test indicated that there was no significant difference between the two groups of RNs` responses.

RNs understand the process (Q3.2.1) 72% (n=88, reversed scored) and the documents used (Q3.2.3) 73% (n=91, reversed scored) for error reporting and management. RNs are not aware of the feedback process on errors reported (Q3.2.5) or the process if not effective, 41% (n=31) agreement. There is still room for improvement in understanding the processes and documents used as 28% (n=35) - 27% (n=33) of RNs disagreed or did not provide their responses.

Table 4.19: Error Reporting Factors

Likert Scale	Question 3.2.1=I do not understand the process for error reporting and management (N=123)	Question 3.2.3=I do not know where to find the documents for error reporting and management (N=124)	Question 3.2.5= Feedback about error/s being reported is not given to staff (N=123)
Agree	n=8	n=13	n=31
Neutral	n=27	n=20	n=41
Disagree	n=88	n=91	n=51
Average Positive Response	72%	73%	41%

Nurse leaders had identical scores for question 3.2.1 and question 3.2.3 reported a high neutral response for nurse leaders 84% (n=16) and no disagreement as reversed scored. Professional nurses 8% (n=8) in agreement (Q3.2.1) and 12% (n=13) for question 3.2.3

which identify a minimal number of RNs who do not understand the error reporting and management process and know where documents can be found.

4.2.6.2 Error management

Questions which explored factors which affect error management are summarized in table 4.20 below. Factors explored included the effect of knowing the outcomes of error investigation, the time for investigation, understanding the disciplinary process applicable and the role of the nurse manager. There was no significant difference between the two groups of RNs based on Fisher's exact completed. Exclusions were only for professional nurses n=7 for all questions as they did not respond to these questions.

RNs' response to question 3.2.2 (The delay in knowing the result of an error investigation leads to anxiety) had 74% (n=92) agreement, with 21% (n=26) remained neutral and 5% (n=6) disagreed and thus considered the length of waiting time not to increase anxiety levels. Both professional nurses 76% (n=80) and nurse leaders 63% (n=12) scored high for agreement.

Table 4.20: Factors affecting Error Management

Likert Scale	Q 3.2.2=The delay in knowing the result of an error investigation leads to anxiety (N=124)	Q 3.2.4 = The time taken to investigate an error is too long (N=124)	Q 3.2.8 =I do not understand how a nurse received disciplinary action for an error made (N=124)	Q3.2.9 = Disciplinary action for an error is given based on whether the manager likes me or not (N=124)
Agree	n=92	n=39	n=15	n=16
Neutral	n=26	n=61	n=44	n=34
Disagree	n=6	n=24	n=65	n=74
Average Positive Response	74%	19%	52%	60%

RNs response to question 3.2.4 (The time taken to investigate an error is too long, reversed scored) had 19% (n=39) agreement, with a high neutral response 49% (n= 61) and disagreement 31% (n=39). Nurse leaders' responses were in agreement 42% (n=8); disagree 37% (n=7) and neutral 21% which is an ambivalent response. Professional nurses' responses were agree 16% (n=20), a high neutral 50% (n=53) and disagree 30% (n=32).

Question 3.2.8 (I do not understand how a nurse received disciplinary action for an error made) average positive response 52% (n=65), with 44% neutral (n=44) and disagreement 12% (n=15). Thus, only half of RNs understand the disciplinary process, with 37% (n=39) - 68% (n=13) of RNs choosing to remain neutral from both groups of RNs. Question 3.2.9

(Disciplinary action for an error is given based on whether the manager likes me or not) average positive response of 60%, disagreement 15% (n=16) - 32% (n=6), and 27% (n=28) - 68% (n=13) neutral for both groups of RNs. This confirms that 58% (n=61) of professional nurses feel that individual performance is a basis for discipline as opposed to the advocated just culture approach to guide the application of discipline (Marx, 2001:5).

4.2.6.3 Education factors

The factors explored which may impact nursing errors and identify educational gaps are summarized below in table 4.21. The factors explored were technology competence, language barriers and cultural restrictions. There was no significant difference between the two groups of RNs based on Fisher exact test completed. Exclusions were professional nurses n=7 for all questions and n=1 for nurse leaders as they did not respond to these questions.

Table 4.21: Educational Factors

Likert Scale	Question 3.2.7 = I do not know how to use a computer and this makes me unwilling to report errors (N=124)	Question 3.2.10 = The language barrier with the patients makes it difficult to disclose and apologize for errors (N=124)	Question 3.2.11 = I do not understand the cultural restrictions which apply to the patients in my unit (N=123)
Agree	n=5	n=48	n=9
Neutral	n=18	n=42	n=28
Disagree	n=101	n=34	n=86
Average Positive Response	81%	27%	70%

RNs' average positive response for question 3.2.7 (I do not know how to use a computer and this makes me unwilling to report errors); 81% (n=101, reversed scored) agreed that have computer skills but 19% (n=23) RNs identify the need to develop these skills.

RNs' average positive response for question 3.2.10 (The language barrier with the patients makes it difficult to disclose and apologize for errors) 27% (n=34) agreement; 34% (n=42) neutral response and 39% (n= 48) in disagreement. An average number of RNs identified language as a barrier, however there was a high neutral response which indicates either not known or did not want to disclose information.

RNs' average positive response for question 3.2.11 (I do not understand the cultural restrictions which apply to the patients in my unit) 70% (n=86); neutral response 23% (n=28)

and agreement was 7% (n=9). Thus, a minimal number of RNs have identified a need for education on the cultural restrictions which apply to patients.

4.2.6.4 *Work environment*

Factors explored for the unit work environment factors which may impact nursing errors are presented below in table 4.22. The factors explored were unit dynamics which make it easy to make errors and the increased risk of errors with the number of overtime shifts worked. There was no significant difference between the two groups of RNs based on the Fisher exact test completed. Exclusions were professional nurses n=7 for all questions as they did not respond to these questions.

Table 4.2: Work Environment Factors

Likert Scale	Question 3.2.12 = My unit is very busy and this makes it easy to make errors (N=124)	Question 3.2.13 = The nursing staff work many overtime shifts and this makes it easy to make errors (N=124)
Agree	n=27	n=36
Neutral	n=41	n=42
Disagree	n=56	n=46
Average Positive Response	45%	37%

The average RN positive response question 3.2.12 (My unit is very busy and this makes it easy to make errors) 45% (n=27), with 33% (n= 41) neutral and 22% (n= 27) in disagreement. The RNs' response continued to have a high neutral response, however almost half of RNs identified the need to review tasks on the nursing units to assess the work environment to decrease error risks. The average RN positive response for question 3.2.13 (The nursing staff work many overtime shifts and this makes it easy to make errors) 37% (n=46), 34% (n=42) neutral and disagreement 29% (n=36). More than one third of RNs identified the increased risk to make errors due to overtime shifts; however the neutral results continue to be high.

4.2.6.5 *Correlation of factors*

Regression analysis was completed to review for any correlation of factors with the RNs' responses to the questions of section 3.1 and section 3.2. Table 4.23 below presents a summary of results which are presented in the discussions above as they are applicable to different questions.

Table 4.23: Summary of Regression Analysis Significant Results

Predictor	Coefficient	SE Coefficient	T	P
Q1.3.3 (Middle Eastern Nationality)	-0.3210	0.1574	-2.04	0.044
Q1.7.1 (Adult Nursing Division)	-0.2788	0.1309	-2.13	0.036
S = 0.315589 R-Sq = 37.9% R-Sq (adj.) = 17.5%				
Q2.4.8	-0.27082	0.09638	-2.81	0.006
Q2.6.9	0.4122	0.1909	2.16	0.033
S = 0.343932 R-Sq = 31.1% R-Sq (adj.) = 12.5%				
Q3.2.1.	0.07607	0.02155	3.53	0.001
Q3.2.3	0.04574	0.02029	2.25	0.026
Q3.2.5	0.06631	0.01429	4.64	0.000
Q3.2.9	0.05030	0.01603	3.14	0.002
Q3.2.10.	0.03329	0.01459	2.28	0.025
S = 0.226243 R-Sq = 64.8% R-Sq (adj.) = 60.5%				
4.3.7	-0.5486	0.2351	-2.33	0.024
4.7.10	0.5499	0.2326	2.36	0.022
S = 0.284038 R-Sq = 70.1% R-Sq (adj.) = 29.6%				

Table 4.23 presents a summary of the significant regression analysis results

Section 1: The results suggest that an average positive response correlated with Middle Eastern nationality; $p=0.044$ and the Adult Nursing Division; $p=0.036$. This indicates that these respondents were on average slightly more negative in their response than the other respondents.

Section 2: The above analysis shows that there is a very weak correlation with the average positive response identified in section 3.1 and section 2. Significantly negatively associated was “Error of omission” (Q2.4.8) as type of error that has occurred. Furthermore, positively associated with the average positive response was the resource staff available: Chief of Nursing (Q 2.6.9).

Section 3.2: The “average positive response” of the individual respondents was used in linear regression as the response variable and the respondents’ answers on section 3.2 as prediction variables. The above results imply that Q3.2.1, Q3.2.3, Q3.2.5, Q3.2.9, Q3.2.10, and Q3.2.13, are significantly related with the average positive response. This suggests that

a positive score on patient safety is associated with understanding the process for error reporting and management (Q3.2.1 & Q3.2.3), receiving feedback about errors made question three ;two and five an objective error management by the manager (Q3.2.9), and negatively associated with a language barrier (Q3.2.10) and working overtime shifts (Q3.2.13).

Section 4: As in section 2, the average positive response is negatively associated with the error of omission (Q4.3.7) in which the respondents were involved. Furthermore, a significant positive relation is found between the average positive response and the outcome of an error to be disciplined by the manager (Q 4.7.10).

4.3 SUMMARY

This chapter has presented the results obtained through a questionnaire administered to RNs, i.e. professional nurses and nurse leaders. The data results were sufficient to provide the responses of registered nurses errors, managed in a tertiary hospital in Saudi Arabia and was successful in addressing the four goals set for the study and the research question.

Chapter five will complete a discussion of the results, the application of the results in achieving the aims and objectives of the study and recommendations based on the findings.

CHAPTER 5: DISCUSSIONS, CONCLUSIONS AND RECOMMENDATIONS

5.1 INTRODUCTION

The previous chapters presented the research results and discussed the analysis and interpretation thereof. This chapter will present a summary of the study findings through a discussion of the objectives; discuss the limitations, present recommendations and conclude the study.

5.2 DISCUSSION

Chapter one presented the objectives of the study which were:

1. Identify the nursing related errors occurring
2. Determine the current process of reporting nursing errors
3. Describe the management of nursing errors
4. Explore the factors impacting on the management of nursing errors

These four objectives will be discussed in detail using the results of the study to determine conclusions and recommendations for future studies.

5.2.1 Objective one was to identify the nursing related errors occurring within the organisation

The approach of healthcare towards errors has changed since the publications of the IOM report (Kohn *et al.*, 2000); numerous initiatives promoting awareness and prevention; reporting and management of errors that have been implemented. To gain an understanding of the changes in healthcare, it was important to identify the scope of nursing errors which occur within King Faisal Specialist Hospital and Research Centre (General Organisation) – Jeddah (KFSH&RC-J).

5.2.1.1 Harm score classification

KFSH&RC-J classified errors according to the Pennsylvania University Harm Score (2004) presented in chapter four. The majority of RNs (84%) identified experience with nursing errors as seen in table 4.3. These errors were all levels of harm score classifications, experienced in all divisions of nursing; experienced by RNs with various nursing years of experience and by both groups of RNs, i.e. professional nurses and nurse leaders.

Table 4.4 demonstrates that there was a significant difference between the nurse leaders and professional nurses' classification of errors according to the harm score; $p=0.03$ (Fisher exact test). The results demonstrate that the two groups of RNs either report different errors or classify the same errors differently. The most severe error outcomes, i.e. classification 6: error, death occurred in the Critical Care Division of Nursing and was reported by experienced professional nurses, with post basic nursing qualifications.

The inability to define errors by classification and identify when nursing errors need to be reported is supported by studies as one of the difficult challenges of error reporting, as discussed in chapter one (Marx, 2001: 3; PSA, 2008; Chard, 2010:140).

Classification 1: No Error includes the concept of near misses or "almost events" which are not errors but are reported for feedback on the effectiveness of risk management and improvement to systems (PSA, 2004). However, figure 4.1 indicates that the majority of RNs (76%) identify a near miss as an error, which is incorrect according to the harm score; but correctly agree that a near miss needs to be reported (85%). The lack of knowledge for near miss management was across both groups of RNs, and identifies an educational need for both groups of RNs.

5.2.1.2 Examples of types of errors reported

Benner *et al.* (2002: 509-520) classified a taxonomy of errors to gain an understanding of the errors which had occurred, which ranged in eight categories and were classified as serious. RNs reported various examples of errors (N=200) in the nursing units, as seen in table 4.5, with professional nurses identifying medication errors and nurse leaders' incorrect identification as the most frequently occurring errors. Professional nurses identified more errors reported than nurse leaders which may be a gap in reporting errors to nurse leaders.

Saudi Arabia has a very diverse nursing workforce as seen in table 3.1: Professional Nurses (Staff Nurse 1 & 2) Sampling Frame, March 2001, chapter three. Cultural errors were added in order to explore if any errors of this nature had been experienced by RNs. Cultural errors were identified by professional nurses which were minimal (7%) but does not exclude this as an area for education for these nurses. Communication errors would also be important for these RNs as table 4.2 identified that the majority of RNs spoke a first language other than English or Arabic which were the official languages for the employees and patients. Professional nurses identified 15% communication errors; however, there was no significant difference between language and error reporting on regression analysis.

Errors in the "other" category included n=9 RNs with no experience with errors; and additional examples of errors reported. The different error examples provided were severe

and seemed to include multiple factors, which were not easily identified by RNs to belong to classifications provided, e.g. baby roomed in with wrong mother is an identification error. This supports the need for education to gain competence to classify and identify errors.

The Adult Nursing Division reported the most errors (32%) followed by the Critical Care Division (23%) with the Ambulatory Division reporting the least errors (7%). The Adult Division was found to be the most negative in responses to error reporting and management, which may be due to the increased number of errors reported.

5.2.1.3 Resource staff

Mayer and Cronin (2008:428) state that “a true culture of safety can only be achieved through the larger organisational (leadership) commitment to communicate and demonstrate the desire to have a safety culture by simultaneously nurturing and perpetuating cultures that value learning, reporting and fairness”. Thus, RNs’ perception of the availability of resource staff was explored to gain an understanding of support provided at the point of care with challenges in error reporting and management.

Table 4.6 presents the results of resource staff identified as available to professional nurses and nurse leaders in the clinical setting as they report errors which have occurred in their nursing units. The results show a highly significant difference between the two groups of RNs in their identification of peers and direct supervisors as being available to them; $p < 0.0001$ (Chi-square test).

Thus, for professional nurses the roles of charge nurses (82%), unit colleagues (75%); clinical nurse coordinator (62%) and the nurse manager (61%) are important resources to encourage a practice of error identification, reporting and management at the point of care. In contrast, the nurse leaders identified direct supervisor (74%) and the nursing quality department (63%) and colleagues on another unit (53%) who may be their peers as being their resources available.

Nurse leaders identified one resource department, nursing quality as important to the process of error reporting which is important in changing the work environment, allocation of resources to be available to liaise for error reporting, experts available for clarification of processes and offer guidance in error management.

An important finding on regression analysis ($p=0.03$) was that of the Chief of Nursing, the highest level of nursing accountability in the organisation was identified as a resource by both groups of RNs which were positively associated with the average positive response. This confirms the findings of studies which identified the influence of organisational

leadership to be key to changing the culture of safety in the organisation. Mayer and Cronin (2008:429) state “the greatest responsibility and therefore accountability for a just culture resides with the organisational leaders, thus a just culture can only exist if these leaders understand the value thereof”.

Objective one of the study which was to identify the nursing related errors occurring within the organisation was accomplished and identified the strengths and weaknesses which can be used to recommend changes in error reporting. In summary, RNs were able to identify errors which had been reported and classified in their nursing units. However, there is a need for education on identification of errors, near misses and classification of errors. Nurse leaders and professional nurses classify errors differently, so need to develop an education program which assists both leaders and bed side nurses to effectively apply the same classifications.

A weakness identified is an under reporting of errors, which may be attributed to RNs’ fear of being blamed for the outcomes and nurse leaders not being aware of all errors. This is confirmed in results of objective two, table 4.7: Rationale for error reporting.

5.2.2 Objective two of the study was to determine the current process of reporting nursing errors in the organisation

Error reporting has been introduced by many organisations as a risk assessment tool to decrease potential risks and as a result of healthcare errors. Marx (2001:3) states that for data to be used to analyse the outcomes of errors, there needs to be a willingness to report these events; however few healthcare providers are willing to provide this feedback on organisational systems when faced with blame, disciplinary and legal actions.

It was confirmed on review completed by the researcher with the Quality Management Department (QMD) responsible for risk management that KFSH&RC-J has a defined process for error reporting utilizing a computerised system, i.e. a Safety Reporting System (SRS).

5.2.2.1 Error reporting

Error reporting can be mandatory or voluntary; however healthcare organisations continue to be challenged with under reporting of errors due to the management and outcomes of the errors reported (Marx, 2001:4; Wilson *et al.*, 2008:364; Alahmadi, 2010:20-21; Almutary & Lewis, 2012:125). Table 4.7: Rationale for error reporting shows the majority of RNs (87.6%) were able to identify when an error had occurred and needed to be reported which strength of the reporting process was being well established and known by both professional nurses and nurse leaders.

However, a weakness is the implementation and adherence to the process of error reporting, with an equal number of RNs agreeing and disagreeing (50%) to always reporting errors when they occur. The reporting of errors is in question as figure 4.2 which shows the majority of RNs (53%) who do not think that all the errors which occurred in their units were reported. The reasons for not reporting was identified as shame and blame culture, fear of the error outcome and the reaction of colleagues (team). This supports the research problem which states that RNs will not report errors as they occur due to the individualistic approach of management of the errors.

The majority of RNs recognized the benefits of error reporting to reduce risks in the workplace (89.9%), benefits the patient and their families (79.7%) and the reporting process was easy to apply (76.6%) as seen in table 4.7: Rationale for error reporting. However, although RNs agree with these benefits, adhering to the process and reporting errors as they occur have barriers which prevent compliance as discussed above.

5.2.2.2 The role of nurse leaders

Denham (2007:117) and the American Nurses Credentialing Centre, Magnet Recognition Program (2008) recognize nurse managers as transformational leaders who are visible, accessible and advocate on behalf of the nurses at the bedside for safety in the work environment. Various aspects identified from this group of RNs' responses identified the need for a review of leadership development in various aspects of their job functions. There are gaps in the knowledge of nurse leaders and the expectations of the role of nurse managers which is seen in that the nurse leader group have results which indicate knowledge to be transformational leaders in error reporting and patient safety need to be addressed for performance of job function.

The nurse leaders face a bigger challenge in this concept as there were nurse leaders who were not able to identify whether errors were reported or not (26.3%) as seen summarized in table 4.7: Rationale for error reporting. The role of the nurse leaders in error reporting and management has been identified in studies to be important to improving the work environment and how errors are viewed (Mayer & Cronin, 2007: 428; Scott *et al.*, 2009: 330; Piper, 2012: 32).

5.2.2.3 Feedback and communication

Marx (2001:25) advocates that organisation leaders assess the disciplinary policies as to whether they are "supportive or detrimental to system safety effectors, with a need to balance the interests of communication with those of deterrence". The process of feedback

and communication to the nursing units identified weaknesses in the error reporting and management process of the organisation.

Table 4.8: Feedback and communication demonstrates that only half of RNs (52%.8) are informed of the number of errors which occur in their units, however error feedback is discussed in the unit with the goal of improving the environment for patients and staff (74%). There are no clear expectations of the use of the error feedback which needs to be defined in the process. Mayer and Cronin (2008: 429) are of the opinion that “*competing priorities and vague performance expectations can contribute to at risk behaviour*”.

The use of error reports is not viewed in a positive manner, as the majority of RNs feel that these reports are kept in their confidential files during the investigative process (51.6%) and on a permanent basis (57.5%). This is interpreted as evidence to be used to shame and blame RNs for the error made and this affects performance. However, more than half of nurse leaders agreed to this practice of keeping error reports in nurses' confidential files, which is in agreement with an individual approach, while the majority of professional nurses disagreed with this practice, see table 4.8: Feedback and communication.

There were significant differences between professional nurses and nurse leaders in these responses; $p=0.022$ (Fisher's exact test). Thus, this may be interpreted as falsely positive for professional nurses or not feeling safe reporting their honest perception with these questions. The divergence of responses identifies a need to review the effectiveness and efficiency of the error reporting system and reporting process as there is a lack of clarity for expectations on feedback and communication of errors.

Objective two: of the study which was to determine the current process of reporting nursing errors in the organisation was accomplished and identified the strengths and weaknesses which can be used to recommend changes in error reporting and the feedback processes.

5.2.3 Objective three of the study was to describe the management of nursing errors

This objective was approached through the exploration of the various categories advocated by the Just Culture approach (Marx, 2001) and supported by Reason's (2000) approach of individual versus system error management. The results will be discussed according to the following categories:

- 5.2.3.1 The Non-Punitive Approach
- 5.2.3.2 Organisational Systems and Processes
- 5.2.3.3 Work Environment Factors
- 5.2.3.4 Educational Preparation
- 5.2.3.5 Patient and Nurse Disclosure of Errors

5.2.3.6 Patient and Nurse Error Outcomes

5.2.3.1 Non-punitive approach

Marx (2001: 4) states that “a punitive work environment which views healthcare provider’s errors as carelessness results in most organisations not being aware of the extent of their errors. This approach causes healthcare providers to only report what cannot be concealed i.e. severe errors. Thus a non-punitive work environment is the elimination of punitive error reporting systems which make it safe for employees to report errors as they occur “.

Table 4.9 presents the rationale for the non-punitive approach to error reporting and management, which demonstrates that RNs’ results exploring the non-punitive approach of the organisation were scored very low, 31%-51%. This result identifies the need to introduce the concept of non-punitive and just culture principles within the organisation.

The majority of RNs (50.8%) reported being aware of a no blame policy which makes error reporting easier, however there is no policy in the organisation confirmed on review with the Quality Management Department. What is available is the concept of error reporting not being punished.

The higher respondents were professional nurses (53%) in agreement, while an equal distribution of nurse leaders agreed and disagreed. This identifies the need for clarification of the application of non-punitive and/or no blame and the application in addressing RN performance or behaviour when discipline is needed. The concept of “blame free” in which any conduct reported would be accepted with no retribution is not acceptable in healthcare, but there is a need to balance learning from errors with the need to apply disciplinary measures (Marx, 2001: 3).

The majority of RNs (58% - 67%) identified that there is no definition of non-punitive which can be interpreted by RNs as no-one knowing about the error, applicable only to the reporting of the error and not the investigative process. There was a significant difference between nurse leaders and professional nurses’ perceptions that non-punitive is clearly defined and no one will know of the error demonstrated a higher agreement response for nurse leaders, which is in contrast to what is advocated for error management, $p= 0.035$ (Fisher’s exact test).

Errors when they occur are used as learning experiences to prevent future occurrences. This identifies a weakness of the error reporting process but may also indicate a conflict in the nurse leader’s role of how much is shared of the error process, i.e. the experience to be shared but the outcomes for the RN are kept confidential.

The low response of the non-punitive approach supports the research problem that 50% of RNs fear reporting errors as they may be blamed for the outcomes of the errors. This was supported by the high number (70%) of both groups of RNs who felt that errors are held against the nurse who makes the error or did not share their opinions. When viewed with the high positive response on documentation kept in files in the feedback responses, this is a weakness in the work environment. Trust and transparency is not seen in this work environment and this may continue to perpetrate the behaviour of not reporting errors above as RNs fear the outcomes (Denham, 2007:116)

A strength identified was the majority (68%) of RNs reported being supported during the error reporting and management process. Reporting structures of the Nursing Affairs Department, implementation of the shared decision-making structures (shared governance) and professional development for nurse leaders to become more transformational through the Magnet Recognition Program (ANCC, 2008) may be responsible for these results.

However, 30% of RNs in all nursing divisions except for Ambulatory and Paediatrics affirmed being blamed and not supported when an error was made by a nurse and not treated fairly during the error management process. The RNs of Saudi nationality felt least supported, blamed for errors and not treated fairly followed by RNs of Middle Eastern nationality, see figure 4.4. This may be due to being more secure in the work environment, new graduates, experience, but there was no significant difference between the two groups of RNs based on the Fisher's exact test completed.

There was a significant difference between nurse leaders and professional nurses' perceptions on RNs questioning practice when something does not seem right, $p=0.04$ (Fisher's exact test). Half of the professional nurses (56%) felt that they were able to advocate in this manner on behalf of the patient; however nurse leaders' (74%) responses identify this as a lack in the RNs role in clinical practice.

Factors which may be a part of this significance may be the diverse workforce, different countries of nursing education which all need to be assessed on hire; cultural approaches in dealing with challenging or potential conflict situations; fear of outcomes when challenging more senior staff/ multidisciplinary team, gender biases in Saudi Arabia which has a paternalistic approach; performance linked to continued employment based on an annual contract and to explore the understanding of autonomy in clinical practice for RNs in the nursing units as this may be one of the differences in critical thinking (Van Rooyen *et al.*, 2010: 5-7). There is neither a nursing practice act nor professional association which would

safeguard the rights of the RNs who would be the “second victim” as defined by Wu (2000: 358).

5.2.3.2 Organisational systems and processes

Mayer and Cronin (2008: 427) describe an organisational system as “an aggregation of elements which may be human and/or machine which are organized to accomplish system goals and objectives”. Healthcare organisations have recognized the need to improve patient safety and to incorporate the concepts of a culture of safety into the strategic initiatives (Mayer & Cronin, 2008: 428).

Table 4.10: Rationale for organisation systems and processes demonstrates a range of results which were both positive and negative. The strengths of the organisational systems and processes were identified by the majority of RNs (70.3%) as an effective process for error reporting and management which is unilaterally applied throughout the organisation (88.3%) for reporting of errors; organisational initiatives to prevent errors (76.2%) and a defined process of how disciplinary measures are applied when nursing errors occur (63%); identified by both professional nurses and nurse leaders.

However, a substantial number of nurse leaders (43%) did not understand the application of disciplinary measures for nursing errors which is a challenging aspect for managing RN performance. The majority of RNs (54%) were of the opinion that nurses were treated differently from other healthcare providers, which supports the research question of fear of being shamed and blamed for errors preventing nurses reporting of errors. Nurses are identified as being the “safety nets of the organisation or the last defence for the patients”, with increased risks for errors to occur than other healthcare providers (Rogers *et al.*, 2008:118). Thus, with the increased exposure and opportunity for errors, this may be the perceptions of nurses. However, based on comments provided in question 4.9, RNs have identified that other departments contribute to the errors but nurses are held accountable as they identify / catch the errors.

This was supported by the ambivalent responses of differentiating between a system or individual approach to error management, which showed that less than half of RNs (48.8%) were able to identify a system approach and an individual approach (40.5%) during error investigations. However, more than half of the RNs (60.6%) reported being aware of the investigative processes for error reporting and management, which was seen to be in doubt as almost half of RNs (58.7%) were not aware of the role of a multidisciplinary team in the investigation of errors.

Thus, the weakness of the systems and processes of the organisation are knowledge and application of the investigative processes, the implementation of an approach of a system with a balance to address nurse performance as needed.

5.2.3.3 Work environment factors

Marx (2001:3) states that “it is through the lessons of our everyday errors that we can re-design our work environment to be less error prone and more error tolerant”. The work environment can contribute positively or negatively to RNs reporting and management of errors on the nursing unit as seen in table 4.11. The strengths of the work environment were identified as nurses who make errors first meet with the manager to discuss the circumstances leading to the error (77.6%). This confirms that in the majority of cases an investigation into the error occurs and nurses are not blamed without a review of contributing factors.

The majority of RNs (68.5%) are encouraged by unit colleagues to report errors and support is received by senior nursing staff in the unit when nurses do report errors (67.2%). These factors confirm that nursing units have a supportive environment in the reporting phase of errors and objective one outcome of resources staff available in the nursing units. However, there may be nursing units which need improvement in these measures of colleague and senior staff support, as a substantial number of RNs disagreed or did not share perceptions.

The weaknesses identified in the work environment were an increased risk for errors with the majority of RNs (77%) identifying that the nursing units need improvements in decreasing risks for errors, with nurse leaders (63%) providing results with a higher response in this need, compared to professional nurses (44%). This is an important outcome for the organisational assessment of a culture of safety. Risk management is the accountability of the leaders and thus the need to include nurses' feedback in the assessment of organisational systems and processes. Respondents identified under reporting of errors, non-punitive response to errors, staffing and teamwork across hospital units were potential areas for improvement (Alahmadi, 2010: 20-21).

Teamwork across hospital units was identified as one area for improvements in safety culture review of hospitals in Saudi Arabia (Alahmadi, 2010: 20-21) This is important to the work environment as less than half of RNs (43%) feel free to report the negative behaviour of their nursing colleagues. The results show that though peers will encourage the reporting of errors, they will not hold each other accountable for practice.

Therefore, peer review which is an important aspect of reinforcement of best practices and identifying areas for improvement is viewed in a negative light. RNs are not willing to take on

accountability for peer performance and thus do not recognize the need for improvement in practice and care delivery is dependent on a team and not an individual approach.

Marx (2001:25) explains that the willingness to report errors made by peers is the second step in a move towards a reporting culture, even with the risk of being ostracized.

This view was confirmed by one RN's comment "There is also lip service to a "culture of safety" of course it's the official line the hospital claims, yet you hear on a daily basis "I am going to write on SRS on you". This is never addressed by my unit or other units from middle management and I have never seen upper management correct this. There is also difficulty with cultures as cover ups happen between nurses of the same culture, while those same nurses seek out errors of nurses from other cultures. The nurse who makes mistakes is less likely to report errors in fear of tit for tat".

There was a significant difference between professional nurses and nurse leaders to be willing to report negative behaviour of colleagues with majority of nurse leaders in agreement, while majority of professional nurses were in disagreement, $p=0.049$ (Fisher's exact test). This may be due to the job functions and responsibilities of these two groups of RNs. Nurse leaders will not be reporting a peer but a subordinate when he/she reports an error in the nursing unit as colleagues who are peers are outside of the nursing units for which they are responsible. Professional nurses will continue to work with the RN colleague who was reported which increases the risk of negative feedback in the nursing unit especially if reporting errors which peers may not have reported (Marx, 2001: 25).

Another work environment factor is providing support to patients and the families when an error is made by a nurse. However, there has been a change in the approach from shame and blame of healthcare providers to identifying the patient as the first victim and the nurse who made the error as the "second victim", who also needs support in the management of the error (Wu, 2000:726).

RNs' results show that it is not easy to support the nurse and the patient when an error is made; identified as a challenge for nurse leaders and professional nurses with a very low positive result (27%). The ability to provide support to both the patient and the nurses was identified as lacking and the high a neutral response (42%) may indicate that this concept is not known to some of the respondents.

Skills and ability of the nurse leaders need to provide this additional support. Who supports nurse leaders who may also be disciplined? Scott *et al.* (2009: 330) concluded that "*participants identified the type of peer and institutional support they received and desired*

and believed that nurse managers and peers can be trained to provide immediate and targeted support. However there is a need for an institutional surveillance and support strategies for second victims”.

5.2.3.4 Education preparation

Marx (2001:25-26) identifies the need to introduce a culture of learning as part of the just culture approach of an organisation, where errors when they occur are used to evaluate the systems with the aim of decreasing risks and repeat occurrences. Education and training in error reporting and management are important in informing healthcare providers of the aim of the systems and processes of the organisation (Marx, 2001:4).

RNs results as seen in table 4.12: Rationale for education preparation demonstrates a high positive response for four of the five questions which explored RNs responses on education. The results show that RNs generally recognize the need for and have received education with regard to the concepts of error classification, error reporting and management, the difference between an error and negligence and errors when they occur are used as learning opportunities to prevent future occurrences of errors.

Error classification as a responsibility of the nursing quality staff members received an average response from RNs (53.95%). This demonstrated that though RNs acknowledged their need to be able to classify errors, they are also aware of assistance which can be provided by experts, i.e. nursing staff assigned to the nursing quality coordinator roles. However, this may also add to confusion as to whose responsibility is it to classify errors when they occur, which reinforces the need for a multi-disciplinary review of errors when they occur to gain the perspective from all involved departments.

Though a high number of RNs (73%) agreed with receiving education on the error reporting and management, there is still a lack for a substantial number of RNs (27%) who need to be aware of the processes applicable.

The ability to differentiate between an error and negligence was scored high by the majority of RNs (72%), however when contrasted to having received education on error reporting and management the nurse leaders (47%) identified an inability to complete this function. Thus the classification of errors with this distinction is a gap in the education program.

There was a significant difference between professional nurses and nurse leaders in being able to identify the difference between an error and negligence, $p=0.03$ (Fisher's exact test). Professional nurses considered this distinction an easy task, while nurse leaders disagreed with this assessment. Thus, the nurse leader who will be involved in the process of defining

this with the multidisciplinary investigation process of an error may have the more honest perception of this need.

Negligence is defined as “*the failure to exercise the skill, care and learning expected of a reasonably prudent healthcare provider*” (Marx, 2001:6). This is an important distinction when disciplinary measures are applied for error management, thus an important area for nurse leader educational plan.

Errors when they occur are used as learning opportunities to prevent repeated occurrences which were rated high by the majority of RNs (83%). However though nurse leaders perceived this to be the approach on the nursing units, 19% of professional nurses did not experience this approach. This approach to learning from errors is advocated to decrease the shame and blame view and to increase compliance of error reporting (reporting culture) and build a learning culture (Marx, 2001:25-26; Mayer & Cronin, 2008: 430).

5.2.3.5 Patient and nurse disclosure of errors

Disclosure in errors has become an important component of the error reporting and management process which is influenced by multiple factors such as information technology readily available, a well-informed patient population, patient rights, accreditation and monitoring bodies, compliance standards and legal ramifications of outcomes (Marx, 2001:3; Mayer & Cronin: 2008: 428)

Table 4.13 presents the results of RNs responses on error disclosure which demonstrate a weakness in the approach to error management as there are no defined disclosure practices for the organisation. The results show that RNs (23%) considered informing patient and families about errors was not the practice of nurses, rated the lowest in disclosure practices.

Nurse leaders were ambivalent in their responses which may have been a reluctance to share sensitive information of the organisation or not being aware of a defined process. Groups of RNs also considered the responsibility of disclosing errors to a patient and families the responsibility of the physician; majority of RNs positive response (53%) with a higher response from nurse leaders.

This shows that RNs may not be aware of disclosure to patients if this is a responsibility of the medical team; however some of the RNs viewed disclosure of errors as a combined responsibility with the physicians. As errors normally are due to multiple factors, the approach of the team (nurse and physician) would be the approach to pursue in disclosure practices.

Nurses apologize to the patient and family for errors as they fear the consequences, saw the majority of RNs (43%) not providing their perceptions; with 34.9% RNs in agreement, with majority of nurse leaders in agreement with this practice; while the majority of professional nurses remained neutral. These results show that RNs may fear outcomes, but as most RNs were not willing to share these perceptions one can draw adequate conclusions.

Education in disclosure practices or the ability to disclose errors to patients, which includes taking accountability for actions and apologizing to the patient was seen to be lacking; the majority of RNs (64%) in disagreement or did not know. This could be a challenge with the language barrier and the use of interpreter in the work environment setting.

The nurse who made the error discusses the outcome with colleagues saw the majority of RNs (65%) in disagreement or did not know of this practice. The result is in contrast to the perceptions of RNs discussed above with high consensus to using errors as learning experiences. Thus the conclusions drawn are that there may be limitations to disclosure of confidential information for the RN who made the error, performance issues and disciplinary outcomes or due to the errors not occurring in isolation the unit may be aware of occurrence in real time, nurses do not disclose when errors occur and only share the reported errors on SRS, which can be viewed by nurse leaders, but does give an option for anonymity.

There were no significant differences between the two groups of RNs for perceptions on disclosure practices within the organisation based on Fisher's exact test completed.

Thus the results show that there is a need to address disclosure of errors for both groups of RNs in the organisation as this is a gap.

The unique environment of Saudi Arabia is an additional challenge to consider. As discussed in chapter two there are nursing structures in their infancy or have not been defined which raises the need on how to accomplish these practices in this environment. The poor nursing image which views the medical profession as superior and the language barrier may be additional stressors added to the burden of the error.

The cultural impact in Saudi Arabia which is the approach of a paternalistic access to information to safeguard female patients may not be viewed the same as other countries. Thus RNs may be challenged in the providing care to the patient and family within the cultural norms of disclosing information only to one male relative who is responsible. The language barriers and use of interpreters may not result in a resolution to disclosure of errors as may be apologizing through an interpreter who may not share all information provided (Van Rooyen *et al.*, 2010:5).

5.2.3.6 Patient and nurse error outcomes

Marx (2001:3) highlights Leape's (1999) feedback that "we punish people who make mistakes" which results in the healthcare professional only reporting the outcomes which cannot be concealed, i.e. severe error outcomes. Patients have been identified as the first victim of an error and the healthcare provider who made the error as the "second victim" (Scott *et al.*, 2009: 325).

Table 4.14 presents the results of RNs' responses on patient and nurse error outcomes, with low average positive responses (18.3% - 56.7%). It is acceptable to hold the nurse accountable for her actions and give disciplinary action when an error is made saw the majority of RNs in agreement (56.7%), but nurse leaders had a higher response. However, a substantial number of RNs (43%) were not able to identify the accountability of professional nurses and nurse leaders for care delivery and error management.

Mayer and Cronin (2008:429) are of the opinion that disciplinary action is only warranted in cases of repeated at risk behaviour following warning to correct the behaviour, and advocate the use of Reason's (1997) decision tree to determine culpability or the Just Culture Algorithm developed by Marx (2008). This component of repeated error occurrences by the same healthcare provider which warrants discipline application was not explored.

The patient outcome of an error does influence the level or severity of the disciplinary action received by the nurse was the thinking of the majority of RNs (48%) but the level of influence cannot be concluded as some RNs did not provide their perceptions. The harm score is used.

Thus, if explored the outcome of a patient which is injured because of a nursing error, the nurse who made the error is sent home.

The majority of RNs (45%) are of the opinion that a nurse will not be sent home if she is involved in a severe error outcome for the patient. However, a substantial number of RNs disagreed or did not give their perceptions. Professional nurses had higher scores than nurse leaders, though there was no significant difference between the two groups of RNs. This is a concern for clinical nurses who may have a loss of employment as an error outcome, thus the severity of errors is a factor in nurse performance.

Comments from RNs: "Sometime this process is not fairly applied as for some severe errors a nurse is not sent home, but for a less severe error may be sent home". Thus the application of disciplinary outcomes which are severe, i.e. sent home professional nurses do not understand the decision making process to arrival at these outcomes. Being sent home is

a unique aspect to Saudi Arabia, which is a termination of contract. Annual contract renewal is dependent on performance, thus nurses are aware of the risks to them personally in the loss of employment. This is a key driver for nurses to view outcomes in the sense of family commitments etc. and the reasons they are in Saudi Arabia.

An additional challenge in patient care delivery is the care of Very Important Persons (VIP) patients. The organisation receives a number of VIP patients with a unique acuity and care delivery adjustments. The majority of RNs (50.4%) were of the opinion that a nurse will not be sent home if an error is made while caring for a VIP. However, there were RNs who did not provide their perceptions which may be due to no experience with providing nursing care for a VIP patient.

Nurse leaders had a higher agreement to this question than professional nurses which may indicate experience with this negative outcome or apprehension in the outcome of errors involving VIP patients from the leadership perspective of responsibility. As explained in chapter two, the role of the nurse manager is twenty four hour accountability for patient care delivery. Thus nurse managers are held accountable for outcomes on the nursing units for which they have assigned responsibility.

This includes risk assessment and error prevention, thus nurse managers receive disciplinary action when warranted and this may be based on professional nurses' performance of error outcomes. The majority of RNs (66.1%) were not clear of the disciplinary process which may impact on the nurse leader's performance. Understanding the application of the disciplinary process for nursing errors was not clear to both professional nurses and nurse leaders (34.1%), thus there is a need to explore the components which are understood and which are not by both groups of RNs.

This challenge was supported by the question exploring whether nurses who made errors are always disciplined, which showed an ambivalent response from RNs, in agreement, disagreement and no perceptions shared.

There was no significant difference between the two groups of RNs for the questions exploring opinions on patient and nurse outcomes based on Fisher's exact test completed. The results show that there is a need to review the principles of discipline applied by the organisation when a nurse makes an error and how this is supported by a culture of learning as advocated by the just culture approach (Marx, 2001:3).

5.2.3.7 Errors experienced

Section four of the questionnaire explored RNs responses after being involved with an error to gain a deeper understanding of nurse outcomes with errors, and could thus provide feedback from the unique experience within the organisation.

5.2.3.7.1 Error involvement: Job title

RNs directly involved with nursing errors (32%), which was highest for nurse leaders (58%) than professional nurses (27%). Thus for professional nurses this would be in the role of nurse making the error, nurse completing a check or the charge nurse. Professional nurses were indirectly involved with nursing errors (30.8%) and no error involvement (32.38%), thus for the majority of professional nurses reported from error experience not as nurses who experienced the emotional outcomes of errors.

The nurse leaders would have higher incidence of direct involvement as would need to be aware of all errors on the nursing unit, however in contrast a number of nurse leaders (15.79%) reported no involvement with errors, but errors were reported on all units. Thus this is a gap in nurse leader's awareness of errors occurring in nursing units.

Not wanting to disclose information on error involvement was a choice for some RNs (11%) which included both groups of RNs. This option was placed on the questionnaire based on feedback from the pilot study and the sensitive nature of the topic but may also be due to fear of outcomes.

There was significant difference between professional nurses' and nurse leaders' indication of error involvement and job title, $p= 0.046$ (Fisher's exact test).

The expectation of results was that professional nurses would experience more errors in having direct contact with patients, thus higher risk and nurse leaders are mostly aware of errors reported so would those who have less experience, but these results indicate a difference.

5.2.3.7.2 Error involvement: Nationality

Table 4.15 presents the results of error involvement by nationality, which shows that Indian RNs (63%) had the highest frequency, followed by Middle Eastern RNs (50%) and Saudi RNs (40%). Other nationalities were in a lower range than these results. Western and Saudi nurses were willing to share information, but all other nationalities have RNs who were not willing to disclose information, see table 4.15.

There was no significant difference between error involvement and RN nationality based on the Fisher's exact test completed.

5.2.3.7.3 *Error involvement: Nursing specialty*

Table 4.16 presents the results of RN involvement with errors by nursing specialty. The Paediatrics Nursing Division results were highest for involved with errors (54%), followed by Critical Care Nursing Division (42%), with other nursing divisions with a lesser range in percentage. The Ambulatory Nursing Division had the highest response for no involvement with errors (46%), followed by the Adult Nursing Division (37%).

However, regression analysis results showed that the Adult Nursing Division to be more negative than other nursing divisions for error reporting and management; $p=0.036$, see table 4.23.

5.2.3.7.4 *Capacity in which involved with errors*

The RNs involved in errors may be in different job functions or titles based on assigned tasks, functions and job descriptions. Thus the need to indicate in which capacity the RNs experienced the errors was important, as this may provide differing views of the experience of error management. A high number of RNS were excluded for this question as they did not complete the question (N=98/131). However, in the comments, question 4.9, n=14 RNs identified "no involvement with errors due to low nursing unit census, no major errors only miscommunication, never involved and cannot comment on rumours". This does account for a RN response rate of 85% for this question.

Table 4.17 presents the results which show that the charge nurse (28%); nurse making the error (20%) and colleague (19%) were the roles which professional nurses identified when involved in an error, however nurse leaders identified case review/ investigative process (38%) as the highest result. There was significant difference between the two groups of RNs, $p < 0.001$ (Fisher's exact test). The results show that RNs assumed different job functions/roles when involved in error reporting and management and could thus provide valid feedback on the perceptions of nursing errors experiences.

5.2.3.7.5 *Examples of errors experienced*

RNs reported errors involved with examples which were similar to question 2.5 examples. RNs identified N=195 examples of errors involved in, the majority were in the role of professional nurses (76%). This is in contrast to error involvement by job title above with nurse leaders indicating more errors. Thus one can conclude that professional nurses do not report all errors as they occur. The number and type of errors involved with reported by RNs was confirmed in table 4.5 which displays similar examples of errors reported.

5.2.3.7.6 *Error classification: Harm score*

Figure 4.6 presents the classification of errors experienced by RNs according to the PSA (2004). The results show that the majority of RNs experienced Classification 2: Error/No harm, did not reach the patient (44%), C Classification 3: Error/No harm, reached the patient (32%). Errors with harm, classification of no sentinel event (7%) and sentinel event (4%) and no classification (12%) were experienced by a minimal number of RNs.

Sentinel events were experienced by RNs in the Adult, Maternal /Child and Paediatrics nursing divisions. The Adult Division of Nursing negative results on regression analysis may be attributed to this number of severe errors outcomes as a contributing factor.

5.2.3.7.7 *Fair management of the error*

Mayer and Cronin (2008: 429) define fairness as “human actions which are judged fairly and viewed first within the complexity of the system factors” which may impact on the actions. There was a significant difference between the two groups of RNs and the perception of fair management of the error; $p=0.0407$ (Fisher`s exact test).

The majority of RNs (66%) agreed that nursing errors experienced were managed fairly, with nurse leaders highly agreeing (88%) and professional nurses just above half of RNs (57%). Thus, nurse leaders who manage the errors view their actions as fair, however only half of the RNs at the point of care and who experience the errors agree with this perception.

However, a substantial number of professional nurses did not know if errors were treated fairly (34%) and a minimal number disagreed (6%). A minimal number of nurse leaders equally disagreed and did not know (6%) if errors were treated fairly. A reason given by RN for views on fair management of nursing errors was the need for the investigative process to include a review of all contributing factors. This is supported by questions which explored the knowledge of investigative process, which identified a need for further education.

The nurse who made the error received fair treatment saw similar results as the fair treatment of an error, however there was no significance between the two groups of RNs, $p=0.065$ (Fisher`s exact test).

Figure 4.8 presents the frequency results of fair treatment received by the nurse who made the error, and the results show that majority of RNs (60%) agreed that the nurse had received fair treatment. However, nurse leaders highly agreed (82%), while approximately half of professional nurses agreed (52%), with 37% did not know and 12% in disagreement. RNs provided comments which are identified in chapter four.

These results on fair management of errors and nurses highlight the role of the nurse leaders and the need to be consistent in the approach to the management of errors.

Thus when viewed with question of nurse managers objectiveness in error management (Objective Four; Error Management) there was significant association to a positive score on patient safety, see objective four below.

5.2.3.7.8 The outcomes of the error/s for the nurse, clinical nurse coordinator, nurse manager.

Views on disciplinary actions by Marx (2001) and Mayer & Cronin (2008) are provided above. RNs identified a total of $n=327$ outcomes of errors, with the majority (78%) identified by professional nurses and nurse leaders (22%). The outcomes for RNs were categorized into educational needs, disciplinary actions and severe outcomes.

There was no significant difference between the two groups of RNs and the identified error outcomes, $p=0.2188$ (Fisher's exact test).

5.2.3.7.8.1 Educational outcomes of errors

Figure 4.9 presents the results of RNs who identified no changes or educational outcomes for errors involved in, with a minimal number of professional nurses only (7%) identified did not know outcomes nor had no changes for the nurse. The majority of RNs (39%) identified education and/or competence review as the error outcome, which was equally distributed for both groups of RNs. The nursing speciality with the majority of RNs (25%) which identified this outcome was the Procedure Nursing Division.

Developmental plan which is defined to address nurse performance in areas identified for improvement was indicated as an outcome by 28% RNs with the majority of RNs (17%) in the Adult Nursing Division indicating this error outcome.

5.2.3.7.8.2 Disciplinary outcomes of errors

Figure 4.10 presents disciplinary outcomes for nursing errors, which ranged from counselling to final written warning. The majority of RNs (64%), equal distribution for nurse leaders and professional nurses identified counselling as the error outcome for the nurse. The RNs response showed a decrease in frequency as the disciplinary severity increased. Professional nurses (6%) only reported a third written warning as an outcomes for errors.

These outcomes demonstrate that the majority of RNs seem to be aware of the potential for errors once counselling received; there is a progression of discipline applied for report error

occurrences for the same nurses an almost equal number of RNs received a final written warning and a third written warning.

According to the Employee Relations Manual (ERM, KFSH&RC-J), there is a difference between the degrees of severity for these two disciplinary measures. A third written warning is followed by one of the more severe outcomes of an error discussed below, while a final written warning may progress to a repeated offender being terminated. It is interesting that professional nurses are aware of final written warnings and none of the nurse leaders have this outcome.

5.2.3.7.8.3 Severe disciplinary errors outcomes

Figure 4.11 presents the severe disciplinary outcomes for nursing errors, with the majority of RNs (76%) identified “other” outcomes than listed which were number of occurrences, near miss including multidisciplinary involvement, not applicable and policy review.

Professional nurses had equal distribution of frequency (13%) for suspension; demotion and dismissal, however nurse leaders’ frequency responses were higher for all outcomes, see figure 4.11. Termination were identified by professional nurses (25%) but higher scored by nurse leaders (33%).

The critical care division reported the majority of severe outcomes for nursing errors (n=9). The work environment of the critical care nursing units is recognized as being stressful, with increased opportunity for errors which may result in morbidity and mortality if errors reach the patient (Tang *et al.*, 2007:457)

RNs of Middle Eastern nationality experienced the highest number of severe outcomes for nursing errors (n=5) which included suspension, dismissal and termination. The RNs in this nationality group were identified in the linear regression results to be more negative to error reporting and management than the rest of the respondents, $p= 0.044$.

5.2.3.7.9 After the error had been reported, the nursed involved expressed what she felt: Table 4.18 presents the RNs expressions of how they felt after the error was managed, with significant difference between the two groups of RNs and their expressed feelings after an error, $p= 0.12$ (Chi-Square test). A fair number of RNs (20%) expressed not knowing about the feelings of the nurses after an error was experienced and not applicable was identified in the category of other (3%).

The majority of RNs expressed positive feelings with the outcomes of their experience of reporting and the management of the error. The majority of RNs (35%) identified feeling good

about reporting the error, with higher numbers of professional nurses (36%) than nurse leaders (26%). The results were equally distributed in nursing divisions and across all nationalities.

An equal number of RNs (27%) identified feeling good, the patient received the care needed and understood and agreed with the disciplinary process; with the ambulatory and adult nursing divisions with the highest agreement. The number of professional nurses was higher than nurse leaders. An equal number of RNs (21%) expressed feeling better and could receive support and needed to receive education and training, with the number of professional nurses higher than nurse managers. The Maternal/Child and Paediatrics nursing divisions were the highest responders. RNs (8%) expressed feeling relieved that no longer keeping a secret, which was distributed within all nursing divisions except for Paediatrics and Ambulatory.

A higher number of nurse leaders (26%) than professional nurses (7%) expressed feeling not supported and blamed. This identifies that nurse leaders who are responsible for providing the supportive environment to staff express this outcome.

This may be due to nurse leaders also receiving discipline or recognize that there is a lack in providing a supportive environment without assigning blame.

In contrast, professional nurses (20%) were a higher number than nurse leaders (11%) who expressed that were supported and could work through the error event and professional nurses (7%) and nurse leaders (5%) expressed feeling not treated fairly. These results support the research problem of fearing outcomes for errors and thus will not report these occurrences.

Trust for senior leadership (12%) and colleagues (14%) were seen to be lacking as a minimal number of RNs expressed trust and will continue to report errors. Saudi and Indian RNs were the higher responders for trust in the team, while South African and Filipino RNs were lower responders.

Professional nurses only (n=3) expressed being a bad nurse, not able to trust self with patient care; while both professional nurses (13%) and nurse leaders (32%) expressed feeling devastated that could have made this error. The results show a very high response for error outcomes for nurse leaders who are not assigned to clinical practice. There is a need to clarify if these would be professional nurses expressions to the nurse managers or personal error experience.

RNs from both groups have identified both positive and negative experiences in error management and outcomes which identify a need to improve the response of colleagues and nurse leaders when errors are made and the change to supportive work environment.

5.2.3.7.10 Comments shared about experiences with errors and error management

RNs shared comments which confirmed findings of the study and are described in chapter four.

5.2.4 Objective four of the study was to explore the factors impacting on the management of nursing errors.

There are numerous factors which can impact on the reporting and management of nursing errors. The factors discussed below are demographical/biological factors and section 3.2 of the questionnaire.

5.2.4.1 Demographical/biographical factors

Demographical factors of the sample which were found to be significant were:

5.2.4.1.1 Gender

There were significantly more male than female nurse leaders, $p= 0.0031$ (chi-square test). This is significant in a culture which is perceived to be paternalistic and the preference for males in communication with the multidisciplinary team. However, this can be a contributing factor to error reporting and management as female nurses may not be comfortable in reporting errors made. Response to errors may differ between male and female leaders, with females being more approachable and males more aggressive as seen in the paternalistic approach of the health environment in Saudi Arabia (Van Rooyen *et al.*, 2010:5).

Gender restrictions may negatively impact the management of errors with not wanting confusion between performance and cultural restrictions. Safeguards may be the addition of another leader to the discussion, but this may negatively impact counselling as seen as two leaders in discussion with one nurse.

Regression analysis was completed to identify a correlation between section 3.1, section 3.2 questions average positive response and the participants' biographical data. The results presented in table 4.23 show that there were significant differences for two factors which were nationality and nursing specialty.

5.2.4.1.2 Nationality

Middle Eastern Nationality was found to be significant, $p=0.044$ in that there were more negative in the average positive responses than the other respondents. Middle Eastern RNs

were identified to have more experience with severe error outcomes of suspension, dismissal and termination and this may have impacted on these perceptions.

5.2.4.1.3 *Nursing speciality*

The Adult Division of Nursing was found to be significant, $p=0.036$. The Adult Nursing Division reported the most errors experienced, thus as may not have severe outcomes but may have more experience with errors and thus a work environment of increased risk.

5.2.4.2 **Defined factors in Section 3.2**

5.2.4.2.1 *Error reporting and feedback*

Table 4.19 presents the results of the error reporting and feedback factors which showed that the majority of RNs confirmed understanding the process of error reporting (72%) and the use of documentation required (73%), but there is room for improvement as a substantial number of RNs still do not understand the error reporting process. However, the majority of RNs (59%) identified a gap in the feedback process with regard to errors reported.

Linear regression results found that a positive average score is associated with understanding the process of error reporting and management ($p=0.001$); knowing the documentation process for error reporting and management ($p=0.026$) and receiving feedback about errors ($p<0.001$).

5.2.4.2.2 *Error management*

Table 4.20 presents the results which show the majority of RNs (74%) agreed that the delay in knowing the results of an error investigation leads to anxiety. Thus the supportive environment for RNs is important to assist in this, decrease the risk for more errors from an anxious or insecure nurse.

The majority of RNs (49%) were not able to conclude if the time taken to investigate an error is too long; with a substantial number in agreement (31.4%). RN understanding of the disciplinary process was seen to be a factor in error management with half of the RNs (52%) expressing understanding, while 48% in disagreement or did not know. The majority of RNs (60%) were of the opinion that disciplinary action given is not based on manager liking of the nurse or not; however a substantial number of professional nurses (13%) agreed with this perception.

Thus there is a need for an understanding of the disciplinary processes for all RNs. A positive score on patient safety is associated with an objective error management approach by the nurse manager, as shown by linear regression, $p=0.002$.

This perception by professional nurses may be due to a lack of consistency with the application of disciplinary measures, which shows that RNs are of the opinion that nurses are treated differently to other healthcare providers. Consistency in approach to discipline is advocated by Marx (2001:10) which would assist in nurses understanding of the application of the process, implementation and outcomes or review on feedback. Nurse Managers may not understand the application of discipline as seen in objective three, thus were unclear on understanding of process.

5.2.4.2.3 *Educational factors*

South African RNs employed in Saudi Arabia identified factors which included computer literacy, language and cultural factors as challenges in their work environment (Van Rooyen *et al.*, 2010:7).

Table 4.21 presents the results on education factors explored which show that the majority of RNs (81%) were computer literate and thus had no barrier to using the error reporting system so not challenged by this factor. However, RNs (19%) did identify this factor as a challenge and this impacted on their ability to report errors.

The language as a barrier with the patients makes it difficult to disclose and apologize for errors was identified as a challenge by a minimal number of RNs (27%), however there was a high neutral response and RNs may be aware of the assistance which is available to them in the form of colleagues who speak Arabic and interpreters, thus are able to meet this need. Linear regression results demonstrated a significant negative association with the average positive results of patient safety, $p= 0.025$.

The majority of RNs (70%) were not challenged by the cultural restrictions applicable to the patients on the nursing unit, which may be due to the education and training which has been introduced in the understanding of the needs of the Arabic patient in the Crescent of Care Model (Lovering, 2008). However a substantial number of RNs did not provide their perception which may indicate a need for some nurses.

5.2.4.2.4 *The work environment*

Table 4.22 presents the results of work environment factors which may impact on error management. The results show that the majority of RNs (45%) did not see the nursing unit as very busy which makes it easy to make errors. However, a substantial number of RNs did identify this as a factor for their nursing units (22%).

The majority of RNs (37%) agreed that the nursing staff work many overtime shifts and this makes it easy to make errors, however there were almost equal numbers who did not

provide perceptions or disagreed. Nurse leaders' results showed RNs (42%) agreed and (37%) disagreement. This demonstrates that there are some nurse leaders who are satisfied with the number of staff to complete nursing tasks, however there are nurse leaders who have concerns with the number of shifts worked by RNs to meet the needs of the patients and still provide safe healthcare. Studies have shown that increased number of shifts and the length of shifts do predispose nurses to a higher risk for errors (Aiken *et al.*, 2008: 229; Kelly *et al.*, 2011: 228).

5.2.4.2.5 *Linear regression results of factors (Section 3.2)*

Table 4.23 presents the significant linear regression results, which imply that question 3.2.1, 3.2.3, 3.2.5, 3.2.9, 3.2.10, and 3.2.13 are significantly related with the average positive response. This suggests that a positive score on the patient safety is associated with understanding the process for error reporting and management (3.2.1 & 3.2.3), receiving feedback about made errors (3.2.5), an objective error management by the manager (3.2.9), and negatively associated with a language barrier (3.2.10) and working overtime shifts (3.2.13).

The above discussion demonstrates that some components of a just culture are evident in the reporting and management of nursing errors. However, the organisation still has work to do to accomplish full implementation of a just culture.

5.3 LIMITATIONS OF THE STUDY

Limitations of a study are defined as “restrictions in a study that may decrease the credibility and generalizability of the findings. Methodological limitations can limit the credibility of the findings and restrict the population to which the findings can be generalized. Methodological limitations result from factors such as an unrepresentative sample, weak design, single setting, limited control over treatment implemented, instruments with limited reliability and validity, limited control over data collection and improper use of statistical analysis” (Burns & Grove, 2007: 37-38).

The following were regarded as limitations within this study:

5.3.1 The research environment

A limitation of the study was only one healthcare organisation was used as the location of the study, which was a tertiary institution with a reputation for well developed systems and processes within the Kingdom of Saudi Arabia. Thus, the study outcomes cannot be generalized to the general population of registered nurses in Saudi Arabia. Generalization is

defined as the extent of the implications of the research findings from the sample to a larger population (Burns & Grove, 2007: 37).

The research setting was King Faisal Specialist Hospital and Research Center (General Organisation) – Jeddah (KFSH&RC-J); a 350 bed capacity which provides tertiary care to the patient population in the western region of Saudi Arabia and has specialties in cardiology, paediatrics, oncology and neuroscience.

5.3.2 The instrument

The instrument used was self report, i.e. a questionnaire which included open- and closed-ended questions. The limitations of questionnaires are identified as “response rates which are generally lower than that of other self reports; if the response rate is below 50%, the representativeness of the sample is seriously in question. The respondents generally fail to mark responses to all questions, especially if form is long. The incomplete nature of data can threaten the validity of the instrument” (Burns & Grove, 2007: 382)

5.3.2.1 Self reporting

The questionnaire was a self-report on a sensitive topic thus the self reporting style of the questionnaire though safer for participant in approach may not have been ideal in gaining honest feedback. This may affect the conclusions drawn from the results. Neither would a qualitative approach have been ideal because of the sensitivity of the study therefore, the best option was to engage in self reporting without fear.

5.3.2.2 Length

The questionnaire was more than eight pages long; this may have led to the number of RNs who did not complete the entire question, as seen in the last section (four) of the results; see chapter four. However, all questions had more than 50% response rate on returns as seen in chapter four.

5.3.2.3 Layout

The layout of the questionnaire may have led to some confusion as some questions may have seemed to be similar. The questionnaire could have accomplished more with clarity of some of the questions.

5.3.3 Response rate of participants

The returns rate for nurse leaders was below 50% which according to Burns and Grove (2007: 382) is a problem with questionnaires in comparison to other self reporting methods and does question the representativeness of the sample. However, to compensate for this

lack, the nurse leaders group of RNs was created of the nurse managers and clinical nurse coordinators, but was still below 50% response rate.

5.4 STUDY CONCLUSIONS

Describe the conclusions derived from the study, including goals and objectives reached, research questions answered/ hypothesis accepted or rejected

The just culture approach to keeping patients safe from medical errors is designed to promote a safety culture within healthcare organisations as errors continue to occur. Errors cannot be addressed and prevented unless the extent of the problem is known (Botwinick *et al.*, 2006:1).

The research problem was that registered nurses feared error outcomes of being shamed and blamed and thus would not report errors. The conclusions are discussed based on the goals of the study; the research problem identified and the conceptual framework. The conceptual framework in chapter two presented the importance of the accountabilities for the three roles within the organisation to partner together to achieve patient care with minimal error risk as errors will continue to occur, i.e. executives, nurse managers and professional nurses (direct care).

5.4.1 The decision for just culture implementation

The implementation of the just culture principles are an organisational leadership decision and require these leaders to set the mission, vision and values of a safety culture within healthcare. Kohn *et al.* (2000: 6-14) and Marx (2001: 25-27) recommend that executive support and understanding of the systems, processes, work decision and relationships required to implement and sustain a safety culture present with excellent patient and staff outcomes.

Volgelmeier, Scott-Cawiezell and Miller (2010) studied the influence of just culture training on leadership's perceptions of their patient safety culture and how this aligned with direct care staff views. The study included 52/63 healthcare organisations to collaborate in a statewide approach "Missouri Just Culture Collaborative". Additionally, four regulatory boards, including the state board of nursing schools and association participated in study.

The aim of the study was to assist leaders to identify and manage systems and human issues that led to errors in organisations which included providing expert training to all leaders. The emphasis of the training is shared accountability between leaders and direct care staff. The intensity of engagement of staff with priority for executives, and greatest

engagement included on-site training for direct care staff, which was the choice for 17/52 organisations.

Leaders from the participating organisations completed a questionnaire which provided feedback on three measures, i.e. error reporting, leadership response and feedback to error, measuring the changes of post training. Findings showed differences between the least and most engaged leaders, with the most engaged organisation leaders' scores being closer to direct care nurses' responses than the least engaged organisations. These leaders were also able to realistically identify the barriers to a safely culture, with recognition of fear and the effect on error reporting. These results suggest that the more engaged leaders may have gained a better understanding of the true challenges for direct care staff, opposed to less engaged leaders who were not facing the true problem of safety culture challenges. (Volgelmeier *et al.*, 2010: 293).

The study results identified that there are benefits to implementing the just culture approach to error reporting and management within KFSH&RC-J organisation. This approach may address the gaps identified through this study discussed below and improve error reporting to evaluate the extent of the problem for the organisation and lead to a decreased risk for patients. The implementation of the just culture approach to error reporting and management is recommended.

5.4.2 Safety champion, nurse executive

The study results showed the importance of the commitment of the nurse executive to safety as seen in the results of high significance for the chief and assistant chief as resources available to the nursing units. This was reinforced on regression analysis, with the Chief, Nursing Affairs the highest nurse leader in the organisation being identified by both middle managers and direct care RNs as being available as a resource in error reporting and management. Studies support this view of the nurse executive as a champion for safety (Botwinick *et al.*, 2006:1).

Volgelmeier *et al.*, (2010:293) reported increased opportunity for open communication between leaders and direct care staff, which resulted in improvements seen in closing the perception gap between leaders and direct care staff on safety culture, seen in minimizing a culture of blame where system factors are addressed, open communication of error events led to an shared understanding of the true challenges for safety culture in the organisation.

It is recommended that the nurse executive continues to role model the transformational characteristics of accessible, visible and supportive leader to middle managers and direct care RNs (ANCC, 2008).

5.4.3 Evaluation of the systems and processes for error reporting and management

The study has shown that the organisation has an effective reporting system, but there is reluctance to report errors due to a knowledge deficient in identification of errors, fear of the outcome, being shamed and blamed, reaction of the manger, reaction of peers and not knowing the policy of non-punitive error reporting. This has led to a problem of under reporting of errors in nursing. These perceptions of the RNs support the research problem that RNs will not report errors as they fear the outcomes, thus this question is accepted.

Goal one of the study has demonstrated a gap in identifying the nursing related errors which occur in the units which are affected by under reporting. Goal two was to identify the current process of error reporting in nursing. These two goals are connected as impact each other and thus are discussed together.

The full implementations of the Just Culture principles within the organisation which will address the gaps discussed below are recommended.

5.4.4 Education programs in error reporting, classification; disclosure and management

The study found that the organisation does not provide continuous education programmes geared towards awareness of safety and prevention of risks. This includes error reporting, error management, performance expectation, disclosure of errors and support of the second victim. The recommendation would be to introduce the Just Culture approach which would include education and training and should be available for all employees especially direct care providers.

Volgelmeier *et al.* (2010: 293) reported improvements in the healthcare facilities which chose the fully engaged approach to just culture education. The education was provided on-site and evaluation of the organisation systems and processes as needed. Education was provided to all employees not limited to leaders only.

5.4.5 Error classification, identification and reporting

A just culture promotes a reporting culture, which promotes a non-punitive environment to assess the efficiency and effectiveness of the systems and processes of the organisation. RNs identified the strengths of the error reporting process which was easy to use and an on-line system. The first step to error prevention is to identify the extent of the problem, thus to promote a reporting culture (Marx, 2001:3).

Nurse Managers are responsible to improve the systems and processes at nursing unit level and advocate on behalf of the professional nurses as needed, see conceptual framework,

chapter two. This study found that there was significant difference between professional nurse and nurse leader's classification of errors according to the harm score. Either RNs classify the same errors differently or report different errors. This study found that RNs report errors of all classifications based on a harm score and not only the most severe as suggested by literature (Marx, 2001:4).

Professional nurses mostly report Classification 3: Error/No Harm, reached the patient, while leaders report all classifications. Studies have been mixed in their reporting of errors of various classifications. Hobgood *et al.*, (2005) used a modified Delphi process to classify medical errors common to the emergency department. Classified case errors were divided into three categories to create taxonomy of errors; utilizing expert panellists; 95% of who completed the rounds. The panellists were able to agree on classifications with none classified as no error and the cognitive errors required the most review sessions. Hobgood *et al.* (2005: 144) concluded that the classification of errors is a challenge, but is possible.

This study found that RNs were able to identify an error and when to report, but were unable to differentiate between an error and a near miss, with significant difference between nurse leaders and direct care nurses. Chard (2010: 143) found that RNs were able to distinguish between a near miss (almost events) and that these were reported in a preoperative setting. This is the first step to error prevention, and needs to be prioritized for professional nurse education.

However, Almutary and Lewis (2012: 122-123) found that knowledge deficiency did not impact on error reporting and proposed that MAE are not accurately reported in Saud Arabia. This study is in agreement as an equal number of RNs agreed and disagreed that errors are always reported. In agreement with Almutary and Lewis (2012: 123) this study found that nurses recognize the benefits to reporting, reduces risks in the workplace and the on-line reporting process was easy.

Barriers identified by this study preventing error reporting were a shame and blame culture, fear of the error outcome and the reaction of peers. These findings are supported by Almutary and Lewis (2012: 125) in concerns for the error outcomes and being shamed and blamed by nurse managers. However, the third barrier identified differed, which was fear of the reaction of peers in the nursing unit and there were no significant differences for level of education affecting frequency of error reporting, which was in agreement with Mayo and Duncan (2004: 216).

The factors identified from this study which impacted on error reporting and management were outcomes and disclosure of errors; the Adult Nursing Division was slightly more

negative than other respondents, but did experience the most errors; gender may impact error reporting and management as had a significantly higher number of male nurse leaders; leadership approach influences error reporting, management and outcomes and the application of disciplinary measures are not clearly understood and this can lead to confusion for professional nurses, as well as nurse leaders in the application process.

Therefore it is recommended that RNs receive education on error classification, identification and the purpose of near miss reporting.

Chapter one presented the challenges of error identification and no agreement on the definitions of errors. Thus, a future research topic for study may be to identify taxonomy of errors for Saudi Arabia. This may be of benefit to exclude the assumptions that errors may be different due to the cultural influences or may be the same as elsewhere in the world.

5.4.6 Non-punitive error reporting

The study identified the on-line error reporting system was strength in being effective, easy to use and applicable throughout the hospital. There are safety initiatives being introduced throughout the organisation which are known to all levels of RNs. However, underreporting of errors was a problem.

RNs feared the outcomes of errors and thus there is under reporting of errors. This supports the research problem that RNs will not report errors as they fear the outcomes, thus this question is accepted. Studies have shown that under reporting will continue to be a problem if the culture of the nursing unit and organisation does not change from a individual focus, i.e. shame, blame and abandonment with discipline used as a punishment tool to a balanced approach of just, open and fair culture (Mayo & Duncan 2004: 215-216; Almutary & Lewis, 2012:126).

The areas for improvement demonstrated by low scores were lack of understanding of non-punitive approach to error reporting, errors are not used as learning to prevent reoccurrence, confusion about a no blame policy being applicable in the organisation, which may suggest that RNs are not willing to be held accountable for their behaviours, fear, shame, blame for outcomes of errors and errors are held against the nurse who reports.

A study by Almutary and Lewis (2012) in Saudi Arabia, reported on RNs willingness to report Medication Adverse Events (MAE) using a convenient sample of RNs N=62, which was reduced to 39/62 as the other RNs experienced no barriers to reporting. The RNS believed that they should report MAE as they occur, but identified the barriers to reporting were concerns about outcomes of reporting and legal action and four aspects related to the nurse

administration contributed to RN unwillingness to report MAE. Regression analysis showed that higher education was associated with fewer MAE and associated with greater frequency of reporting MAEs. However, the small sample size limited the data analysis plan and thus results are viewed with caution (Almutary & Lewis; 2012: 121-125).

Alahmadi (2010: 20-21) assessed the safety culture of 13 hospitals in Saudi Arabia, with a 47% response rate (1224/2580) support the findings of this study in identifying underreporting of errors, improvements needed in a non-punitive approach to error reporting and the role of the manager in promoting a reporting culture.

In contrast, Chiang and Pepper (2006: 396-398) studied the barriers to MAEs reporting, with a sample of 597/807 nurses in one hospital in Taiwan. Chiang and Pepper (2006:395) identified the availability of the quality management department as an expert providing assistance in MAE reporting, while this study found high significance for resource staff who were charge nurses, colleagues, clinical nurse coordinator and nurse manager available for professional nurses. Nurse leaders identified their immediate supervisor and the nursing quality department as their resources. These resources were identified for both errors reported and errors experienced.

The two top barriers to error reported identified by Chiang and Pepper (2006: 396) were fear and administrative barriers, while Mayo and Duncan (2004: 214) identified fear of nurse manager and co-worker reaction and error not serious enough for reporting as top barriers. But the majority of nurses did not fear disciplinary action (loss of job) due to making and error, which are similar to the findings of this study. Additional factors identified for this study were language barriers, the Middle Eastern nationality and the Adult Nursing Division RNs were more negative in their perceptions to error reporting and management.

Mayo and Duncan (2004:214) identified that only 45.6% of drug errors are reported to the nurse manager, using the incident report. This study is different in that the reporting system is computerised and nurse managers received automatic follow up or notification but there is still a gap in nurse manager awareness of all errors which occurred on the unit due to under reporting.

Under reporting is prevalent and is due to fear, shame and blame and error consequences similar to the above two studies. Volgelmeier *et al.* (2010: 293) recommend bridging the safety perception gap between a nurse leader's awareness of errors and professional nurses through combined education sessions for professional nurses and nurse leaders to encourage partnerships in error prevention and change management.

The study results identified a lack of understanding of the non-punitive approach to error reporting. A policy for the non-punitive approach to error reporting needs to be defined for the organisation. This will assist RNs in their understanding of how this approach is applicable in error reporting. A non-punitive approach is needed to address the underreporting of errors, for both nurse leaders and direct care nurses.

5.4.7 Supportive work environment

A supportive (healthy) work environment has been identified in chapter two by Schmalenberg and Kramer (2008). Safety is a shared accountability between the nurse manager and the professional nurse and thus this partnership is seen in the combined effects of reporting by professional nurse and nurse manager who advocates improving systems and processes as needed.

The work environment for reporting was seen to be supportive with resources available to encourage reporting; there were highly significant differences between the nurse leaders and the professional nurses. This showed that both groups of RN have a supportive environment in terms of resources, expertise and guidance to report and manage errors.

RNs identified receiving support during the reporting and management of an error which may be due to the introduction of empowerment structures, e.g. unit councils which are part of the Magnet journey (ANCC, 2008).

Studies conducted by Kelly *et al.* (2011: 432) and Aiken *et al.* (2008: 228-229) described a supportive environment to be organisations which are Magnet accredited, which demonstrate better nurse to patient ratios, less likely to experience burnout, highly satisfied with their nursing job and are more highly educated, investments in staff development and nurse managers supervisory abilities and good multidisciplinary relationships have better nurse and patient outcomes.

Saudi RNs followed by Middle Eastern RNs affirmed being the least supported, blamed for errors and not treated fairly, but no significance was found between the different nationalities and error reporting or management. This may be a topic for future research, as it is difficult to quantify concepts such as fair, just, open communication and supported as there may be personal needs which are not met and thus not supported.

Future studies of whether RNs of various nationalities interpret the concepts in error reporting and management differently or the same are recommended.

It is recommended that the organisation introduces the just culture concepts of fair, open and just approach to nursing errors. There is a need to build trust and transparency to improve the approach to error reporting. As a high number of the RNs were nurse leaders, this may be an executive led initiative to promote a supportive, trusting and transparent environment for nurse leaders, as well as leadership developmental programmes to assist nurse leaders in meeting the needs of the professional nurses.

5.4.8 Nursing units with highest risks for errors

The most errors were reported in the Adult and Critical Care Nursing units. Studies have shown that these units are at greater risk for errors (Tang *et al.*, 2007:447-457). In this study, the Critical Care Nursing units also experienced the most severe outcomes of disciplinary action for errors.

Anooseh, Ahmadi, Faghihzadeh and Vaismoradi (2008:292) found that due to stressors experienced in the high risk environment of the Intensive Care Unit, Cardiac Intensive Care unit and Haemodialysis units a qualified competent manager is needed for each of these units.

Results of the Adult Nursing Division were also more negative in their perceptions of error reporting and management. The study results showed nurses were working more overtime shifts which increased the potential for errors on some nursing units.

This raises the question if results were due to more errors being reported and thus a more realistic picture of errors in the organisation or do these units face more challenges in patient acuity, staff shortage, and management and peer reactions to errors and need support and improvements. Studies report that the quality of care is affected by workload, length of on-duty hours and overtime shifts which increase the risks for errors (Aiken *et al.*, 2008:228-229; Anoosh *et al.*, 2008:294).

This study results demonstrated both groups of RNs, agreed that the organisation is addressing patient and employee safety through initiatives which are known to employees but RNs, mostly nurse leaders identified the need to improve the unit level risk for errors. This is an important outcome for executive leadership to further investigate. This is a shared perspective with the professional nurses which indicate a truer reflection of the risks and potential risks within the work environment.

Recommended are future studies to measure the impact of introducing just culture principles within these nursing units.

5.4.9 Peer feedback and response to errors

The study results show that peer review in the form of reporting a colleague's negative behaviour was lacking as professional nurses were not willing to report colleagues which was in agreement with study by Chiang and Pepper (2006:397). Chiang and Pepper (2006:395-396) explored the perceived barriers to MAE reporting and the relationship between the barriers and culturally relevant factors. Findings support those of this study which found that a reporting and learning culture are dependent on the nurse manager and collegial/peer support provided, not only during the reporting of an error but also during the phases of coping with having made an error.

Chiang and Pepper (2006: 393) found significant correlations between perceived barriers to reporting; power hierarchy and face saving, which may be a future research topic for the Saudi Arabian multicultural environment. Peer feedback may be the norm in western individualistic cultures, however in collectivist cultures it may not be an acceptable norm as the group dynamic needs to be preserved and saving face may add another dimension to this concept (Chiang & Pepper, 2006: 393).

Studies are in agreement that these two factors affect error reporting negatively or positively dependent on the reaction of managers and peers to errors when they occur (Mayo & Duncan, 2004:214). Education and training for all employees in the just culture principles is recommended. The policy review of an organisation safety plan should include transparency statements which advocate the stand of the organisation leaders to support a culture of learning and trust (Leape *et al.*, 2009:425). Managers' recommendations are included under leadership development.

Further research is suggested to explore the barriers to giving and receiving peer feedback in a multicultural work environment.

5.4.10 RN autonomy

The study reported a significant difference between nurse leaders and professional nurses in their perceptions of RNs questioning practice when something does not seem right. It was interesting that the majority of professional nurses perceived that they advocated on behalf of their patients, but nurse leaders disagreed. This highlights the differing perceptions of sharp and blunt end approaches and as the nurse leaders are not in direct care, there is a need to understand the differing perceptions.

Benner *et al.* (2002:509) in a study of nursing errors to define a taxonomy of individual, practice and system errors in nursing highlighted the role of the nurse as an autonomous practitioner, managing care of numerous patients, the role includes detection, intervention a

in missed care to reduce adverse events from errors. Thus nurses need to be competent, receive the necessary training, experience and specialize to make safe, reliable applicable care delivery decisions. Thus, the study of the “nurse’s role in preventing, detecting and making errors would yield valuable data for others” to learn from. Benner *et al.* (2002:509) define “practice responsibility” for nurses which links the individual and the systems approach together and identify the central role and functions of the nurse.

Recommended for future research and included could be a review of multiple factors which are: gender discrimination, autonomous practice in a multicultural workforce, if varying levels /countries of training of nursing education impact autonomous practice and do all these RNs interpret the concepts of patient advocacy and autonomous practice the same?

5.4.11 Error investigation (system approach)

The study findings identified RNs lack of understanding of the investigative process which is convened when an error is investigated and the role of the multidisciplinary team in the investigation process. Multidisciplinary communication and contributing factors from other departments to errors have been identified as two of the system factors which need to be considered when errors are made.

Elnour *et al.* (2008: 183) completed a study in the United Arab Emirates to evaluate the collaborative approach to implementing error reporting using a computerised medication safety tool. The approach was to introduce education and training and monitor compliance with the number of medication errors reported, using pre and post tests.

The system was seen to be more efficient, and the collaborative approach improved the communication and understanding of challenges for the different disciplines as pharmacy provided the education to nursing staff.

It is recommended that education be included as part of the just culture implementation plan to inform nurses about the investigative process and that transparency be promoted through unit level discussions on the errors experienced in the nursing units.

5.4.12 Managing staff behaviour: Disciplinary process versus just culture approach

The study results showed that RNs affirmed that there is a defined process to apply disciplinary measures for nursing errors, but felt that nurses were treated differently to other healthcare providers; not treated fairly or supported was the response of some of the RNs.

However, the nurse leaders indicated a lack of clear decision making in the application of disciplinary measures for nursing errors. This is based on the assumption that severe

outcomes for patients, cause severe discipline where applicable. Thus, the nurse leaders would benefit from the conceptual framework application of balancing the system review and nurse behaviour. Punishment in the form of discipline has been seen to have more negative outcomes for the RN and does not result in improved nursing practice (Wolf *et al.*, 2000:289).

Nurse leaders would benefit from education and training on the just culture application of the decision tree (Reason, 1998) and /or Just Culture Algorithm (2008). This would provide the guidance in consistently, justly and fairly applying the same processes to nursing errors and focused on managing behaviour not performance, i.e. identify the need for consolation, counselling and discipline i.e. Just Culture (Mayer & Cronin, 2008: 428-429).

A review of the policies currently applicable and if they are detrimental to error reporting or if they support a culture of learning and changes be made which would meet the needs of the organisation, employees, patients and families in safe care delivery and the decrease of errors in healthcare delivery (Marx, 2001: 25-26).

Implementation of Just Culture approach to managing staff performance and behaviour as described in chapter 2, Conceptual framework will assist in providing a decision tree which assist with error classification, identifying nurse behaviour, educational needs and the organisational changes which need to be implemented. This approach would assist in decreased risk, improved compliance and supportive environment as seen in study by Volgelmeier *et al.* (2010: 293).

5.4.13 Leadership development

The study identified a need to provide nurse leaders with the skills to become transformational leaders, who are able to provide a supportive environment for professional nurses to report errors, have them managed in a just and fair manager, transparent about their errors and are able to share these experiences with colleagues and promote a learning culture.

Studies have shown that when the nurse managers are supportive, error reporting increases, but when fear of the manager reaction is the response with concern of the outcomes and disciplinary or legal action, professional nurses will not report errors. Anoosh *et al.* (2008: 294) in a study conducted in Iran concluded that a culture of safety is the nurse managers' responsibility and is accountable to ensure staffing, resources, a supportive work environment and professional development of nursing staff to ensure competence and patient safety. The Magnet program (ANCC, 2008) advocates that the transformational leader be developed and thus learn the skills of motivating, coaching and sharing the vision of the nursing units to improve staff and patient outcomes.

Studies have shown that nurse managers are important to the process of error reporting and management and strongly influence the outcomes for the professional nurse (Mayo & Duncan, 2004:214; Chiang & Pepper, 2006:396-398; Moody *et al.*, 2006:204; Chard, 2010:143; Almutary & Lewis, 2012:125).

The Magnet Program (ANCC, 2008) has defined outcomes and expectations for transformational leaders and recommends that this may be the model used for implementation of the leadership developmental plan.

Transformational leadership competence is advised, thus need to develop programmes aimed at nurse leaders to manage and support nurses in error reporting and management. There is a need for an in depth understanding of the systems and processes of the organisation; the application of the Just Culture principles including the management of staff performance and behaviours; how to create a supportive work environment: partnership and empowerment of professional nurses and how to support nurses who have made errors. There is also a need to clarification of the role and responsibilities of the nurse manager in error reporting and management. This may include a leadership developmental programme to include these concepts and how to support nurses who have become second victims due to errors.

Leadership development as transformational as will be needed to develop the safety culture of the work environment is recommended.

5.4.14 Support of the second victim

The study results showed that RNs reported being blamed and not supported when experienced an error and were not treated fairly. The majority of RNs also felt that nurses were treated differently from other healthcare providers. However, a limitation of this question was the assumption that this was meant in the negative sense. Value would have been added to the responses if clarification of a positive or negative response was solicited.

Second victim had been identified as the nurse (healthcare provider) who makes an error (Wu, 2000: 762). Scot *et al.* (2009) interviewed 31 second victims and defined the six stages experienced when an error is made and the needs of the nurse during these stages.

Chard (2010) explored the coping strategies of RN on the preoperative units, and the results support the findings of this study, which found that the nurses' coping strategies and staying in nursing after making an error are dependent on the support received in the work environment and the support and approach to dealing with the error from the manager.

Chard (2010: 135 - 143) reports a limitation of sample size of 39% (but had assumed a response rate of 27%, so mailed 700 surveys, returns 272).

Literature advocates the need for healthcare organisations to develop programmes which would support the second victim as errors may have long term outcomes for the healthcare provider who makes an error.

As the study has identified this lack, it is recommended that the executive leadership review the need for implementation of the organisation wide programme to support second victims.

Future research study would recommend a qualitative approach to exploring the nurses' experiences that have identified not receiving support and what this would look like; this may assist the executive in developing a programme for specific needs of the multicultural workforce.

5.4.15 Emotional support program

The study has demonstrated that there is a gap in providing support to the second victims who make errors. The organisation needs to recognize that there is a need to provide support for all healthcare providers who make errors and develop a programme to meet this need. Programmes which provide toolkits which can be adopted by other organisations are available, e.g. John Hopkins has piloted a programme at the hospital which was found to be effective.

Training for front line staff, colleagues, middle managers and executives was completed which made all staff recognize that each play an important part in supporting the second victim, which would include the six stages needed to be cared for and not abandoned.

This should also be made available for all employees and presentations should be part of the orientation and annual education updates. This will increase staff awareness as studies have shown some staff suffers long term when an error has been made; especially if the outcome for the patient is has been severe (Scot *et al.*, 2009: 329).

An additional stressor may be the multicultural workforce and coping in a foreign country, thus managers and peers may need to be educated in recognizing symptoms of not coping and the programme may include unique additions for this environment (Van Rooyen *et al.*, 2010:5-6).

5.4.16 Disclosure practices (adverse events, JCIA, patients)

Results of this study show there are no defined disclosure policies in the organisation, and the conceptual framework identifies this as a right for the patient and family. RNs do not

consider error disclosure to the patient and family which is the nurse's responsibility, while nurse leaders were ambivalent. RNs did not provide sufficient feedback to draw conclusions from apology to patients due to fear and RNs have not received education in disclosure practices.

However, there are debates on disclosure as to responsibility, liabilities, no education and unique cultural challenges in Saudi Arabia, e.g. language barrier. Thus a recommendation would be for the organisation to develop and implement an error disclosure plan which would include education on how to disclose errors, define responsibilities for the job functions and support for patients and employees.

Future research topics: Defining medical error disclosure policies in a multicultural, paternalistic decision making society; disclosing medical errors in a multicultural workforce; ethical dilemmas in medical error disclosure in Saudi Arabia.

The study demonstrated that there is no defined process for error disclosure and staff does not know how this is done. Disclosure may determine how the patient and family respond to an error, and this may be dependent on the severity of the outcomes for the patient. However, healthcare providers have an ethical and moral obligation to disclose errors to the patient and family. But, healthcare providers have barriers to disclosing errors, the most important being the legal outcomes especially for physicians (Herbert *et al.*, 2001: 511; Mazor Simon, Yood, Martinson, Gunter, Reed & Gurwitz, 2004: 416-417). .

A process for error disclosure is developed by the organisation leaders which would guide the multidisciplinary team in disclosure to patients and families. This will assist in guiding staff when there is a need to inform patients about error outcomes. This process should include support experts, e.g. Arabic speaking social workers, educators, quality coordinators to assist staff during the process until they are more confident at communicating these outcomes to patients.

5.4.17 Policies

The study has shown the need to review the following policies:

5.4.17.1 Error reporting and management policies

The study has shown that both groups of nurses were confused about the non-punitive policy and need to have education and training in these processes.

5.4.17.2 Just Culture Performance Management Policy

A review of the policies currently applicable and if they are detrimental to error reporting or if they support a culture of learning and changes be made which would meet the needs of the organisation, employees, patients and families in safe care delivery and the decrease of errors in healthcare delivery (Marx, 2001: 19-27)

Implementation of Just Culture approach to managing staff performance and behaviour as described in chapter 2, assist in providing a decision tree which assist with error classification, identifying nurse behaviour, educational needs and the organisational changes which need to be implemented.

5.4.17.3 Disclosure Policy

The study identified there is no disclosure policy to guide staff in the process and no assistance available to healthcare providers. The definition of a policy for error disclosure, together with a process described above will assist employees in accomplishing a difficult task in healthcare, i.e. admitting an error has been made, acknowledging the error and disclosing to the patient, regardless of the outcomes.

5.4.17.4 Second Victim

The study has identified that no policy exists in the organisation to define the rights of the second victim and to provide a guide managers in care of the second victim. Recommend is the development of a Second Victim Care policy which would be implemented alongside the second victim programme to provide support and education.

5.5 RECOMMENDATIONS

Describe the recommendations, based on the findings of the study for future study or work

5.5.1 Recommendations for the organisation

Recommended is the implementation of the Just Culture programme which would provide the missing links in error reporting, management and prevention. This will also assist in providing a decision algorithm which will assist with error classification, identifying nurse behaviour, education needs and the organisational changes which need to be implemented. This would result in decreased risk, improved compliance and supportive environment.

The organisational disciplinary processes, application and monitoring and outcomes for nurses are revisited to check for compliance with just culture principles to improve the culture of safety for the organisation. The promotion of a balanced approach to managing staff behaviour, thereby removing fear, shame and blame expectations for errors which occur is recommended.

A culture of learning: Educational programme which would include the identified gaps of error reporting, disclosure and management. This would include addressing the factors of language, culture and computer literacy.

An educational plan which would focus on specific needs of professional nurses and nurse leaders needs which will include the following topics: Application of disciplinary measures, peer review, shared governance structures to empower accountability for practice, autonomy, harm scoring types of errors, e.g. near misses, errors and negligence; emotional support / supportive skills / coping skills, monitoring of compliance, as well as feedback mechanism which is very important.

The empowerment of professional nurses who fulfil the role of a safety net with an increased focus on skills and education, end user feedback to evaluate the effectiveness of systems and processes and multidisciplinary collaboration are recommended.

A supportive environment exists in the nursing units who have resource staff available in the error reporting and management process. The recommendations would be to use the support staff more in encouraging an environment of reporting and the allocation of resources to assist nursing units with errors reporting, e.g. quality experts.

A leadership development programme to include the just culture principles, learning culture, reporting culture and how to support nurses who become second victims due to errors is recommended.

Organisational leadership: The role of the chief of nursing was significant to changing the work environment and perceptions of safety culture. Thus the role model behaviour of a transformational leader who continue to advocate, be visible and accessible bed side nurses and implementation of structures and processes which empower nurses at the bed side are recommended (ANCC, 2008).

5.5.2 Recommendations for national nursing structures to be established

The Nursing Practice Act has not been defined for Saudi Arabia and would recommend that this is prioritized as this may assist in the definition of autonomous practice, clarifying accountabilities and responsibilities of RNs. There is no nursing council, the Saudi Commission for Healthcare Specialities (SCHS) registers all healthcare providers and requires nurses to register but there is no defined process to hold nurses accountable at the national level.

A Saudi Nursing Association has been established but is relatively unknown to nurses and the scope of the association is not known. Thus many nurses question the role of support as a nursing council would stand for patients and the association for nurses.

5.5.3 National level error reporting

More studies are now being conducted and published about healthcare safety in Saudi Arabia, and there would be a benefit in sharing experiences and strategies which have resulted in better outcomes for patients and staff. Executive leadership have a responsibility to decimate information at a national level, but a challenge is no mandatory error reporting and as hospitals at different levels of quality provision.

Recommended is a National Saudi Voluntary Error reporting database to be established which would benefit not just Saudi Arabia but the Middle Eastern region, as would establish a cohort for comparison in similar healthcare settings.

5.5.4 Recommendations for future studies

This study was limited to one organisation in Saudi Arabia and thus cannot be generalized. Recommended future studies which would focus on the unique aspects which were found to be significant, e.g. the impact of national diversity on nursing errors, the role of the nurse leader on nursing errors reporting and management.

5.6 CONCLUSION

Error management in nursing amongst registered nurses working in a tertiary hospital in Saudi Arabia has been explored through this study with the four goals which were to identify the nursing related errors occurring, determine the current process of reporting nursing errors, describe the management of nursing errors and explore the factors impacting on the management of nursing errors achieved.

The approach to error management for RNs is complex as depicted in the conceptual framework, chapter two. Multiple factors composed of healthcare providers, systems, processes and organisational culture play important roles and influence error reporting, error management and influence the outcomes.

A discussion of the results, conclusions of the findings, limitations recognized and recommendations for the organisation, nursing community and Saudi Arabia (MOH); and future studies have been presented.

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ADDENDA

Addendum A: Ethics Board, Stellenbosch University Approval



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03 March 2010

MAILED

Ms FI Haines
Nursing Affairs, MBC-J73
King Faisal Specialist Hospital & Research Centre
P O Box 40047
Jeddah Saudi Arabia
21499

Dear Ms Haines

"Error management in nursing amongst registered nurses working in a tertiary hospital in Saudi Arabia"

ETHICS REFERENCE NO: N10/01/023

RE : MODIFICATIONS REQUIRED

A review panel considered the application for interim approval and registration of the abovementioned project on behalf of the Health Research Ethics Committee.

In principle the panel is in agreement with the project, but requested that you should attend to the following matter(s) before the project could be approved:

1. It is important to protect the confidentiality and anonymity in this setting and thus would approve a waiver of written consent.
2. The questionnaire needs to have a brief introduction that states that completion is voluntary and that by completing the questionnaire, it will be assumed that participants have consented.
3. A major weakness of this project is the failure of the researcher to adequately explore and define the concept of 'error' within a nursing context or to understand that a nurse's subjective evaluation of the consequences of an error are likely to be a critical component to how she/he then goes on to report or manage the error. Errors can range from a very minor lapse in procedure with no adverse consequences to extremely serious errors such as giving the wrong injection. The nurse will probably complete this questionnaire differently for a minor error as opposed to a serious error. This needs to be adequately explored and the questionnaire altered accordingly.

On receipt of the additional information/corrected document(s) the application will be reconsidered. Please HIGHLIGHT or use the TRACK CHANGES function to indicate ALL the corrections/amendments clearly in order to allow rapid scrutiny and appraisal.

Please quote the abovementioned project number in ALL correspondence henceforth.

For standard CHR forms and documents please visit: www.sun.ac.za/rd

03 March 2010 09:49

1.) ✓ ~~HH~~

2.) Questionnaire updated ~~HH~~

3.) a.) Questionnaire altered for classification of errors ~~HH~~

b.) Proposal updated ~~HH~~ ~~HS~~ ~~HS~~ ~~HS~~ ~~HS~~ ~~HS~~ ~~HS~~ ~~HS~~ ~~HS~~ ~~HS~~

Page 1 of 2



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Yours faithfully



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03 March 2010 09:49

Page 2 of 2



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06 April 2010

MAILED

Ms FI Haines
Nursing Affairs, MBC-J73
King Faisal Specialist Hospital & Research Centre
P O Box 40047
Jeddah Saudi Arabia
21499

Dear Ms Haines

"Error management in nursing amongst registered nurses working in a tertiary hospital in Saudi Arabia"

ETHICS REFERENCE NO: N10/01/023

RE : APPROVAL

It is a pleasure to inform you that a review panel of the Health Research Ethics Committee has approved the above-mentioned project on 6 April 2010, including the ethical aspects involved, for a period of one year from this date.

This project is therefore now registered and you can proceed with the work. Please quote the above-mentioned project number in ALL future correspondence. You may start with the project. Notwithstanding this approval, the Committee can request that work on this project be halted temporarily in anticipation of more information that they might deem necessary.

Please note a template of the progress report is obtainable on www.sun.ac.za/rds and should be submitted to the Committee before the year has expired. The Committee will then consider the continuation of the project for a further year (if necessary). Annually a number of projects may be selected randomly and subjected to an external audit.

Translations of the consent document in the languages applicable to the study participants should be submitted.

Federal Wide Assurance Number: 00001372
Institutional Review Board (IRB) Number: IRB0005239

The Health Research Ethics Committee complies with the SA National Health Act No.61 2003 as it pertains to health research and the United States Code of Federal Regulations Title 45 Part 46. This committee abides by the ethical norms and principles for research, established by the Declaration of Helsinki, the South African Medical Research Council Guidelines as well as the Guidelines for Ethical Research: Principles Structures and Processes 2004 (Department of Health).

Please note that for research at primary or secondary healthcare facility permission must still be obtained from the relevant authorities (Western Cape Department of Health and/or City Health) to conduct the research as stated in the protocol. Contact persons are Ms Claudette Abrahams at Western Cape Department of Health (healthres@pgwc.gov.za Tel: +27 21 483 9907) and Dr Hélène Visser at City Health (Helene.Visser@capetown.gov.za Tel: +27 21 400 3981). Research that will be conducted at any tertiary academic institution requires approval from the relevant hospital manager. Ethics approval is required BEFORE approval can be obtained from these health authorities.

06 April 2010 10:45

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Approval Date: 6 April 2010

Expiry Date: 6 April 2011

Yours faithfully

MS CARLI SAGER

RESEARCH DEVELOPMENT AND SUPPORT

Tel: +27 21 938 9140 / E-mail: carlis@sun.ac.za

Fax: +27 21 931 3352

06 April 2010 10:45

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10 August 2011

MAILED

Ms FI Haines
Nursing Affairs, MBC-J73
King Faisal Specialist Hospital & Research Centre
P O Box 40047
Jeddah Saudi Arabia
21499

Dear Ms Haines

"Error management in nursing amongst registered nurses working in a tertiary hospital in Saudi Arabia"

ETHICS REFERENCE NO: N10/01/023

RE : PROGRESS REPORT

At a review panel of the Health Research Ethics Committee that was held on 4 August 2011, the progress report for the abovementioned project has been approved and the study has been granted an extension for a period of one year from this date.

Please remember to submit progress reports in good time for annual renewal in the standard HREC format.

Approval Date: 4 August 2011

Expiry Date: 4 August 2012

Yours faithfully


MRS MERTRUDE DAVIDS

RESEARCH DEVELOPMENT AND SUPPORT

Tel: 021 938 9207 / E-mail: mertrude@sun.ac.za

Fax: 021 931 3352

10 August 2011 11:31

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20 September 2012

MAILED

Ms FI Haines
Nursing Affairs, MBC-J73
King Faisal Specialist Hospital & Research Centre
P O Box 40047
Jeddah Saudi Arabia
21499

Dear Ms Haines

"Error management in nursing amongst registered nurses working in a tertiary hospital in Saudi Arabia"

ETHICS REFERENCE NO: N10/01/023

RE : PROGRESS REPORT

At a meeting of the Health Research Ethics Committee that was held on 19 September 2012, the progress report for the abovementioned project has been approved and the study has been granted an extension for a period of one year from this date.

Please remember to submit progress reports in good time for annual renewal in the standard HREC format.

Approval Date: 19 September 2012

Expiry Date: 19 September 2013

Yours faithfully

MRS MERTRUDE DAVIDS

RESEARCH DEVELOPMENT AND SUPPORT

Tel: 021 938 9207 / E-mail: mertrude@sun.ac.za

Fax: 021 931 3352

20 September 2012 12:01

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Addendum B: IRB KFSH & RC-J Approval



مستشفى الملك فيصل التخصصي ومركز الأبحاث
King Faisal Specialist Hospital & Research Centre
Gen. Org. مؤسسة عامة
Jeddah Branch - جدة

#1337

INTERNAL MEMORANDUM

To : **Fiona Haines** DATE: 12 Jumad Al Awal 1431
Principal Investigator, IRB 2010-11 26 April 2010
Magnet Project Coordinator
Nursing Affairs

FROM : **Osman Hamour, MD** REF.: RC-J 183-31
Deputy Chairman, Institutional Review Board (IRB)
Research Centre

SUBJECT : PROTOCOL APPROVAL
IRB 2010-11: Error management in nursing amongst registered nurses working in a tertiary hospital in Saudi Arabia

Thank you for your submission of the above-mentioned research project which was reviewed at the Board meeting yesterday. It was noted that this study is a first of its kind in the Kingdom and certainly would contribute much to the enhancement of nursing error management in our institution.

I am pleased to inform you that the Board is satisfied with the protocol as presented. Scientific and ethical approval is granted and you may now start with the research project.

Please submit to is the first Bi-annual Progress Report on or before **25 October 2010**.

The Board wishes you all the best in the conduct of this protocol.

CC: Sandra Lovering, RN, DHSc, Chief, Nursing Affairs

MyDocs/Memos/Chrono1431
/ess

Addendum C: Nursing Affairs, KFSH & RC-J Approval


مستشفى الملك فيصل التخصصي ومركز الأبحاث
King Faisal Specialist Hospital & Research Centre
Gen. Org. مؤسسة عامة
Jeddah Branch - جدة

NURSING AFFAIRS

MBC J73, Phone 5839, Fax 5077
Internal Memorandum

TO: SANDY LOVERING, RN, DHSc
Chief
Nursing Affairs

Date: 22 Jumada Al-Thani 1430
15 June 2009

FROM: FIONA HAINES 
Magnet Project Coordinator
Nursing Affairs

Ref. #: NA-J 625-30

SUBJECT: APPROVAL RESEARCH STUDY : MOUR, UNIVERSITY STELLENBOSCH,
SOUTH AFRICA

I am enrolled in the Structured Masters Program (MOUR) at the University of Stellenbosch, South Africa for the years 2008-2009. As part of my program I need to complete a research study under the supervision of Mrs. A. Demaris and Dr E. Stellenberg.

My research study is entitled: **Error management in nursing amongst registered nurses working in a tertiary hospital in Saudi Arabia.**

My research study will be reviewed by Stellenbosch University Ethical Board and then be submitted to King Faisal Specialist Hospital & Research Center-Jeddah IRB for approval.

The research is expected to be conducted in 2009.

I would hereby like to request your approval to conduct the above entitled research study in the Nursing Affairs Department, KFSRC-J

Thank you.

APPROVED:


SANDY LOVERING, RN, DHSc
Chief, Nursing Affairs

FORM

Form 11100-14 (06-29) I.D. 02125001081

Printed by Reprographics KFSH&RC

Addendum D: Data Collecting Tool**Questionnaire****Research study: Error Management in Nursing amongst Registered Nurses
working in a Tertiary Hospital in Saudi Arabia**

Dear Colleague,

In nursing, we strive to provide safe and quality patient care. Unfortunately, though, from time to time errors do occur that can compromise the patient's health and safety. There has been recognition that "to error, is human". It is, however, important to address these errors when they occur and to reflect on how we manage the systems, processes and procedures relating to the occurrences of such errors.

This research study is being conducted to meet the requirements for a Master's Degree in Nursing at Stellenbosch University, South Africa and has received approval from the University's Ethical Board, as well as from the Institutional Review Board (IRB) at KFSHRC (Gen.Org.), Jeddah Branch.

You are invited to take part in this research study, aiming at exploring your knowledge, experiences and opinions on how nursing errors currently are being managed in this hospital. You may ask why you are invited to participate in the study. The invitation to participate in this study is sent to different categories of nursing staff. The selection of these nurses has been done by the Research Department, KFSHRC (Gen.Org.), Jeddah Branch, in collaboration with a statistician from Stellenbosch University, through a technique called random sampling. This was based on all registered nurses employed in the positions of Staff Nurse 1, Staff Nurse 2, Clinical Nurse Coordinator (CNC), Assistant Head Nurse and Head Nurse (A/HN) in this tertiary hospital in Saudi Arabia.

All information submitted will be kept confidential. The only persons who will have access to the completed questionnaires are myself, my university study leaders and the statistician involved with the analysis of the collected data. On completion of this study, the completed questionnaires will be destroyed. No identifying information will be given to any person other than those mentioned here. The outcomes of this research will further be published without disclosing any identifying information.

It is your choice to participate in the study or not. Your decision not to take part, will not affect you in any way. If you agree to take part, completion of the questionnaire and returning it to the researcher is regarded as your informed consent to participate.

The questionnaire is sent to you by email, as well as hard copy. Please answer all the questions by making an X in the appropriate block and/or filling in your responses where requested. The questionnaire will take about 20-30 minutes to complete.

On completion, please place your questionnaire in the envelope provided, seal and return it through internal mail to:

Fiona Haines, MBC-J 73, Magnet Office, Nursing Affairs.

Alternatively, my secretary will personally collect the sealed envelopes on your request.

It will be appreciated if you could return the completed questionnaire **before or on Wednesday 26th March 2011.**

If you have any questions, you are welcome to contact me at the information below:

1. Work telephone: 667 7777, Ext. 63577
2. Mobile no.: 0509672081
3. E-mail: FHaines@kfshrc.edu.sa

Thank you for completing this Questionnaire. Your time is greatly appreciated.

Fiona Haines, Magnet Project Coordinator, Nursing Affairs

Questionnaire adapted from the Agency for Healthcare Research and Quality (AHRQ), Sorra, J.; Nieva, V.F. 2004. Hospital survey on patient safety culture. (Prepared by Westat, under Contract No. 290-96-0004). AHRQ Publication no. 04-0041. Rockville, MD: Agency for Healthcare Research and Quality).

SECTION 1: Biographical information

Please complete this section, as this information will help in the analysis of the survey results. As noted, none of this information will be used to identify you. It will only be viewed by the researcher and the study leaders.

Indicate your answer with a tick (X) in the appropriate box.

1.1. Age

<input type="checkbox"/> 1. < 25 years	<input type="checkbox"/> 2. 25 - 35 years	<input type="checkbox"/> 3. 36 - 45 years
<input type="checkbox"/> 4. 46 - 55 years	<input type="checkbox"/> 5. 56 - 65 years	<input type="checkbox"/> 6. > 65 years

1.2. Gender

<input type="checkbox"/> 1. Female	<input type="checkbox"/> 2. Male
------------------------------------	----------------------------------

1.3. Nationality

<input type="checkbox"/> 1. Saudi	<input type="checkbox"/> 2. Western (USA, Canada, Europe, New Zealand, Australia)	<input type="checkbox"/> 3. Middle Eastern (Lebanon, Jordan, Egypt)
<input type="checkbox"/> 4. South African	<input type="checkbox"/> 5. Indian	<input type="checkbox"/> 6. Malaysian
<input type="checkbox"/> 7. Filipino	<input type="checkbox"/> 8. Singaporean	<input type="checkbox"/> 9. Other (Please indicate)

1.4. Indicate which is your first language

<input type="checkbox"/> 1. English	<input type="checkbox"/> 2. Arabic	<input type="checkbox"/> 3. Other (Please indicate)
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1.5. Nursing education and experience (Indicate all that apply)

<input type="checkbox"/> 1. Basic Nursing Diploma	<input type="checkbox"/> 2. Basic Nursing Degree	<input type="checkbox"/> 3. Post Basic Specialisation
<input type="checkbox"/> 4. Master's Degree, Nursing	<input type="checkbox"/> 5. Doctorate in Nursing / Health Sciences)	<input type="checkbox"/> 6. Other (Please indicate)

1.6. Your nursing experience gained after registration is _____ year(s).

1.7. Select your primary work area according to the Nursing Divisional Council Structure

<input type="checkbox"/> 1. Adult Division (Adult Oncology, Surgical, Medical, VIP, Neurosciences, CVT)	<input type="checkbox"/> 2. Mat. / Child Division (L&D, NICU, OB/GYN/ NNN)	<input type="checkbox"/> 3. Critical Care Division (CSICU, MSICU, SICU)
<input type="checkbox"/> 4. Procedure Areas Division (ART, RDU, OR, RR, DPU& ADU, Endoscopy)	<input type="checkbox"/> 5. Paediatrics Division (Paediatrics (1N), PICU, Paediatric Oncology)	<input type="checkbox"/> 6. Ambulatory Care Division (EMS, OPD, HHC Family Medicine & VIP Clinic)

1.8. Are you currently working in the nursing area in which you have experience?

<input type="checkbox"/> 1. Yes	<input type="checkbox"/> 2. No
---------------------------------	--------------------------------

1.9. If no, indicate the reason(s) that is (are) applicable to you

<input type="checkbox"/> 1. Personal request	<input type="checkbox"/> 2. No post available	<input type="checkbox"/> 3. Professional development
<input type="checkbox"/> 4. Promotion	<input type="checkbox"/> 5. Type of unit change	<input type="checkbox"/> 6. Other / NA (Please Indicate)

1.10. How long have you worked in your current unit?

<input type="checkbox"/> 1. < 1 year	<input type="checkbox"/> 2. 1 - 5 years	<input type="checkbox"/> 3. > 5 years.
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1.11. How long have you worked in this hospital?

<input type="checkbox"/> 1. < 1 year	<input type="checkbox"/> 2. 1 - 5 years	<input type="checkbox"/> 3. > 5 years
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1.12. Indicate your nursing job title in the hospital

<input type="checkbox"/> 1. Staff Nurse 1 or 2	<input type="checkbox"/> 2. Clinical Nurse Coordinator	<input type="checkbox"/> 3. Assistant / Head Nurse
--	--	--

Section 2: Type of errors and feedback process**INSTRUCTIONS:**

King Faisal Specialist Hospital and Research Center (Gen. Org.), Jeddah Branch classifies errors into different categories.

(NCC MERCK Index for categorising medication Errors, National Coordinating Council for Medication Error Reporting and Prevention).

When answering the questions listed below, please refer to the definitions below.

Category	Classification	Explanation
A	No Error	Circumstances or events that have the capacity to cause an error, but no error has occurred.
B, C & D	Error, No Harm	An error occurred, but the error did not reach the patient / reached patient with no harm, and monitoring is needed to assess that no harm results later.
E, F & G	Error, Harm	An error occurred that may have contributed to or resulted in temporary harm to the patient, which required intervention; permanent harm with prolonged hospitalisation).
H	Error, Death	An error occurred that may have contributed to, or resulted in the patient's death.
SENTINEL EVENT	Definition (A) (B)	An unexpected occurrence involving death, serious physical or psychological injury, or the risk thereof, and any event that might cause embarrassment or risk to the hospital, with potential legal ramifications and/or media inquiries or coverage. The phrase, "sentinel event, or the risk thereof, includes any process variation for which a recurrence would carry a significant chance of a serious adverse outcome. Such events are called "sentinel, because they signal the need for immediate investigation and response. <u>Serious injury includes, but is not exclusive to:</u> 1. An unanticipated death or major permanent loss of limb or function, unrelated to the natural course of the patient's illness or underlying condition. 2. Infant abduction, or discharge to the wrong family. 3. Patient suicide in hospital. 4. Rape of a patient, staff member, or visitor. 5. Significant hemolytic transfusion reaction involving administration of blood, or blood products having major blood group incompatibilities. 6. Surgery on the wrong patient or body part. 7. Significant medication errors.

2.1. Indicate the type of error(s) being made by nurses in your unit (Indicate all that apply)

<input type="checkbox"/> 1. No error(s)	<input type="checkbox"/> 2. Error(s): No harm. Did not reach the patient.
<input type="checkbox"/> 3. Error(s): No harm. Reached the patient.	<input type="checkbox"/> 4. Error(s): Harm. NOT a Sentinel Event.
<input type="checkbox"/> 5. Error(s): Harm. Classified as Sentinel Event.	<input type="checkbox"/> 6. Error(s): Death.
<input type="checkbox"/> 7. Other (Please indicate):	

1.9. If no, indicate the reason(s) that is (are) applicable to you

<input type="checkbox"/>	1. Personal request	<input type="checkbox"/>	2. No post available	<input type="checkbox"/>	3. Professional development
<input type="checkbox"/>	4. Promotion	<input type="checkbox"/>	5. Type of unit change	<input type="checkbox"/>	6. Other / NA (Please Indicate)

1.10. How long have you worked in your current unit?

<input type="checkbox"/>	1. < 1 year	<input type="checkbox"/>	2. 1 - 5 years	<input type="checkbox"/>	3. > 5 years.
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1.11. How long have you worked in this hospital?

<input type="checkbox"/>	1. < 1 year	<input type="checkbox"/>	2. 1 - 5 years	<input type="checkbox"/>	3. > 5 years
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1.12. Indicate your nursing job title in the hospital

<input type="checkbox"/>	1. Staff Nurse 1 or 2	<input type="checkbox"/>	2. Clinical Nurse Coordinator	<input type="checkbox"/>	3. Assistant / Head Nurse
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Section 2: Type of errors and feedback process**INSTRUCTIONS:**

King Faisal Specialist Hospital and Research Center (Gen. Org.), Jeddah Branch classifies errors into different categories.

(NCC MERCK Index for categorising medication Errors, National Coordinating Council for Medication Error Reporting and Prevention).

When answering the questions listed below, please refer to the definitions below.

Category	Classification	Explanation
A	No Error	Circumstances or events that have the capacity to cause an error, but no error has occurred.
B, C & D	Error, No Harm	An error occurred, but the error did not reach the patient / reached patient with no harm, and monitoring is needed to assess that no harm results later.
E, F & G	Error, Harm	An error occurred that may have contributed to or resulted in temporary harm to the patient, which required intervention; permanent harm with prolonged hospitalisation).
H	Error, Death	An error occurred that may have contributed to, or resulted in the patient's death.
SENTINEL EVENT	Definition (A) (B)	An unexpected occurrence involving death, serious physical or psychological injury, or the risk thereof, and any event that might cause embarrassment or risk to the hospital, with potential legal ramifications and/or media inquiries or coverage. The phrase, "sentinel event, or the risk thereof, includes any process variation for which a recurrence would carry a significant chance of a serious adverse outcome. Such events are called "sentinel, because they signal the need for immediate investigation and response. <u>Serious injury includes, but is not exclusive to:</u> 1. An unanticipated death or major permanent loss of limb or function, unrelated to the natural course of the patient's illness or underlying condition. 2. Infant abduction, or discharge to the wrong family. 3. Patient suicide in hospital. 4. Rape of a patient, staff member, or visitor. 5. Significant hemolytic transfusion reaction involving administration of blood, or blood products having major blood group incompatibilities. 6. Surgery on the wrong patient or body part. 7. Significant medication errors.

2.1. Indicate the type of error(s) being made by nurses in your unit (Indicate all that apply)

<input type="checkbox"/>	1. No error(s)	<input type="checkbox"/>	2. Error(s): No harm. Did not reach the patient.
<input type="checkbox"/>	3. Error(s): No harm. Reached the patient.	<input type="checkbox"/>	4. Error(s): Harm. NOT a Sentinel Event.
<input type="checkbox"/>	5. Error(s): Harm. Classified as Sentinel Event.	<input type="checkbox"/>	6. Error(s): Death.
<input type="checkbox"/>	7. Other (Please indicate):		

2.2. Do you think a near miss is an error?

<input type="checkbox"/> 1. Yes	<input type="checkbox"/> 2. No	<input type="checkbox"/> 3. Do not know	<input type="checkbox"/> 4. Unsure
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2.3. Do you think a near miss requires reporting?

<input type="checkbox"/> 1. Yes	<input type="checkbox"/> 2. No	<input type="checkbox"/> 3. Do not know	<input type="checkbox"/> 4. Unsure
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2.4. Give examples of the type of errors that have occurred in your unit (Indicate all that apply)

<input type="checkbox"/>	1. Incorrect Identification, e.g. incorrect patient identification for a procedure
<input type="checkbox"/>	2. Cultural implications, e.g. shaved the religious man's (matawa) beard by accident
<input type="checkbox"/>	3. Narcotic, e.g. narcotic missing at count
<input type="checkbox"/>	4. Procedural, e.g. timeout procedure not completed, which led to an error
<input type="checkbox"/>	5. Medication, e.g. wrong medication given to patient
<input type="checkbox"/>	6. Communication, e.g. telephone order written in the wrong patient file, resulted in wrong orders carried out
<input type="checkbox"/>	7. Error of commission, e.g. due to incorrect identification, wrong patient received the preparation for surgery
<input type="checkbox"/>	8. Error of omission, e.g. failure to report critical laboratory results
<input type="checkbox"/>	9. Other ((Please indicate):

2.5. Do you think that all errors that had occurred in your unit were reported?

<input type="checkbox"/> 1. Yes	<input type="checkbox"/> 2. No	<input type="checkbox"/> 3. Do not know
---------------------------------	--------------------------------	---

Reason(s) for your answer:

2.6. Indicate resource staff available to you (Give your reason/s why)

<input type="checkbox"/> 1. Unit Colleagues	<input type="checkbox"/> 2. Charge Nurse	<input type="checkbox"/> 3. Clinical Nurse Coordinator
<input type="checkbox"/> 4. Assistant / Head Nurse	<input type="checkbox"/> 5. Program Director	<input type="checkbox"/> 6. Nursing Quality
<input type="checkbox"/> 7. Colleagues from another unit	<input type="checkbox"/> 8. Assistant Chief of Nursing	<input type="checkbox"/> 9. Chief of Nursing
<input type="checkbox"/> 10. Other (Please Indicate e.g. Patient Affairs Department)		

Reason(s) for your answer:

Section 3: Error reporting and management

3.1. Indicate your agreement or disagreement with the following statements to be followed when a nursing error(s) occurs in the unit.

In our nursing unit	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1. Nurses are able to identify when an error has occurred that requires reporting	<input type="checkbox"/> SD	<input type="checkbox"/> D	<input type="checkbox"/> N	<input type="checkbox"/> A	<input type="checkbox"/> SA
2. Nurses do not need to know about error classification	<input type="checkbox"/> SD	<input type="checkbox"/> D	<input type="checkbox"/> N	<input type="checkbox"/> A	<input type="checkbox"/> SA
3. Nurses who report errors are supported by senior nursing staff on our unit	<input type="checkbox"/> SD	<input type="checkbox"/> D	<input type="checkbox"/> N	<input type="checkbox"/> A	<input type="checkbox"/> SA
4. There is a defined process in the hospital for error reporting and management	<input type="checkbox"/> SD	<input type="checkbox"/> D	<input type="checkbox"/> N	<input type="checkbox"/> A	<input type="checkbox"/> SA
5. The nurses on the unit always report errors as they occur	<input type="checkbox"/> SD	<input type="checkbox"/> D	<input type="checkbox"/> N	<input type="checkbox"/> A	<input type="checkbox"/> SA
6. Error classification is the responsibility of nursing quality staff members	<input type="checkbox"/> SD	<input type="checkbox"/> D	<input type="checkbox"/> N	<input type="checkbox"/> A	<input type="checkbox"/> SA
7. The reporting of errors benefits the patient and his/her family	<input type="checkbox"/> SD	<input type="checkbox"/> D	<input type="checkbox"/> N	<input type="checkbox"/> A	<input type="checkbox"/> SA
8. The hospital has a no blame policy, which makes it easy for nurses to report errors	<input type="checkbox"/> SD	<input type="checkbox"/> D	<input type="checkbox"/> N	<input type="checkbox"/> A	<input type="checkbox"/> SA
9. Nurses are encouraged by their unit colleagues to report errors	<input type="checkbox"/> SD	<input type="checkbox"/> D	<input type="checkbox"/> N	<input type="checkbox"/> A	<input type="checkbox"/> SA
10. Nurses on the unit feel free to report negative behaviour of nursing colleagues	<input type="checkbox"/> SD	<input type="checkbox"/> D	<input type="checkbox"/> N	<input type="checkbox"/> A	<input type="checkbox"/> SA
11. Error reports are never kept in the nurse's confidential file	<input type="checkbox"/> SD	<input type="checkbox"/> D	<input type="checkbox"/> N	<input type="checkbox"/> A	<input type="checkbox"/> SA
12. Nurses are unafraid to ask questions when something does not seem right	<input type="checkbox"/> SD	<input type="checkbox"/> D	<input type="checkbox"/> N	<input type="checkbox"/> A	<input type="checkbox"/> SA
13. The same process is applied throughout the hospital for reporting errors	<input type="checkbox"/> SD	<input type="checkbox"/> D	<input type="checkbox"/> N	<input type="checkbox"/> A	<input type="checkbox"/> SA
14. It is easy to report errors in our hospital	<input type="checkbox"/> SD	<input type="checkbox"/> D	<input type="checkbox"/> N	<input type="checkbox"/> A	<input type="checkbox"/> SA
15. Nurses have received education about the error reporting and management processes	<input type="checkbox"/> SD	<input type="checkbox"/> D	<input type="checkbox"/> N	<input type="checkbox"/> A	<input type="checkbox"/> SA
16. The nurse who makes an error will NOT report it, because he/she is afraid of the outcome	<input type="checkbox"/> SD	<input type="checkbox"/> D	<input type="checkbox"/> N	<input type="checkbox"/> A	<input type="checkbox"/> SA
17. Nurses will NOT report errors made by a colleagues, as they are afraid that they will be blamed	<input type="checkbox"/> SD	<input type="checkbox"/> D	<input type="checkbox"/> N	<input type="checkbox"/> A	<input type="checkbox"/> SA
18. There is a non-punitive policy for error reporting in the hospital	<input type="checkbox"/> SD	<input type="checkbox"/> D	<input type="checkbox"/> N	<input type="checkbox"/> A	<input type="checkbox"/> SA
19. Non-punitive is clearly defined in our hospital, which means that no one will know about the error being reported	<input type="checkbox"/> SD	<input type="checkbox"/> D	<input type="checkbox"/> N	<input type="checkbox"/> A	<input type="checkbox"/> SA
20. Error reporting helps to decrease the risks in the workplace	<input type="checkbox"/> SD	<input type="checkbox"/> D	<input type="checkbox"/> N	<input type="checkbox"/> A	<input type="checkbox"/> SA
21. Feedback about errors is discussed in the unit as part of the commitment to improving the environment of safety for patients and staff	<input type="checkbox"/> SD	<input type="checkbox"/> D	<input type="checkbox"/> N	<input type="checkbox"/> A	<input type="checkbox"/> SA
22. Nurses know the difference between an error and negligence	<input type="checkbox"/> SD	<input type="checkbox"/> D	<input type="checkbox"/> N	<input type="checkbox"/> A	<input type="checkbox"/> SA
23. Nurses are informed about the number of errors which occur in their units	<input type="checkbox"/> SD	<input type="checkbox"/> D	<input type="checkbox"/> N	<input type="checkbox"/> A	<input type="checkbox"/> SA
24. If a patient is injured because of a nursing error, the nurse who made the error is sent home	<input type="checkbox"/> SD	<input type="checkbox"/> D	<input type="checkbox"/> N	<input type="checkbox"/> A	<input type="checkbox"/> SA
25. Error reports are kept in the nurse's confidential file during the investigation of an error	<input type="checkbox"/> SD	<input type="checkbox"/> D	<input type="checkbox"/> N	<input type="checkbox"/> A	<input type="checkbox"/> SA
26. The non-punitive policy for our hospital is known to all staff on my unit	<input type="checkbox"/> SD	<input type="checkbox"/> D	<input type="checkbox"/> N	<input type="checkbox"/> A	<input type="checkbox"/> SA
27. There is a process on how all errors are to be investigated and this is known to all nursing staff	<input type="checkbox"/> SD	<input type="checkbox"/> D	<input type="checkbox"/> N	<input type="checkbox"/> A	<input type="checkbox"/> SA
28. An identified process exists that informs all nurses on how the disciplinary measures are applied when nursing errors are made	<input type="checkbox"/> SD	<input type="checkbox"/> D	<input type="checkbox"/> N	<input type="checkbox"/> A	<input type="checkbox"/> SA
29. If a nurse makes an error while caring for an important person (VIP patient), the nurse will be/is sent home	<input type="checkbox"/> SD	<input type="checkbox"/> D	<input type="checkbox"/> N	<input type="checkbox"/> A	<input type="checkbox"/> SA
30. Nurses who make errors are always disciplined	<input type="checkbox"/> SD	<input type="checkbox"/> D	<input type="checkbox"/> N	<input type="checkbox"/> A	<input type="checkbox"/> SA
31. The manager receives disciplinary action for errors made by nurses on the unit, as patient safety is his/her responsibility	<input type="checkbox"/> SD	<input type="checkbox"/> D	<input type="checkbox"/> N	<input type="checkbox"/> A	<input type="checkbox"/> SA
32. It is acceptable to hold the nurse accountable for her actions and give disciplinary action when an error is made	<input type="checkbox"/> SD	<input type="checkbox"/> D	<input type="checkbox"/> N	<input type="checkbox"/> A	<input type="checkbox"/> SA

In our nursing unit	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
33. Nurses receive education on how to disclose errors to patients, which includes taking responsibility for actions and apologising to patients	<input type="checkbox"/> _{SD}	<input type="checkbox"/> _D	<input type="checkbox"/> _N	<input type="checkbox"/> _A	<input type="checkbox"/> _{SA}
34. Nurses may apologise to the patient and family for errors, as they are afraid of the consequences of their actions	<input type="checkbox"/> _{SD}	<input type="checkbox"/> _D	<input type="checkbox"/> _N	<input type="checkbox"/> _A	<input type="checkbox"/> _{SA}
35. The nurse who made the error discusses the outcome with his/her colleagues	<input type="checkbox"/> _{SD}	<input type="checkbox"/> _D	<input type="checkbox"/> _N	<input type="checkbox"/> _A	<input type="checkbox"/> _{SA}
36. All errors that occur are investigated by a multidisciplinary team	<input type="checkbox"/> _{SD}	<input type="checkbox"/> _D	<input type="checkbox"/> _N	<input type="checkbox"/> _A	<input type="checkbox"/> _{SA}
37. The patient and family are always informed when an error has been made	<input type="checkbox"/> _{SD}	<input type="checkbox"/> _D	<input type="checkbox"/> _N	<input type="checkbox"/> _A	<input type="checkbox"/> _{SA}
38. Errors that occur are used as learning opportunities to prevent the error from happening again	<input type="checkbox"/> _{SD}	<input type="checkbox"/> _D	<input type="checkbox"/> _N	<input type="checkbox"/> _A	<input type="checkbox"/> _{SA}
39. It is the physician's role to inform the patient and family when an error has occurred	<input type="checkbox"/> _{SD}	<input type="checkbox"/> _D	<input type="checkbox"/> _N	<input type="checkbox"/> _A	<input type="checkbox"/> _{SA}
40. Nurses who make errors are treated differently from other healthcare providers who make errors	<input type="checkbox"/> _{SD}	<input type="checkbox"/> _D	<input type="checkbox"/> _N	<input type="checkbox"/> _A	<input type="checkbox"/> _{SA}
41. When an error is made, the nurse first meets with the manager to discuss the circumstances leading to the error	<input type="checkbox"/> _{SD}	<input type="checkbox"/> _D	<input type="checkbox"/> _N	<input type="checkbox"/> _A	<input type="checkbox"/> _{SA}
42. If a patient dies because of a nursing error, the nurse who made the error is sent home	<input type="checkbox"/> _{SD}	<input type="checkbox"/> _D	<input type="checkbox"/> _N	<input type="checkbox"/> _A	<input type="checkbox"/> _{SA}
43. When errors are investigated, the focus is the systems of the hospital	<input type="checkbox"/> _{SD}	<input type="checkbox"/> _D	<input type="checkbox"/> _N	<input type="checkbox"/> _A	<input type="checkbox"/> _{SA}
44. It is easy to support the patient and the nurse when an error has been made	<input type="checkbox"/> _{SD}	<input type="checkbox"/> _D	<input type="checkbox"/> _N	<input type="checkbox"/> _A	<input type="checkbox"/> _{SA}
45. Investigations of errors are focused on the individual who made the error	<input type="checkbox"/> _{SD}	<input type="checkbox"/> _D	<input type="checkbox"/> _N	<input type="checkbox"/> _A	<input type="checkbox"/> _{SA}
46. Nursing errors are not held against the nurse who made the error	<input type="checkbox"/> _{SD}	<input type="checkbox"/> _D	<input type="checkbox"/> _N	<input type="checkbox"/> _A	<input type="checkbox"/> _{SA}
47. The outcome to the patient, whether it is good or bad, does NOT affect the measure of disciplinary action received by the nurse	<input type="checkbox"/> _{SD}	<input type="checkbox"/> _D	<input type="checkbox"/> _N	<input type="checkbox"/> _A	<input type="checkbox"/> _{SA}
48. It is an easy process to define the disciplinary measures applicable to nursing errors	<input type="checkbox"/> _{SD}	<input type="checkbox"/> _D	<input type="checkbox"/> _N	<input type="checkbox"/> _A	<input type="checkbox"/> _{SA}
49. The hospital is working hard to prevent errors from happening	<input type="checkbox"/> _{SD}	<input type="checkbox"/> _D	<input type="checkbox"/> _N	<input type="checkbox"/> _A	<input type="checkbox"/> _{SA}
50. I work in a unit where it is difficult to make errors	<input type="checkbox"/> _{SD}	<input type="checkbox"/> _D	<input type="checkbox"/> _N	<input type="checkbox"/> _A	<input type="checkbox"/> _{SA}

3.2. Factors affecting error management

Indicate your agreement or disagreement with the statements below and give your reason(s), as applicable	Agree	Neutral	Disagree
1. I do not understand the process for error reporting and management	<input type="checkbox"/> _A	<input type="checkbox"/> _N	<input type="checkbox"/> _D
2. The delay in knowing the results of an error investigation leads to anxiety	<input type="checkbox"/> _A	<input type="checkbox"/> _N	<input type="checkbox"/> _D
3. I do not know where to find the documents for error reporting and management	<input type="checkbox"/> _A	<input type="checkbox"/> _N	<input type="checkbox"/> _D
4. The time taken to investigate an error is too long	<input type="checkbox"/> _A	<input type="checkbox"/> _N	<input type="checkbox"/> _D
5. Feedback about the error(s) being reported is not given to staff	<input type="checkbox"/> _A	<input type="checkbox"/> _N	<input type="checkbox"/> _D
6. The decision on the outcome of an error is too long	<input type="checkbox"/> _A	<input type="checkbox"/> _N	<input type="checkbox"/> _D
7. I do not know how to use a computer and this makes me unwilling to report errors	<input type="checkbox"/> _A	<input type="checkbox"/> _N	<input type="checkbox"/> _D
8. I do not understand how a nurse receives disciplinary action for an error made	<input type="checkbox"/> _A	<input type="checkbox"/> _N	<input type="checkbox"/> _D
9. Disciplinary action for an error is given based on whether the manager likes me or not	<input type="checkbox"/> _A	<input type="checkbox"/> _N	<input type="checkbox"/> _D
10. The language barrier with the patients makes it difficult to disclose and apologise for errors	<input type="checkbox"/> _A	<input type="checkbox"/> _N	<input type="checkbox"/> _D
11. I do not understand the cultural restrictions, which apply to the patients on my unit	<input type="checkbox"/> _A	<input type="checkbox"/> _N	<input type="checkbox"/> _D
12. My unit is very busy and this makes it easy to make errors	<input type="checkbox"/> _A	<input type="checkbox"/> _N	<input type="checkbox"/> _D
13. The nursing staff work many overtime shifts and this makes it easy to make errors	<input type="checkbox"/> _A	<input type="checkbox"/> _N	<input type="checkbox"/> _D
Reason(s) for your answer:			

Section 4: The outcome of errors**4.1. Your involvement with nursing errors has been...?**

<input type="checkbox"/> 1. Directly Involved with error(s)	<input type="checkbox"/> 2. Indirectly Involved with error(s)
<input type="checkbox"/> 3. No involvement with error(s)	<input type="checkbox"/> 4. Do not want to disclose information

4.2. If involved with errors, indicate in what capacity (Indicate all that apply)

<input type="checkbox"/> 1. Manager	<input type="checkbox"/> 2. Clinical Nurse Coordinator (CNC)
<input type="checkbox"/> 3. Charge nurse	<input type="checkbox"/> 4. Nurse making the error
<input type="checkbox"/> 5. Colleague	<input type="checkbox"/> 6. Friend
<input type="checkbox"/> 7. Preceptor	<input type="checkbox"/> 8. Nurse completing the check with colleague
<input type="checkbox"/> 9. Audit process	<input type="checkbox"/> 10. Case review / Investigative process of a peer

4.3. Indicate the examples of error(s) you were involved with (Indicate all that apply)

<input type="checkbox"/> 1. Incorrect Identification	<input type="checkbox"/> 2. Cultural implications
<input type="checkbox"/> 3. Narcotic	<input type="checkbox"/> 4. Procedural
<input type="checkbox"/> 5. Medication	<input type="checkbox"/> 6. Communication
<input type="checkbox"/> 7. Error of omission	<input type="checkbox"/> 8. Error of commission
<input type="checkbox"/> 9. Laboratory results	<input type="checkbox"/> 10. Other (Please indicate)

4.4. The error(s) was (were) classified as...? (Indicate all that apply)

<input type="checkbox"/> 1. Error(s): NOT Classified	<input type="checkbox"/> 2. Error(s): No Harm. Did not reach the patient
<input type="checkbox"/> 3. Error(s): No Harm. Reached the patient	<input type="checkbox"/> 4. Error(s): Harm. NOT a Sentinel Event
<input type="checkbox"/> 5. Error(s): Harm. Classified as a Sentinel Event	<input type="checkbox"/> 6. Error(s): Death
<input type="checkbox"/> 7. Error(s): Other (Please indicate)	

4.5. Do you think that the error(s) was (were) managed fairly?

<input type="checkbox"/> 1. Yes	<input type="checkbox"/> 2. No	<input type="checkbox"/> 3. Do Not Know	<input type="checkbox"/> 4. Unsure
If no, how do you think the error(s) should have been managed?			

4.6. The nurse(s) who had made the error(s) received fair treatment

<input type="checkbox"/> 1. Yes	<input type="checkbox"/> 2. No	<input type="checkbox"/> 3. Do Not Know	<input type="checkbox"/> 4. Unsure
If no, how do you think the nurse(s) should have been treated?			

4.7. Indicate the outcome of the error(s) for the nurse / CNC / manager and comment as applicable

<input type="checkbox"/>	1. No change
<input type="checkbox"/>	2. Developmental plan
<input type="checkbox"/>	3. Education and/or competency review
<input type="checkbox"/>	4. Counseling
<input type="checkbox"/>	5. Discipline: Verbal warning
<input type="checkbox"/>	6. Discipline: First written warning
<input type="checkbox"/>	7. Discipline: Second written warning
<input type="checkbox"/>	8. Discipline: Third written warning
<input type="checkbox"/>	9. Discipline: Final written warning
<input type="checkbox"/>	10. Discipline: Manager
<input type="checkbox"/>	11. Dismissal
<input type="checkbox"/>	12. Demotion
<input type="checkbox"/>	13. Suspension
<input type="checkbox"/>	14. Termination
<input type="checkbox"/>	15. Do not know
<input type="checkbox"/>	16. Other (Please indicate):
Comments:	

4.8. After the error had been reported and managed, the nurse involved expressed that he/she felt...? (Indicate all that apply)

<input type="checkbox"/>	1. Good about reporting the error	<input type="checkbox"/>	2. Good, patient received the care needed
<input type="checkbox"/>	3. Better and could receive support	<input type="checkbox"/>	4. Devastated for having made this error
<input type="checkbox"/>	5. Relieved at no longer keeping a secret	<input type="checkbox"/>	6. Supported and could work through the event
<input type="checkbox"/>	7. Unsupported and blamed	<input type="checkbox"/>	8. Poor nurse, unable to trust self with patient care
<input type="checkbox"/>	9. Not treated fairly	<input type="checkbox"/>	10. Trusted colleagues, will continue to report errors
<input type="checkbox"/>	11. Needed to receive education and training	<input type="checkbox"/>	12. Understood and agreed with the disciplinary process
<input type="checkbox"/>	13. Trusted senior staff and will continue to report errors	<input type="checkbox"/>	14. Do not know
<input type="checkbox"/>	15. Other (Please indicate):		

4.9. Share your experience(s) with errors and comment on error management in the hospital

Addendum E: Proof Reading, KFSH & RC-J



مستشفى الملك فيصل التخصصي ومركز الأبحاث
King Faisal Specialist Hospital & Research Centre
مؤسسة عامة - Gen. Org.
فرع جدة - Jeddah Branch

INTERNAL MEMORANDUM

ACADEMIC & TRAINING AFFAIRS

MBC J-36 Tel. Ext.: 64440; Fax: 65310, 68041

TO: **FIONA HAINES** **DATE:** 26 Muharram 1434H
Principal Investigator, IRB# 2010-11 10 December 2012
Program Director, Magnet Hospital
Initiative
Nursing Affairs

FROM: **OLGA SENG** **REF.:** ATA-J 123-34
Clinical Librarian
Academic & Training Affairs

SUBJECT: THESIS PROOF READING AND REVIEW

I have read through the pages of your thesis and found only minor corrections which I have highlighted in red. If you will see some question marks in some of the pages, just look into these. Some sentence structure is needed.

Also, in your list of references, just make the necessary insertions which I have indicated with red markings. You should be consistent with your referencing style.

Overall, you did well in writing you thesis. Congratulations!

/jv

Addendum F: Editing



SERVICES

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10 December 2012

TO WHOM IT MAY CONCERN

This letter serves to confirm that the undersigned

ILLONA ALTHAEA MEYER

has proof-read and edited the document contained herein for language correctness.

 (Ms IA Meyer)

SIGNED

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Addendum G: Formatting



To whom it may concern

This letter serves as confirmation that I, Lize Vorster, performed the technical formatting of Fiona Haines's thesis. Technical formatting entails complying with the Stellenbosch University technical requirements.

Yours sincerely

A handwritten signature in black ink, appearing to read 'Lize Vorster', is written over a simple line drawing of a pen nib.

Lize Vorster
Language Practitioner