

EMPLOYEES' PERCEPTION OF THE CULTURE OF PATIENT SAFETY AND PATIENT
SATISFACTION SURVEYS AT 3 SELECTED PRIVATE HOSPITALS IN LAGOS,
NIGERIA, WEST AFRICA

by

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(Under the Direction of James Oloya)

ABSTRACT

Statement of the problem: Patient safety is a very critical component in improving and sustaining optimal health care quality in healthcare organizations. There is a growing concern about medical errors, which have been identified as one of the five most common causes of death. The burden of medical errors on patients' lives can be devastating. Although there are very limited studies on patient safety and/or patient satisfaction from Africa and none from Nigeria, the few study findings suggest that extrapolating figures yields a calculation that suggests that more than 10,000 patients (i.e. 1 patient every day) die from preventable adverse events at hospitals in Africa. As health care organizations endeavor to improve their health care quality, there is a growing recognition of the need for establishing a culture of patient safety in Africa. **Goal:** To conduct a pilot assessment of the patient safety culture in 3 different hospitals in Lagos, Nigeria and compare results with the Association for Healthcare Research and Quality, an international organization, that utilizes the same tool. **Purpose:** To study the assess employees' perception of the culture of patient safety and patient satisfaction at 3 private hospitals within Lagos and compare this data to the Agency for Healthcare Research and Quality

(AHRQ) benchmarks from Critical Care Access hospitals from 2012; to determine if there are any correlations between HSOPSC, and Patient Satisfaction variables within each hospital setting. **Methods:** This is an analysis of secondary data collected in a cross-sectional study that adopted a customized version of the Hospital Survey of Patient Safety Culture (HSOPSC) and convenient sampling of clinical and non-clinical employees at 3 hospitals in Lagos, Nigeria. It also includes analysis of secondary data collected in another cross-sectional study of Patient Satisfaction in the Outpatient Clinics at these 3 hospitals. **Results:** This analysis of secondary data was done on responses from 156 employees and 225 patients. Areas of strength for the HSOPSC were Teamwork, Organizational Learning and Continuous Improvement within the units whereas areas requiring improvement were Hospital Non-Punitive Response to Error, Staffing and Communication Openness with the surveys. **Conclusion:** The culture of patient safety is an imperative for improving patient outcomes (as indicated in events reporting) and patient satisfaction in the 3 hospitals. This is a pilot study that suggests the need for more studies in Nigeria, considering the factors that are outlined in this study as being correlated. The major drawback with correlation is that it does not predict causal relationships.

INDEX WORDS: patient safety; safety culture; culture of patient safety; patient safety culture; satisfaction; survey; quality; patient satisfaction; employee satisfaction

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Figure 1: List of Abbreviations

Abbreviation	Meaning
ACSNI	Advisory Committee on Nuclear Installations
AHRQ	Agency for Healthcare Research and Quality
AIDS	Acquired Immune Deficiency Syndrome
CDC	Centers for Disease Control and Prevention
CEO	Chief Executive Officer
CFA	Confirmatory Factor Analysis
CMS	Centers for Medicare and Medicaid Services
CPOE	Computerized Physician Order Entry
CR	Construct Reliability
EFA	Exploratory Factor Analysis
HAC	Hospital-acquired Condition
HCAHPS	Healthcare Consumer Assessment of Healthcare Providers and Systems
HRO	High Reliability Organization
HSC	United Kingdom Health and Safety Commission
HSOPSC	Hospital Survey on Patient Safety Culture
IHI	Institute for Healthcare Improvement
IOM	Institute of Medicine
IPPS	Inpatient Prospective Payment System
MCBS	Medicare Current Beneficiary Survey
MSI	Modified Stanford Instrument
NPSF	National Patient Safety Foundation
POA	Present on Admission
PSO	Patient Safety Organization
SAQ	Safety Attitudes Questionnaire
SAS	Statistical Analysis Software
SCS	Safety Climate Survey
SPSS	Statistical Package for Social Sciences
SQHN	Society for Quality in Healthcare in Nigeria
Stanford/PSCI	Stanford Patient Safety Culture Instrument
TJC	The Joint Commission
WHO	World Health Organization

CHAPTER 1

INTRODUCTION

Public Health Significance

In healthcare, there is no collectively accepted definition of “quality.” Within the global healthcare community, the following definition from the United States (U.S.) Institute of Medicine (IOM) is commonly used: “the degree to which health services for individuals and populations increase the likelihood of desired health outcomes and are consistent with current professional knowledge.” (IOM, 2001). Similarly, Dlugacz, Restifo, and Greenwood (2004) define healthcare quality as “care that is measurably safe, of the highest standard, evidence-based, uniformly delivered, with the appropriate utilisation of resources and services.” In 1999, the IOM released a landmark report re-iterating the urgent need for patient safety (Kohn, Corrigan and Donaldson, 1999). This report indicated that approximately 44,000 to 98,000 people die every year from medical errors in U.S. hospitals. In addition, this 1999 report indicated that these numbers of deaths from U.S. hospitals surpassed the combined deaths from motor vehicle accidents, breast cancer and AIDS (Brickell and Carla, 2011).

Johnstone and Kanitsaki (2008) in their review of multiple patient safety issues (e.g. medication errors, healthcare-associated conditions, etc.) which have occurred at various healthcare organizations over the years, highlight the fact that since the first IOM report on quality in 2002, it has become increasingly evident that the effect of patient safety issues within healthcare systems requires deliberate and consistent efforts to overcome multiple patient issues (such as medication errors, healthcare-associated conditions, etc.).

Statement of the Problem

Bodur and Filiz (2010) indicate that medical errors have been identified as one of the five most common causes of death. The World Health Organization (WHO) estimates that millions of patients worldwide experience mortality and morbidity directly related to unsafe medical practices. It further estimates that the incidence of medical errors during healthcare procedures is more than 5%, with the majority of these errors identified as preventable. Similarly, studies conducted in acute care hospitals in the U.K., New Zealand, Denmark and Canada found adverse event rates to be 11.7%, 12.9%, 9% and 7.5% respectively (WHO, 2004).

The burden of adverse events on patients' lives can be devastating. In the U.K., additional length of hospital stay cost about \$2 billion (pounds) per year, with additional litigation claims and costs to the National Health Service approximately \$400 million annually. Conversely, in the U.S., the estimated total cost of preventing adverse medical events and its associated mortality and morbidity is estimated to be between US\$1.7 billion and US\$2.9 billion annually (WHO, 2004).

Similarly, Garbutt et al (2003) also recommended that hospitalized patients be asked about any hospital stay concerns. Since then, in the U.S., multiple agencies have created strategies for determining patients' perceptions of their care, such as the Healthcare Consumer Assessment of Healthcare Providers and Systems (HCAHPS) program developed by the Agency for Healthcare Research and Quality, Medicare Current Beneficiary Survey (MCBS) developed by the Centers for Medicare and Medicaid Services (CMS) and World Health Organization's (WHO) Patients for Patient Safety initiatives.

The Institute of Medicine (IOM) is a nonprofit organization established in 1970 under the charter of the National Academy of Sciences. The IOM works outside the framework of the U.S.

government to provide independent, objective, evidence-based advice to policymakers, health professionals, the private sector, and the public. Its mission is to serve as adviser to the nation to improve health (IOM, 2006).

In 1998, the National Academy of Sciences appointed the IOM Committee on the Quality of Health Care in America to identify strategies for achieving a substantial improvement in the quality of health care delivered to Americans. In response, in 1999, the National Academies released the report, *To Err Is Human: Building a Safer Health System* (Kohn, Corrigan, & Donaldson, 2000). This report stated one of the leading causes of death and injury in the U.S. was medical errors. This report highlights the fact that medical errors kill between 44,000 and 98,000 people in U.S. hospitals each year.

Based on just even the lower estimate (of 44,000 annual deaths), more people die from medical errors in a year than from highway accidents, breast cancer, or AIDS (Kohn, Corrigan, & Donaldson, 2000). The '*To Err is Human*' report recommended that health care organizations create an environment in which culture of safety is an explicit/clear organizational goal, becomes a top priority, and is driven by leadership (Kohn et al., 2000). The report further stressed the need for executive and clinician leadership and for patient safety accountability by governing boards of trustees. It emphasized that safety principles of standardization and simplification of equipment, supplies, and processes should be adopted.

After these IOM recommendations were made, health care organizations began to work on improving general widespread lapses in establishing patient safety programs. They focused on creating organizational safety culture, otherwise known as the culture of patient safety within their respective organizations (Leape et al., 2002). This new drive+ at the time, resulted in several healthcare organizations' ways of evaluating the organizations' culture of patient safety (Pronovost et

al., 2006). Many healthcare organizations have been striving to come up with a uniform definition for the culture of patient safety, both in the U.S. and globally.

Patient Safety from a Global Perspective:

According to the World Health Organization (WHO, 1999), patient safety is defined as the reduction of the risk of unnecessary harm associated with healthcare. Prior to this WHO definition, in 1999, a landmark report of the Institute of Medicine (IOM), “To Err is Human: Building a Safer Health System” was published. This report re-iterated the urgent need for a national effort to make health care safer in the U.S., as well as all over the world. Similarly, Corrigan and Donaldson’s Patient Safety Report (1999) indicated that approximately 44,000 to 98,000 people die every year from medical errors that occur in U.S. hospitals. Furthermore, Brickell and Carla (2011) bring up this alarming trend, as the number of people who die from medical errors that occur in the U.S. has surpassed the people who die from the combined cases of motor vehicle accidents, breast cancer and AIDS.

Furthermore, in 2002, the Resolution 55.18 of the Fifty-fifth World Health Assembly was passed and it called upon the Assembly member states to pay close attention to patient safety (World Health Organization, 2009). In October 2004, the WHO launched an initiative called the World Alliance for Patient Safety. This Alliance was developed to explore patient safety as a global issue affecting both developed and developing countries all over the world (WHO, 2009). In 2001, the WHO estimated that one in every ten patients seeking healthcare suffers an adverse event. Concurrently, Resolution 55.18 was passed during the Fifty-fifth WHO Assembly meeting in 2002 (WHO, 2002). In this resolution, there was an urgent appeal made to Member States to improve the quality of care and patient safety by paying close attention to the problem of patient safety and establishing and strengthening science-based systems for improving patients’ safety

and health care quality. Conversely, Resolution 55.18 of the Fifty-fifth World Health Assembly was passed in May 2002 and it urged the member states to pay close attention to patient safety (WHO, 2009). Jardali et al (2011) indicate that developing a patient safety culture was one of the recommendations made by the Institute of Medicine, in agreement with the World Health Assembly resolution.

Lee et al (2010) describe patient safety culture as “shared beliefs, values, attitudes and assumptions of how people perceive and act upon safety issues within their organization. Similarly, Krause and Hadley (2009) demonstrate in their study that as patient safety culture improves, patient safety improves, employee satisfaction improves, quality of care improves and overall reputation and financial security of the organization is assured. In Africa, there is insufficient awareness of patient safety and inadequate data to assess the magnitude of patient safety issues and resulting impact on healthcare organizations (Ente, Odongkara, Mpora, 2010).

Concurrently, the Patient Safety report from the World Health Organization (WHO, 2009) indicates that the general patient safety challenges in the African continent are dire. Most countries lack national policies and plans on safe and quality healthcare practices; there is insufficient funding of healthcare systems and unavailability of critical support systems outlining the critical strategy for healthcare safety/quality of healthcare standards; weak healthcare delivery systems with sub-optimal infrastructure, poor management capacity and under-equipped healthcare facilities; overuse, underuse and misuse of medicines, black market medicines and counterfeit medicines; lack of adequate infection control within healthcare facilities; unsafe surgical care with only a few African countries systematically using the WHO-recommended Safe Surgery Saves Lives check list; shortage of human resources; lack of partnership involving patients and the general public in improving patient safety and inadequate data on patient safety issues.

The WHO Patient Safety Report from 2009 further estimates that in developed countries, as many as one in 10 patients is harmed while receiving hospital care. This harm is not to be often caused by a range of errors or adverse events. The WHO defines an adverse event as an incident which results in harm to a patient (including omission). As a result, many health care organizations have geared towards assessing their patient safety culture using the Hospital Survey on Patient Safety Culture (HSOPSC). This survey tool was validated and developed by the Agency for Healthcare Research and Quality (AHRQ). Chen et al (2010) demonstrate that the survey tool has a good reliability and validity and it has been translated into 17 languages.

Moreover, the World Health Organization (WHO, 2011) conducted a retrospective study involving the review of medical records of randomly selected hospitals in Egypt, Jordan, Kenya, Morocco, South Africa, Sudan, Tunisia and Yemen. The patients hospitalized in the selected hospitals during 2005 were screened for harmful incidents. The study objective was to assess how many harmful incidents occurred during 2005 (incidence rate) and identify the harmful incident types, prevention factors and contributing factors.

The World East Mediterranean and African study findings showed that almost one third of patients impacted by harmful incidents died and yet 4 out of 5 incidents were preventable. It also showed that the following disability rates for the study patients: 14% sustained permanent disability, 16% sustained moderate disability, 30% sustained minimal disability and 8% sustained unspecified harm. In addition, each incident required an average of nine additional hospital days. Furthermore, of all the harmful incidents: 34% resulted from therapeutic errors; 19% from diagnostic errors; 18% from surgical mistakes; 9% from obstetrics; 8% from neonatal procedures; 5% from non-surgical procedures; 4% from drug-related incidents and 2% from fractures; 0.5% from anesthesia and 0.5% from falls.

Similarly, in the Nigerian context, Adeyemo et al (2011) in a cross-sectional questionnaire-based study in a Southeastern Nigeria city, involving 171 dental surgeons showed that 13% dental surgeons reported extracting at least one wrong tooth in the preceeding 12 months, but only 25% of the dental surgeons were aware of the universal protocol for preventing wrong-site, wrong-procedure or wrong-person surgeries, out of which only 30% had read the universal protocol. Nwosu et al (2015) in a case review of two wrong-site orthopedic surgery cases at the same hospital noted that neither one of these incidents were officially reported to the surgery department, nor mentioned in regular clinical morbidity/mortality review. In addition, there was no audit or root-cause analysis initiated for either one of these cases.

Overall, in terms of progress of Patient Safety in sub-Saharan Africa, particularly, Nigeria, there is still very limited research, and this might indicate that patient safety and quality of care information from the region is still “infrequent and limited in scope” (Carpenter, et al., 2010). For instance, it is not known whether a safety intervention such as the WHO Guidelines on Hand Hygiene in Healthcare designed to prevent healthcare-associated infections at the point of care or the Surgical Safety Checklist, which is designed to improve the safety in surgery, have been implemented. There is also scant evidence of local initiatives put in place in healthcare organizations to ensure patient care is effective, appropriate, and safe (WHO, 2011). Therefore, an information gap in practice remains related to the implementation of best practice, safety culture, quality improvement, and patient safety and quality of care measures in the region. Moreover, patient safety and quality improvement initiatives in parts of Nigeria are being impeded by factors that include: unfocused stakeholder agendas, limitations of the infrastructure of the health care system, lack of capacity (in terms of healthcare staffing, time, etc.) for improvement, lack of data to inform improvement priorities.

Kohn et al (1999) identified medical errors as including, but not limited to adverse drug events, improper transfusions, surgical injuries or deaths, falls, burns, pressure ulcers and mistaken patient identity. Ente et al (2010) found that 75% of African healthcare professionals believed that adverse events were mistakes made by individual practitioners leading to personal guilt, depression, and remorse. Fear of blame, prosecution, and even imprisonment for medical errors may impede the reporting of patient harm in African healthcare settings as in other countries (Barach & Small, 2002). This fear of reporting further complicates the ability to collect incident reports or obtain open and transparent information concerning suspected adverse events. Additionally, in many developing African healthcare settings, medical records are not organized well or completed properly, leading to frustration, debate, and clinical misjudgements. Over 53% of survey participants reported frequent or occasional rates of medical errors in their healthcare facilities (Ente, et al., 2010). Any clinical setting that lacks reliable data to recreate the occurrence of medical errors and adverse events, which is critical in identifying the underlying problems and the potential solutions, is bound to face enormous and daunting challenges to improve patient safety.

Rationale for Study

This retrospective analysis of secondary data study was undertaken because there were limited studies that outlined healthcare workers' perspectives on the culture of patient safety in Lagos, Nigeria, or even Africa, as a whole. Ente et al (2010) indicate that the limited awareness of patient safety data measurement of inherent safety problems and their resulting effects on healthcare facilities.

Concurrently, the Patient Safety report from the World Health Organization (2009) summarizes the general patient safety challenges in the African continent are as follows: i) most

countries lack national policies and plans on safe and quality healthcare practices, ii) insufficient funding of healthcare systems and unavailability of critical support systems outlining the critical strategy for healthcare safety/quality of healthcare standards, iii) weak healthcare delivery systems with sub-optimal infrastructure, poor management capacity and under-equipped healthcare facilities, iv) overuse, underuse and misuse of medicines, black market and counterfeit medicines, v) lack of adequate infection control within healthcare facilities, vi) unsafe surgical care with only a few African countries systematically using the WHO-recommended Safe Surgery Saves Lives check list, vii) shortage of human resources and, viii) lack of partnership involving patients and the general public in improving patient safety and inadequate data on patient safety issues.

The 2009 WHO Patient Safety Report shows that in developed countries, as many as one in 10 patients is harmed while receiving hospital care. This harm is not often caused by a range of errors or adverse events. According to Singer et al (2003), there are discrepancies and lack of clarity issues around definitions and conceptualizations of patient safety culture. Singer (2003) further indicates that the current literature focused on how measuring change in culture for patient safety is limited to quantitative measurement tools with the idea that a 5% change in the survey result would indicate a shift in culture in the positive or negative direction.

The U.S. Agency for Healthcare Research and Quality (AHRQ) developed and tested a survey tool that has been used by organizations to assess and benchmark their patient safety culture. Ginsberg et al (2009) and Sorra et al (2010) further outline that, even though the AHRQ survey tool has been used for a number of years, it is now only being tested for validity and reliability. There are very limited studies from Africa and none in Nigeria, at the moment.

Gaps in the Literature

There are only a few studies focused on examining the Culture of Patient Safety and Patient Satisfaction in Africa (Wilson et al, 2012). The limited data from these studies point to the fact that poor patient safety is probably a much bigger problem in developing countries than what is reported. Wilson et al (2012) further indicate that extrapolating their figures to the activity of the study hospitals yields a calculation that suggests that more than 10,000 patients would die from adverse events at the study hospitals. In their estimate, this amounts to more than one death a day in each of the study hospitals, with most of the deaths resulting from preventable adverse events during hospitalization. At the time of this study, there were no previous reports that had specifically outlined the patient safety gaps in Nigerian private hospitals, given that there are no current regulations or accreditation requirements for mandating or regulating patient safety. In addition, there is limited pressure for healthcare worker accountability and patient satisfaction. Furthermore, with the significant brain drain of healthcare workers from Nigeria to developed countries, there is little engagement from the limited number of healthcare workers in Nigeria to evaluate the need for patient safety.

Objectives of the Study

The main objective of the study was to conduct a pilot assessment of the culture of patient safety in 3 different hospitals in Lagos, Nigeria and compare our findings with the 2012 benchmark results of the U.S. Agency for Healthcare Research and Quality (AHRQ).

Specific Aims:

The HSOPSC Survey and Patient Satisfaction Survey were conducted in the three Hospitals in Nigeria. The study was planned with the following research aims:

Specific Aim 1: To assess employees' perception of the culture of patient safety at 3 private hospitals within Lagos, Nigeria and to compare this with the outcome of U.S. Agency for Healthcare Research and Quality (AHRQ) benchmark data of 2012 from Critical Access Hospitals in the U.S.;

Specific Aim 2 - To assess patient satisfaction at 3 private hospitals within Lagos, Nigeria using the modified version of the U.S. Healthcare Consumer Assessment of Healthcare Providers and Systems (HCAHPS) that focused on the patients' ambulatory care satisfaction. This data was compared to the Agency for Healthcare Research and Quality (AHRQ) benchmark data from 2013;

Specific Aim 3: To determine if there were any correlations between the employees' perception of the culture of patient safety variables, and patient satisfaction outcomes within each hospital.

Hypotheses

The study was conducted with the following hypotheses:

- a) With a more positive safety culture, there would be a positive correlation between mistake-reporting and events reporting. This hypotheses is related to the employees' perception of the culture of patient safety, particularly in relation to the events reported at the hospitals within the previous 12 months;
- b) With a more positive safety culture, there would be better teamwork and management support. This hypotheses is related to the employees' perception of teamwork and management support;
- c) With a more positive safety culture, there will be multiple correlations between the HSOPSC and Patient Satisfaction indicators. This hypotheses is related to the correlation between HSOPSC (event-reporting) and Patient Satisfaction (future use).

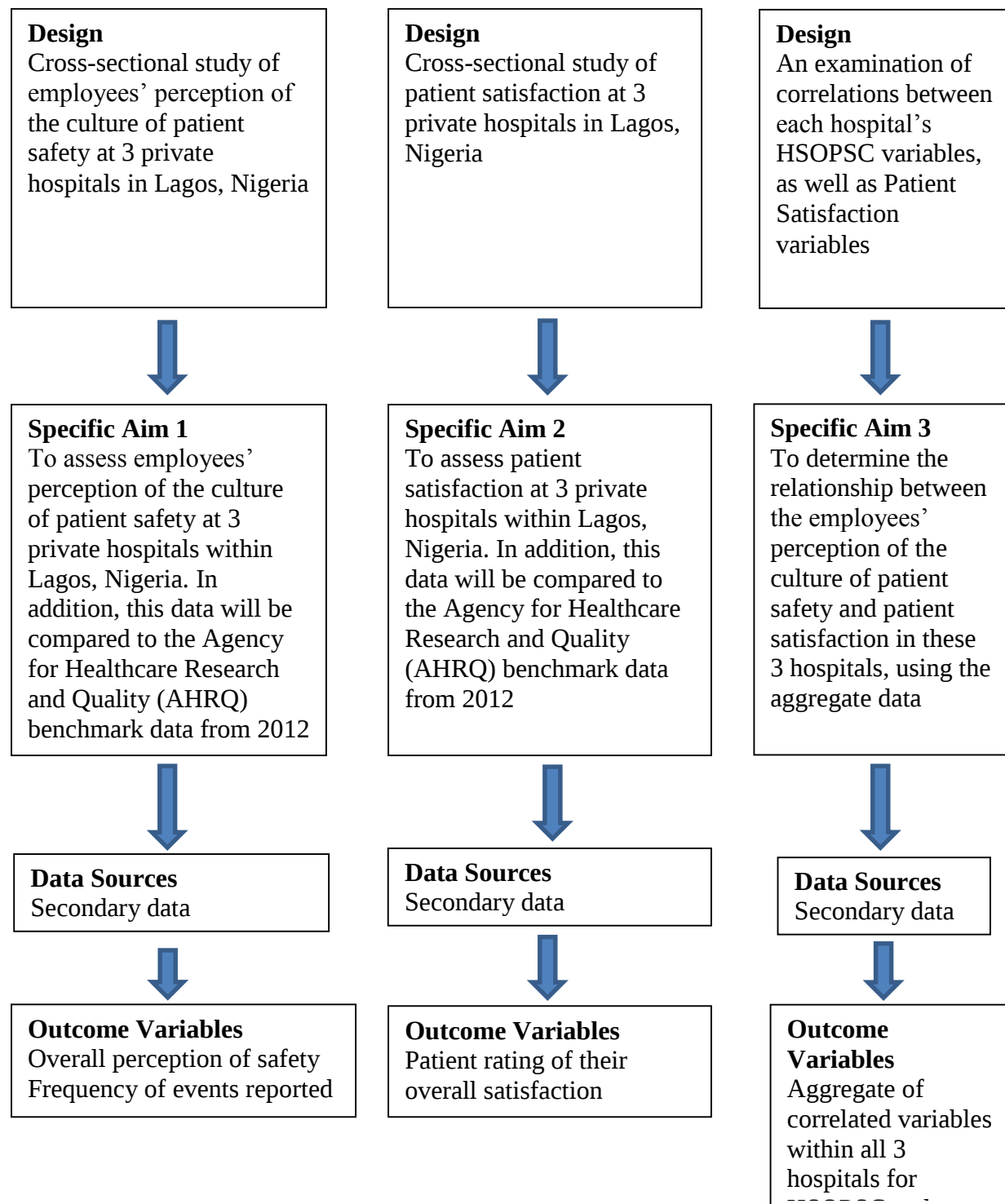
Deliverables

Research findings on the Culture of Patient Safety and Patient Satisfaction would provide an insight into possible factors that may positively or negatively influence patient outcomes from hospital interactions and encounters. These findings outline the gaps that will need to be addressed in subsequent studies focused on the relationship between employees' perception of patient safety and inherently, patient satisfaction

- a) A summary of the findings from this pilot assessment of the Culture of Patient Safety within the 3 hospitals in Lagos, Nigeria
- b) A summary of the findings from this pilot assessment of Patient Satisfaction within the 3 hospitals in Lagos, Nigeria
- c) An examination of the possible correlation between employees' assessment of the Culture of Patient Safety within each hospital and correlates and levels of Patient Satisfaction within each hospital

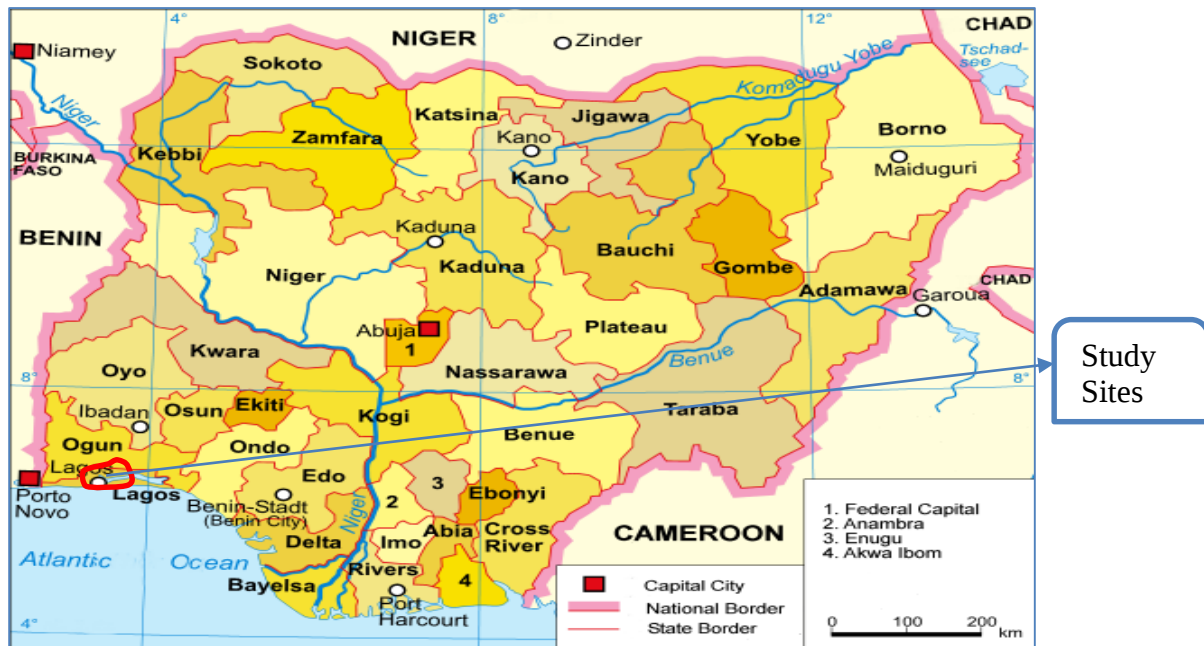
Study Designs

Figure 2: Epidemiologic Studies



Maps of Nigeria and Lagos

Figure 3: Map of Nigeria, Exhibiting its 36 States and the Federal Capital Territory



Source: <http://www.worldatlas.com/webimage/countrys/africa/ng.htm>

Figure 4: Map of Lagos City's Major Areas Served by the 3 Private Hospitals in the Study



Source: google maps, 2015

CHAPTER 2

LITERATURE REVIEW

Culture of Patient Safety

Definition of the Culture of Patient Safety

According to Antonsen (2009), the use of the term “safety culture” became more evident in the 1990s, close to the incident of the Chernobyl disaster in 1986. At the time, arguments were made by Pidgeon (1998) about the need to examine safety culture, which was deemed as an essential part of an organization. Guldenmund (2000), Cox et al (1991), Hellings et al (2007) have all identified definitions of safety culture as follows: “safety cultures reflect the attitudes, beliefs, perceptions and even values shared by employees related to safety”; “everyone feels responsible for safety in a total safety culture, and it is pursued on a daily basis”; “safety culture reflects aspects of attitudes, behaviors of groups and overall values”; “a pattern of shared beliefs or assumptions that are learned by a group of people can be taught to new members as the correct way to think about a problem”; “safety is perceived as a basic assumption throughout an organization, as it relates to the values and behaviors of staff within that organization”

To date, there has been limited research studies (Deilkas, 2008; Weick et al, 2007; Schein, 2010; AHRQ, 2009) that measure the trend in the culture of patient safety for organizations. More so, these studies suggest that a 5% change in the survey result over time could be an indication of a shift in culture in the positive or negative direction.

Theories behind the Science of Safety

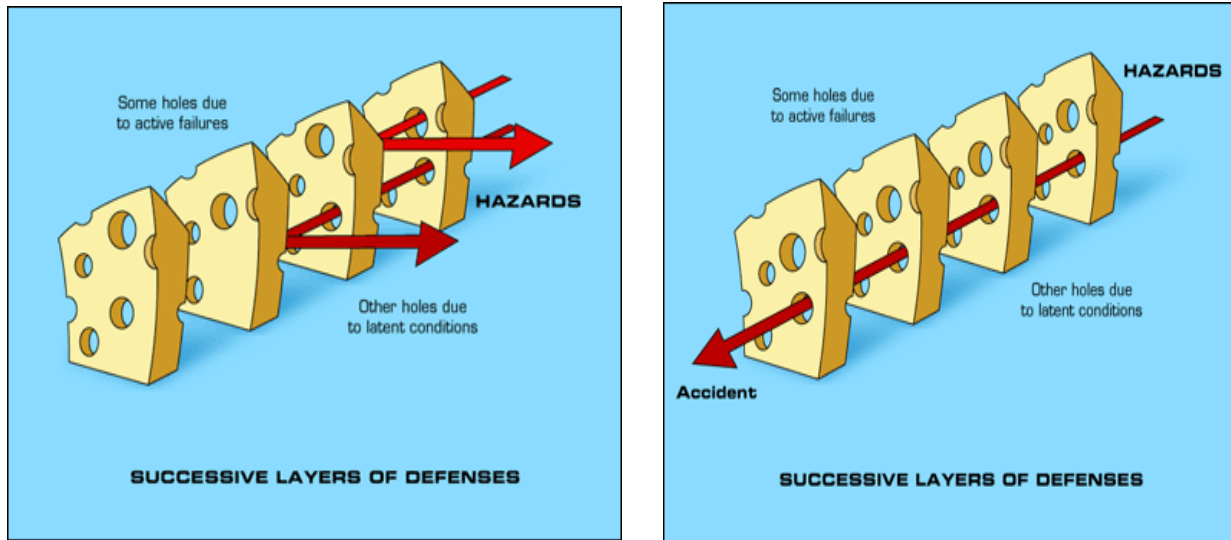
In the past, the exploration of the reasons and mechanisms for adverse events and medical errors focused on the human error perspective of the healthcare worker. Cook and

Reswoods (1994) and Weinberg (2002) in their study describe the tendency to ascribe some blame on individuals when human errors occur, and the resulting tendency to punish and drive accountability to prevent further human errors. Multiple studies on the science of the safety focus on the need for starting out with the culture and orientation of patient safety in the minds of healthcare workers. For example, an Advisory Committee on Nuclear Installations (ACSNi) describes the culture of safety in any organization as the product of individual and group values, attitudes, competencies and behavior patterns determining commitment to the organization's safety programs.

Reason (1997) and Weick (2001) describe the culture of safety using the “Swiss Cheese” model, depicting the general idea of multiple factors being responsible for organizational and individual levels of safety, which result in structural holes and the alignment of these holes, if done one at a time, will allow for an error to occur. In essence, Reason (1997) illustrates how multiple organizational factors impact adverse events and the need for organizations to move away from blaming individuals for poor safety outcomes. Reason further defines the types of failures: active failures, which are errors that occur where there is interaction between the human and the system in which he or she is working; latent failures, which are organizational factors impacting the trajectory of error. Prime examples of active failures include structural design failures and latent failures include poor design, inadequate tools, inadequate training, etc.

In addition, Reason (1997) further outlines the fact that, in any culture, the formation of organizational practices (e.g. values, beliefs, traditions, etc.) should include error reporting, learning, flexibility and justice. Reason's analogy of the “sharp end” and “blunt end” of the system is illustrated as follows:

Figure 5: Human Error – “Swiss Cheese” Model



Source: Reason, J. (1990) *Human Error. “Swiss Cheese” Model*. Cambridge: University Press, Cambridge.

Concurrently, Guldenmund (2000) and Cox et al (1991) define safety culture as “attitudes, beliefs, perceptions and values that employees share in relation to safety. In safety culture, everyone feels responsible for safety and pursues it on a daily basis.” Similarly, Schein (2010) defines organizational culture as “a pattern of shared basic assumptions learned by a group, and subsequently taught to new members as the correct way to perceive, think and feel in relation to problems.”

Overall, the culture of safety of any organization is a concept that is drawn from high reliability organization (HRO) theory, as translated by Reason (1997) and Weick (2001). Reason’s “Swiss Cheese” model illustrates how different layers of an organization are affected by each specific component. The need to focus on safety science research has provided healthcare leadership direction and focus, where appropriate. To date, there are still knowledge gaps with evaluating and making culture changes.

Despite the relatively little difficulty to express safety culture in words, knowing and understanding the characteristics that define a safety culture and its implications to health care organizations may be more elusive. In 2001, the IOM Committee published a second report:

Crossing the Quality Chasm: A New Health System for the 21st Century (Committee on Quality of Health Care in America, 2001). IOM's previous report, *To Err is Human*, focused solely on patient safety, while the second report took on a broad overview of the U.S. healthcare delivery system and the need for redesign of the system. The IOM report identified six specific aims for the improvement of the health and functioning of the people of the U.S. The six domains of healthcare quality and safety were defined as:

- 1) *Safety*: leadership and commitment to safety (avoidance of injuries to patients) defined as “leadership acknowledgement of the health care environment is a high risk environment and seek to align vision/mission, staff competency, fiscal and human resources to the frontline;
- 2) *Timely Teamwork*: “a spirit of collegiality, collaboration and cooperation among executives, staff and independent practitioners”;
- 3) *Effectiveness*: “the provision of services based on scientific knowledge and standardization to reduce variation;
- 4) *Patient-centered*: “provision of care considering individual patient preferences”; timely defined as “wait-time reduction”;
- 5) *Efficiency*: efficiency defined as “waste reduction”;
- 6) *Equitable*: equity defined as “provision of care that does not vary in quality regardless of patients’ demographics.”

The IOM committee concluded in 2001 that if health care systems could achieve the above goals, they would be better able to serve the needs of patients with safer and more reliable

care. This report further served as an impetus for more healthcare organizations to focus on strategies for evaluating their organization's culture. Concurrently, the Agency for Healthcare Research and Quality (AHRQ) ultimately came up with the culture of patient safety definition, adopted from the Health and Safety Commission of Great Britain that is now widely used today.

The AHRQ definition is as follows: "The safety culture of an organization is the product of individual and group values, attitudes, perceptions, competencies, and patterns of behavior that determine the commitment to, and the style and proficiency of, an organization's health and safety management. Organizations with a positive safety culture are characterized by communications founded on mutual trust, by shared perceptions of the importance of safety, and by confidence in the efficacy of preventive measures." (United Kingdom Health and Safety Commission, HSC, 1993).

The Culture of Patient Safety

The concept of the culture of patient safety has been approached historically from research studies on medical errors and adverse events within the healthcare setting. The majority of these studies factors (Allnut, 1987; Reason, 1990; Amalberti, 2001 and Rasmussen, 2003) have focused on human error as a causative factor. For example, Rasmussen (2003) specifically classified human errors compromising patient safety, into categories: (i) rule-based errors, where information is correct but the wrong application method is selected for addressing an issue; (ii) knowledge errors, mistake that is from inadequate or incorrect information and (iii) skill-based errors, those resulting from faulty performance, usually due to some form of inattention. This section examines the research evidence behind the culture of patient safety and the multiple safety measurement tools that have been used at different healthcare systems in the past.

The Theories of Organizational Culture

Jung et al (2009) outline the varying perspectives of how organizational culture is identified and conceptualized. Jung illustrates how a wide variety of perspectives and paradigm shifts are always competing and changing definitions of the culture of patient safety. Jung's illustration of "organizational culture as a mirror of the king of the mountain game, where one king's or queen's temporary triumph at the top of the sand pile is rapidly superseded by the reign of another monarch." Jung further illustrates the inherent need to outline the overall purpose of research studies involving culture of patient safety, from the beginning.

Jung indicates that there are three different forms of ways for examining the culture of patient safety: *The formative approach*, with the methods following qualitative techniques (e.g. interviews); *The summative approach*, with a focus on dimensions or questions related to culture and *The diagnostic approach*, with a focus on the assessment of existing cultures and the subsequent modification and realignment of individual and organizational core goals.

The main frameworks that have outlined the structure of the concept of patient safety are from: Schein's Levels of Organizational Culture (2004, 2010); Westrum's Typologies Use (2004) and Martin and Meyerson's Perspectives of Organizational Culture (1988). All of these theoretical frameworks are focused on the perception of culture of patient safety being a complex phenomenon, but also being manageable and an integral part of the performance of any organization. The outlines of these frameworks are as follows:

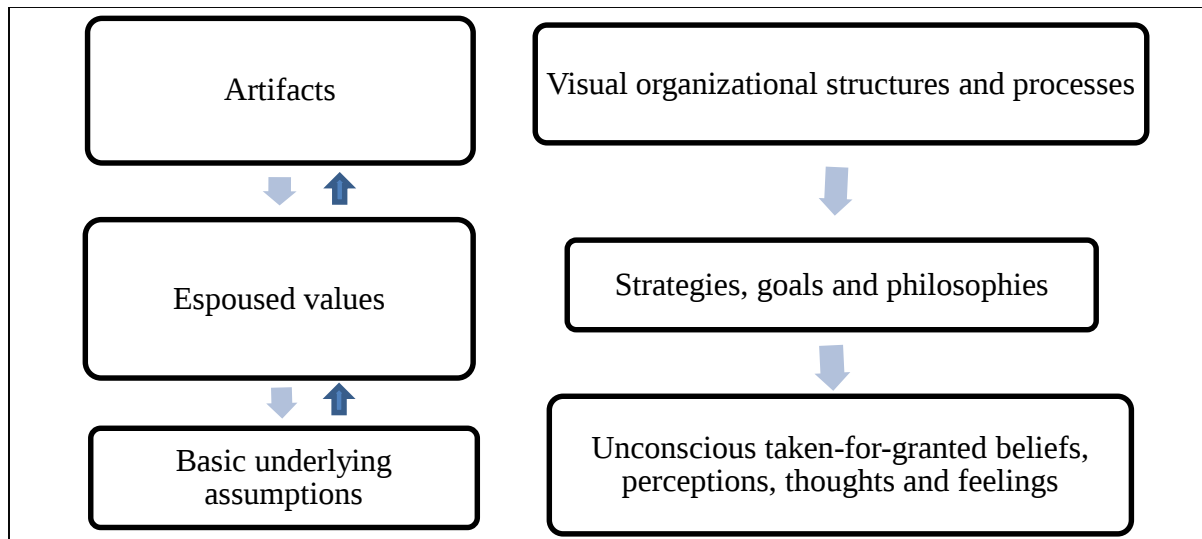
Schein's Levels of Organizational Culture

Schein (1990) defined culture as a pattern of basic assumptions that a group has invented, discovered or developed in learning to cope with its problems of external adaptation and internal

integration, and that have worked well enough to be considered valid and are taught to new members as the correct way to perceive, think, and feel in relation to those problems.

Overall, Schein's theory is based on the assumption that culture is a product of human beings' thought processes and activities. Schein further illustrates this assumption in this diagram, below:

Figure 6: Schein's Three Levels of Organizational Culture



Artifacts are defined as the most surface level of the organization (e.g. dress code). Espoused values are defined as consisting of conscious strategies, goals and philosophies. Basic assumptions and values are defined as the core or essence of culture, as depicted by basic underlying assumptions and values, and exist at an unconscious level.

At the first level, artifacts are visible and tangible behavior results (e.g. dress code, physical layout of the organization, meetings, personal protective equipment, etc.). The second level refers to the value system which usually depicts why observed behaviors, phenomena and beliefs are in place. Values are reflected in conscious, desires and wants. For instance, value systems are usually displayed in training manuals, policies, incident-reporting and job descriptions. The last and third level refers to basic underlying assumptions, thoughts, perceptions, behaviors and feelings.

Overall, Schein (1996) further illustrates that, even though individuals may enter an organization and become socialized with the culture of the organization, they also come to the

organization with their own assumptions that may have been passed on from their previous backgrounds and experiences. The differences that exist among members of certain occupations, specifically related to the assumptions they hold can create a challenge, but it is imperative for healthcare professionals to be able to work together and view patient safety as a cultural attribute that must permeate all of the cultures, and hence, the need for a shared patient safety consensus.

Martin and Meyerson's Three Perspectives of Organizational Culture

Martin and Meyerson (1988) outline the following perspectives for safety culture analysis: *The integration perspective*, with the assumption that a strong culture indicates consistency, clarity and consensus within the organization; *The differentiation perspective*, with a focus on the subtle or subculture inconsistencies within the organization and *the fragmentation perspective*, with a focus on undefined and ambiguous behaviors or thought processes within the organization and how they impact the safety culture. Meyerson further re-iterates the critical need to examine the safety culture from all three perspectives, in order to get multiple perspectives within the organization.

Westrum's Typologies of Organizational Culture

Westrum (2004) defines organizational culture as the response patterns to problems, issues and opportunities. He denotes that there are three different patterns that should be examined: *The pathological*, defined as power-oriented with a focus on needs and glory; *the bureaucratic*, defined as preoccupations with rules and position-oriented and *the generative*, defined as focused on the mission of addressing issues or problems, without paying attention to people and their positions. Westrum further illustrates that organizational leadership has a major role in shaping the culture of the organization by their indication of what is really important, through their actions and communication with their employees. Westrum concludes that, it is

imperative to seek an understanding of how information is processed within an organization, in order to appreciate the culture.

Overall, each of the three frameworks provides the basis for understanding the culture of safety within the health care institution. Schein (2010) offers the framework of where to look, how to look and what to look for (in terms of interpretation) on the framework for understanding an organization's culture. Furthermore, Martin and Meyerson (1988) re-iterate the need to view safety culture data from different perspectives and Westrum (2004) is focused on the grouping of information, to provide an overall comprehensive understanding of the culture.

The Measurement and Evaluation of the Culture of Patient Safety

External accreditation and internal regulatory bodies have long called and advocated for the need to develop the culture of patient safety. Using the evaluation framework and assessment tools, much of the understanding of patient care needs, healthcare personnel needs and organizational culture improvement and benchmarking. This has stemmed from the use the data collected from assessments for designing positive changes to safety within the healthcare system. This section provides an overview of the tools that are most frequently being used to assess culture of patient safety.

Safety Climate Survey (SCS)

The SCS was developed by Zohar in 1980 (Zohar, 1980). He had developed and tested the first model of the survey using a 40-item questionnaire, administered to workers at 20 Israeli factories in multiple industries. The original SCS included questions on: the status of the workplace safety committee; status of the safety officer; effects of safe conduct on promotion; level of risk at workplace; management attitudes toward safety and effect of safe conduct on social status.

According to Seo et al., (2004), subsequent modified SCS have consistently focused on these factors, but they have clustered the factors into five main constructs of safety climate. These 5 constructs are: supervisory safety support; coworker safety support; management commitment to safety; employee participation and competence level. In some research studies, it has also been referred to as the “Safety Culture Survey.” This tool is often used by organizations to get quick assessment data on the safety climate from which organization leaders can focus on improvement activities (Kho et al, 2005).

Safety Attitudes Questionnaire (SAQ)

This questionnaire is based on management of the Intensive Care Unit (ICU), adapted from a commercial aviation questionnaire, called the Flight Management Attitudes Questionnaire (Sexton et al, 2006). The current questionnaire examines 6 domain factors using 40 question items. These factors include: working conditions, perceptions of management, safety climate, teamwork climate, job satisfaction and stress recognition. Sexton illustrates that the SAQ has been adapted for use in multiple healthcare settings, including Ambulatory Clinics, General Inpatient settings, etc. since its creation.

Stanford Patient Safety Culture Instrument (Stanford/PSCI) and Modified Stanford Instrument (MSI)

This tool was developed in 2003 by Singer et al (2003). This safety culture assessment tool is required by the healthcare accreditation body of Canada. This questionnaire contains: reflective of perception of unit leadership, organizational leadership, shame and repercussions, perceived state of safety and safety learning behaviors. According to Ginsburg (2009), analysis of this questionnaire involves a ranking system for positive and negative responses on the questions.

Hospital Survey on Patient Safety Culture (HSOPSC)

In 2004, the U.S. Agency for Health Research and Quality (AHRQ) released the first version of the survey tool, HSOPSC. This tool was developed after a comprehensive review of literature on patient safety and safety management, with both researcher and hospital administrator input (AHRQ, 2010). According to Sorra and Dyer (2010), pilot data was subsequently collected to evaluate variability in responses, reliability and factor structure.

The dimensions assessed include: error feedback and communication, communication openness, frequency of events, transitions and handoffs, non-punitive response to error, management support, organizational learning, overall perceptions of patient safety, supervisor expectation, staffing, and teamwork across units and within units.

HSOPSC Survey Reliability and Validity

Over time, multiple researchers have raised concerns about multiple surveys and questionnaires outlined in the previous questions. For instance, Singla et al (2006) and Kitch (2007) raised concerns about overall differences in the ways the survey dimensions were utilized in the safety survey tools; differences in emphasis on the survey dimensions; lack of very detailed descriptions of how different tools were developed and the limited validity of dimensions or constructs in the safety surveys against other ways that safety culture can be assessed, which have not been discovered.

Similarly, Flin et al (2006), Colla et al (2005) and Singla et al (2006) have all conducted extensive systematic reviews of safety culture studies, and they have all found multiple common dimensions which include: reporting or recording of adverse events, communication, leadership and management, systems policies/education/training, work demands, teamwork, values and beliefs about safety, organizational learning, individual factors, evaluating incidents and best

practices and overall commitment to continuous improvement. Within these three systematic reviews, the most commonly occurring theme was with: leadership, safety systems, teamwork, values and beliefs about safety and teamwork. Furthermore, the Hospital Survey of Patient Safety Culture (HSOPSC) was noted to have acceptable reliability and construct validity when the survey was applied in a Turkish health care setting (Bodur and Filiz, 2010); Dutch health care setting (Smit et al, 2008) and United Kingdom setting (Pfeiffer and Manser, 2010).

Gaps in Knowledge

In summary, the concept of patient safety culture is relatively new, as it only started in the 1990s. More research is needed to examine how findings from different patient safety settings differ or are inter-related and how organizational culture and culture change can be effectively integrated. Although there have been very few systematic prevalence studies in developing countries (including Nigeria), the existing evidence from these countries suggest that unsafe medical care is still more prevalent than in developed countries. Aiken et al (2015) highlighted in their study of Mexican hospitals that nearly one out of every four hospitalized patients developed at least one nosocomial or hospital-acquired infections.

CHAPTER 3
LITERATURE REVIEW
Patient Satisfaction

Patient satisfaction, in both inpatient and outpatient settings, has increasingly become a priority in many healthcare organizations. Ensuring the satisfaction of patients is important to a healthcare organization's long-term survival and overall success. Patient satisfaction survey tools may help to teach organizations about their patients and provide patients the opportunity to express their thoughts regarding their experience with healthcare organizations and healthcare workers. It has been shown that patient satisfaction is a measure of the quality of services being provided (White, 1999). A patient satisfaction survey can help to show patients that a healthcare organization is interested in quality and in making improvements. It demonstrates an organization's commitment to its patients (Luzzatto, 2006).

The main criticism of patient satisfaction surveys is that their results are unreliable. In order to get the most out of the data, an organization should use statistical analysis to interpret survey responses into meaningful information. Brandi White in her article "Measuring Patient Satisfaction: How to do it and why to bother" suggests that organizations keep several things in mind for statistical reliability of their satisfaction surveys. These guidelines include determining an appropriate sample size, distribution method, considering the response rate and the actual number of responses received. Despite this drawback, the benefits of conducting a patient satisfaction survey are great to a healthcare organization. These benefits include improving

patient loyalty, reacting to changes in the market, identifying new opportunities, retaining or gaining market share, increasing revenue, and reducing costs.

Patient satisfaction surveys are derived in a variety of ways for use in multiple healthcare settings. Some organizations embrace a universal or generic type of questionnaire that may be used in outpatient and inpatient settings. Other questionnaires used are patient specific, where the survey is designed for patients in a particular setting or specialty. Survey instruments which are generic allow comparisons among many different healthcare settings, but may lack in the validity of the content compared to that of specialty or patient specific questionnaires. Often patients are not consulted when choosing the most appropriate survey tool and the choice is made solely by the professionals within the organization.

Unfortunately, there are few studies conducted on whether one questionnaire is better than another (Peytremann-Bridevaux, 2006). Patient satisfaction questionnaires may also be designed to strictly measure satisfaction, which is often criticized for being an ambiguous term, or they may directly report on patients' actual experiences. Regardless of the tool chosen, it is important for professionals choosing a patient satisfaction survey instrument to ensure that the data collected will be measurable and useful for quality improvement efforts.

One study conducted involving two psychiatric inpatient facilities compared satisfaction questionnaires specifically designed for psychiatric patients to those which were generic patient satisfaction questionnaires. The investigators wanted to know if one was better than the other in evaluating patients' satisfaction in the psychiatric setting. Their findings showed that one was not advantageous over the other but that each did have drawbacks. Also, it was shown that the generic instrument was more desirable when comparing medical services or hospitals (Peytremann-Bridevaux, 2006). Other ways in which questionnaires may differ are; looking at

how they are administered. Studies have been done on the effectiveness of a computerized questionnaire versus the traditional paper-and-pen method. Some of the advantages of a computerized questionnaire, specifically using touch-screen technology, include shorter time to complete the survey, faster data analysis, and overall easier for patient's to use.

The Consumer Assessment of Health Providers and Systems (CAHPS) Hospital Survey is a standardized survey developed by the Centers for Medicare and Medicaid Services (CMS) and the Agency for Healthcare Research and Quality (AHRQ). The CAHPS Hospital Survey is designed to ask patients to report on various aspects of their health care experience. The development of the survey was based on certain objectives, including to generate comparable data on patients' perspectives of the care they received and to be able to make comparisons among other hospitals, and to publicly report the data, giving hospitals motivation to initiate and continue quality improvement efforts within their organization.

According to the journal article, *Measuring Hospital Care from the Patients' Perspective: An Overview of the CAHPS Hospital Survey Development Process*, the CAHPS Hospital Survey is intended to become the standard survey instrument and data collection methodology for measuring patients' perspectives on inpatient hospital care and reporting valid comparisons among hospitals" (Goldstein, 2005). Hospitals rely on various survey vendors to collect patient satisfaction data and the CAHPS surveys utilize standardized instrument among the hospitals using different vendors.

CHAPTER 4

METHODOLOGY

Study Design

This cross-sectional study design is based on the analysis of secondary data collected by 3 different private hospitals in Lagos, Nigeria, West Africa. The questionnaire used for the study was previously modified from the Hospital Survey of Patient Safety Culture (HSOPSC) form that was originally developed by the U.S. Agency for Healthcare Research and Quality (AHRQ). Overall, the Hospital survey questionnaire used by the primary data collection team was designed to measure the following outcomes of patient safety: the number of reported events, event reporting frequency, overall patient safety perception and overall patient safety grade.

In addition, the survey focused on the following dimensions of patient safety culture: The communication openness, teamwork within and across hospital units, supervisor/manager expectations and actions promoting patient safety, feedback and communication about error, staffing, organizational learning and continuous improvement, non-punitive response to error, management support for patient safety and hospital hands-off and transition of care.

The focus of this study was to conduct the analysis of secondary data from a pilot study data collected by the Society for Quality of Healthcare in Nigeria (SQHN) on the current patient safety culture in 3 private Nigerian hospitals using HSOPSC and to compare results with the 2012 benchmark findings from Critical Access Hospitals. According to the Centers for Medicare and Medicaid definition (1997), a Critical Access Hospital is a hospital certified under a set of Medicare Conditions of Participation, which include: having no more than 25 inpatient beds,

maintaining an annual average length of stay of no more than 96 hours for acute inpatient care, offering 24-hour, 7-day-a-week emergency care and being in a rural area. The limited size and short stay length allowed Critical Access Hospitals to focus on providing care for common conditions and outpatient care. Challenges of these hospitals have historically include small size, limited workforce and constrained financial resources.

The study findings provide some guidance for a larger-scale survey structure with multiple hospitals in diverse geographic locations in Nigeria. The findings also provide policy-makers, healthcare professionals and research scientists with a broad understanding of the current patient safety culture in hospitals in Nigeria. This study evaluated current patient safety culture in 3 different private hospitals in Lagos, Nigeria and made comparisons with the AHRQ 2012 benchmark findings.

Study Description

This data analysis was conducted on secondary data already collected by the Society for Quality in Healthcare in Nigeria (SQHN). SQHN was incorporated in May 2006 as a not-for-profit charitable organization. It has multidisciplinary involvement and is governed by a constitution, with a focus to bring about a wider understanding and acceptance of Quality in Healthcare towards improved patient outcomes and reduction in healthcare delivery costs. Since its inception, SQHN has advocated for the need for sharing best practice and successful strategies among healthcare professionals throughout Nigeria. Written permission to use the data for analysis of secondary data for this study was obtained from SQHN.

Study Setting – Lagos, Nigeria

Nigeria, the most populous country in West Africa, is bordered by the Republics of Niger and Chad (to the north), Benin (to the west) and Cameroun (to the east). With a population of

162 million people (National Census, 2011); it represents about 2.35 percent of the world's total population (World Bank Report, 2012). It has the second-largest economy (\$ 509.9 billion) in the African continent (The Economist, 2015). Furthermore, it is the twelfth largest producer of petroleum in the world and its Stock Exchange is the second largest in Africa (World Bank Report, 2012). The country's agricultural sector employs many Nigerians, with cocoa, sugar cane, yams, maize, palm oil, groundnuts, coconut, millet and cassava as the major agricultural products.

Despite Nigeria's tremendous economic growth, rich natural crude oil petroleum reserves and agricultural resources, the quality of healthcare services delivery for the majority of Nigerians remains largely poor. With little overall governmental enforcement of the current legislature for healthcare quality improvement structures, the private health sector in Nigeria has remained the consistent advocacy representative driving the need for healthcare quality in Nigeria. Being the second largest economy and most populous country in Africa, it is expected that any improvements in the healthcare and living conditions of Nigerians will affect the African continent, as a whole. Concurrently, the same overall healthcare quality issues in Nigeria are also present in developed countries like the U.S.

Lagos is the most populous and second fastest-growing city in Africa and the seventh in the world with a population of about 17.5 million people. It is a metropolitan area which was originally on islands separated by creeks. It has since expanded to the mainland west of the lagoon. The mainland now extends to over 40 kilometers (25 miles) north-west of Lagos Island. There are currently fifty-seven different local government area and councils in the city of Lagos. Lagos Island contains a central business district with its notably high-rise buildings and the city's largest wholesale markets (e.g. Balogun market, Idumota market, etc.).

Study Sites Description

St. Nicholas Hospital (established in March 1968) is located in Lagos Island. It is a 48-bed capacity private hospital that provides around-the-clock comprehensive care services ranging from renal medicine, renal transplant surgery, obstetrics and gynecology, emergency services, non-invasive and minimally invasive procedures (such as endoscopy), pediatrics, endocrinology and preventive medicine services.

In 2013, St. Nicholas Hospital opened an outpatient clinic location in Victoria Island to provide the endoscopy, cardiology, preventive medicine and other outpatient services, with the target of prompt services provision during lunch breaks for workers in the area. St. Nicholas Hospital was established, primarily to serve the health needs of the Lagos mainland residents. The Outpatient Department has a throughput of over 20,000 patients seen or treated per year. It also has a high-dependent unit (H.D.U.) to serve critically ill and trauma patients, with its ventilator capacity of 4 adult ventilators and 4 neonatal incubators.

Premier Specialists' Medical Center (established in 1992) is a 25-bed capacity private hospital located in Victoria Island. The hospital's mission is a complete management hospital, which applies modern technology, while also focusing on caring for every patient and meeting the needs of every patient in-house with empathy. The hospital's core values of commitment/compassion, efficiency/excellence and integrity along with the vision to promote the highest complete health care service attainable in the most developed parts of the world have driven its participation in SQHN's activities in the past. The clinical services offered at this hospital include: Obstetrics and Gynecology, Pediatrics, Internal/Family Medicine, Surgery, Anesthesiology and General Practice. Paelon Memorial Clinic (established in 2010) is a 10-bed capacity private hospital located in Victoria Island. It was established by a Pediatrician whose

daughter had died from Charge Syndrome. Later in the same year, an Obstetrician and a General Practitioner came on board as co-Partners. The hospital's vision is to be a global model for the delivery of exceptional quality healthcare, with a deliberate focus on honoring the ethnic, cultural, spiritual and socioeconomic diversity of all families. The hospital's core values are attitude, exceptional quality in healthcare service delivery, love and compassion, openness and integrity, neighborliness and patients as the center its existence.

Inclusion/Exclusion Criteria

The primary data collection was conducted by SQHN consultants in each of the 3 hospital systems between April and September 2013. The hospital systems are member-hospitals for the Society for Quality of Healthcare in Nigeria (SQHN). In November through December 2013, SQHN had conducted key informant interviews with leadership from multiple randomly selected public and private hospitals, outpatient clinics, pharmacies and dental centers all over Nigeria in 2013 to determine which hospitals had collected data on patient safety culture. Of all the managers hospitals interviewed, only the 3 hospital systems had conducted the HSOPSC and Patient Satisfaction surveys in Lagos. This study excluded other hospitals with previously collected data prior to 2013 and in other states in Nigeria outside of Lagos, for logistics reasons.

Participant Recruitment and Data Collection

Prior to this study, SQHN had conducted key informant interviews with multiple randomly selected hospital leadership representatives from its member hospitals in November and December 2013, with the primary goal of interviewing identified multidisciplinary healthcare senior leadership and front-line professionals (known as key informant stakeholders) to gain an understanding of the perception and the state of healthcare quality in these healthcare

organizations in Nigeria. Healthcare organizations in Nigeria are strongly encouraged to be a member of SQHN.

Of the member hospitals, there were a few private hospitals in Lagos that had collected data in 2013 using standardized AHRQ's Hospital Survey of Patient Safety Culture (HSOPSC) and Patient Satisfaction Survey, with the same team of Independent Consultants from SQHN. These Lagos private hospitals were Premier Specialist Hospital in Victoria Island, Saint Nicholas Hospital in Lagos and Paelon Memorial Clinic in Victoria Island. According to SQHN, these Lagos hospitals were selected based on the hospitals' membership and participation in the Society for Healthcare Quality in Nigeria (SQHN) activities, as well as their data repository of HSOPSC and Patient Satisfaction data from 2013.

SQHN (Society for Quality in Healthcare in Nigeria) was incorporated in May 2006 as a not-for-profit non-government organization. It has multidisciplinary healthcare professional involvement and is governed by a constitution. Its focus is to bring about a wider understanding and acceptance of overall healthcare quality improvement in Nigeria. Since its inception, it has advocated for the need for sharing best practice and successful strategies among healthcare professionals throughout Nigeria (SQHN, 2012).

In line with this need, SQHN in 2013 developed an overall goal of interviewing identified multidisciplinary healthcare professionals from various healthcare organizations throughout Nigeria to gain an understanding of the perception and the state of healthcare quality in these healthcare organizations. In some organizations, the barometer for measuring patient safety within them was indicated by the organizational baseline assessment of the patient safety culture (within a few hospitals) from April 2013 through September 2013.

This retrospective study therefore analyzed the secondary data from the Hospital Survey on Patient Safety Culture (HSOPSC) and Patient Satisfaction Surveys collected from SQHN member-hospitals within Lagos in 2013. Overall, the relationship between the HSOPSC and Patient Satisfaction Surveys were examined for the 3 different hospitals included in this analysis. This study was undertaken because there were limited studies that outline healthcare workers' perspectives on the patient safety culture and patient satisfaction in Lagos, Nigeria, or even Africa, as a whole.

Patient safety, even though crucial to the quality of health care, remains a challenge worldwide. Kuo et al., (2010) in their study indicate that the challenge of achieving health care quality and patient safety continues to be a challenge for many health care organizations. Mardon et al., (2008) in their study of U.S. health care organizations' patient safety culture showed that there is a positive correlation between the patient safety culture and patient satisfaction.

Ethical Considerations

Since our data analysis study was based on secondary data previously collected, the UGA Institutional Review Board (IRB) permission was sought and it made the decision to waive the IRB process for this study since there were no direct human subjects' involvement.

Prior Primary Data Collection by SQHN

As mentioned, this study conducted an analysis of secondary data of cross-sectional surveys conducted by 3 selected Nigerian hospitals with active membership in the Society for Quality in Healthcare in Nigeria (SQHN). It used a validated HSOPSC and HCAHPS surveys data of 2013 to examine the patient safety culture within the hospital from the healthcare workers' perspectives, as well as patient satisfaction survey scores. To avoid inter-judge variability and observer bias, it was decided that the study focuses on only 3 of the SQHN-

member hospitals that had collected HSOPSC data with the help of the same team of Independent SQHN Consultants between April 2013 and November 2013. Those 3 member hospitals selected were Premier Specialists' Medical Centre, Paelon Clinic and St. Nicholas Hospital. They were randomly assigned identities A, B and C (blinded for purposes of analysis).

According to SQHN, the AHRQ survey tool was modified to fit the Nigerian cultural context, and the survey process was coordinated by SQHN consultants in English. In each of these hospitals, for the primary data entry section, they each had a triple-entry system for the HSOPSC responses received. Each questionnaire was initially entered in Microsoft Excel 2007 version of the spreadsheet by the first data entry personnel. Thereafter, the second data entry personnel double-checked each field entry and flagged any errors. The third data-entry personnel double-checked each field entry again and corrected any missed or/and flagged errors.

Subsequent Secondary Data Retrieval and Processing

After obtaining UGA's IRB permission, the secondary data was retrieved from these hospitals in an electronic format (in Microsoft Excel 2007 files). For the data analysis, the data management system utilized SPSS v. 21 Software program. During the initial secondary data validation and analysis period, all secondary datasets were reviewed for missing data and values. Conversely, these missing values were assigned labels such as "MSG" in the database system. Random missing data was not used, to prevent potential biases of the inferences. For instance, if any of the patient satisfaction measures were missing randomly, these cases were excluded from the data analysis.

Description of Secondary Datasets

The secondary data collection was chosen because of ease of accessibility to the already collected data, its high quality and an existing data validation process within the three hospitals.

The components of the secondary data collected were:-

- a) *The Hospital Survey on Patient Safety Culture (HSOPSC)*: this portion of survey data focused on staff perceptions and attitudes, rather than the views of senior managements. The questions in the survey were targeted at examining perceptions of what occurs in the daily life of the organization from the perspective of direct patient care providers and other staff members who had direct impact on patient safety.

The HSOPSC data consisted of 42 items that SQHN collected. These items were categorized in 12 dimensions or factors.

The 7 unit-level measurements of safety culture aspects consisting of the following: manager/supervisor expectations and actions promoting patient safety (4 items); organizational learning and strive for continuous improvement (3 items); team work within departments (4 items); communication openness (3 items); feedback and communication about error (3 items); non-punitive response to error (3 items) and staffing (4 items).

The 3 hospital-level measurements of safety culture aspects include: teamwork across hospital units (4 items); hospital handoffs and transitions (4 items) and hospital management support for patient safety (3 items). The two outcome variables were: overall perception of safety (4 items) and frequency of event reporting (3 items).

- b) *The Patient Satisfaction Survey*. A modified version of the Hospital Consumer Assessment of Healthcare Providers and Systems (HCAHPS) instrument was used to measure patient satisfaction at the above mentioned hospitals in Lagos. Patients rated the

hospital on a Likert scale of 0 (did not like) to 5 (best). For the data analysis, patients and employees were units of observation and hospitals; units of analysis. Aiken et al (2005) noted that observations from their large study of different countries indicate that organizational behavior and the retention of a qualified and committed nurse workforce might be a promising area to improve hospital care safety and quality, both nationally and internationally.

Analysis of Secondary Data

The study data analysis was conducted in SPSS v.21. First, the demographics of respondents and descriptive statistics of their responses on Patient Satisfaction, as well as HSOPSC were computed. Secondly, descriptive statistics was used to explore the differences between the study data and to highlight the differences in the response rates of employees and patients. Thirdly, the exploratory factor analysis (EFA) and a confirmatory factor analysis (CFA) were performed to justify the accuracy of the HSOPSC assessment data in Nigeria. Lastly, construct reliability (CR) and internal correlation was tested to get a better understanding of the HSOPSC data in Nigeria. The CR was used to provide indication of the internal consistency of the 12 dimensions while internal correlation provided the validity among the 12 dimensions.

Demographic Statistics

This was used to provide summary information about survey participants, which included: discipline (physician, nurse, etc.), the average length of time worked at the hospital, direct or indirect contact work with patients, training programs within the hospital and own patient safety reporting mechanism. Summaries of unit-level aspects of patient safety culture were also computed to provide an overview of the general perception of respondents on safety culture

within their department or unit. The results were sorted by thematic areas and in descending order, to determine where there were recurring trends within hospitals.

Data Process

Sample size determination

Sample size for the study was based on Cochran's sample size formula for categorical data (Bartlett, 2001), using the following: $N_0 = [(t)^2 * (p)(q)]/d^2$ where t is $Z_{\alpha/2} = 1.96$ which is the level of risk that the true margin of error may exceed the acceptable margin of error; $(p)/(q)$ is the estimate of variance and d is the acceptable margin of error (0.05) for the proportion being estimated. The estimated sample size was $[(1.96)^2 * (0.5)*(0.5)] / (0.05)^2 = 384$. However, the sample exceeds 5% of the population (Estimated 300 patients interviewed), therefore Cochran's correction formula for finite sample size was applied as indicated: $N_1 = N_0 / (1+N_0/\text{population}) = (384) / (1+384/300) = 169$.

Statistical Issues

The criterion validity of HSOPS and Patient Satisfaction surveys from these 3 Lagos hospitals was examined by comparing them to important and similar studies like the U.S. HSOPSC and Consumer Assessment of Health Plans Study (CAHPS) dimension on care. Their internal consistency and construct validity was initially evaluated by Exploratory Factor Analysis (EFA), and confirmed by the Confirmatory Factor Analysis (CFA).

Firstly, an exploratory factor analysis was conducted initially to explore the dimensionality of the survey data. This analysis was done to determine the presence of multiple factors, reasons of evidence that may suggest similarities and differences between the factors in the survey. To further examine the dimensionality of the survey, and taking into consideration the *a priori* safety culture dimensions, a confirmatory factor analysis (CFA) was further

performed. The CFA was used to test the fit of a model that highlighted a number of factors and the possible influence of the factors.

A final confirmatory factor model was derived from a good fit to the data. The plan was to feature at least two outcome variables and multiple safety culture dimensions. The closer each of these indices for each dimension was to 1.00, the better the fit of the model to the data. Furthermore, the root-mean-square error of approximation/RMSEA (i.e. the measure of the discrepancy per degree of freedom) was determined. If the root-mean-square error was less than or equals to 0.05, that indicated that there was a good model fit. In essence, the closer the root-mean-square error was to zero, the better the fit of the model to the data.

All the question items were on a 5-point Likert response scale, with composite scores ranging from 1 to 5 (with 1 being the lowest score and 5 being the highest score). The construct validity of each safety culture dimension was reflected in composite scores moderately related to one another. Correlations of less than the minimal defined value (e.g. 0.20) indicated that two safety culture dimensions were weakly related. Conversely, high correlations indicated the dimensions were closely related. The construct validity indicated the degree to which a test measures what it claimed or purported. It also indicated the appropriateness of inferences made on the basis of the survey results.

First, an EFA was conducted on all items; the EFA showed that all items naturally loaded as one factor, indicating that all items in the patient satisfaction survey appear to vary in a similar way. However, due to conceptual differences across items assessed, patient satisfaction was further divided into six subdomains including personal manner, check-in/billing, explanation/listening, access/time, technical skills/environment, and future use.

To assess the strength of each factor, individual EFAs were conducted on the items that were chosen conceptually to make a given subdomain. The domains and corresponding items are outlined in *Table 5*. Within each subdomain, EFAs were run on items using two methods. Items were first allowed to load across factors based on the observed eigenvalue. Items were then forced to load on a one-factor solution. Overall, across all domains, items tended to load in a one factor solution and the amount of variance explained ranged from 43.34% to 57.42%. The internal consistency of items was assessed using Cronbach's α . Observed reliability ranged from 0.620 (explanation/listening) to 0.732 (personal manner). Observed alphas were lower than ideal; however, they were still within the acceptable range for exploratory data such as this.

Furthermore, in order to assess the final factor structure of patient survey items, a confirmatory factor analysis (CFA) was conducted. The CFA utilized a maximum likelihood estimation method in order to test the goodness of fit between a theorized measurement model and the dataset. When conducting the CFAs, a constraint value of 1 was placed on one measured variable for each latent construct. This type of constraint is commonly used in modeling analyses that contain items with a defined scale, which was the case for the present study. Individual CFAs were first conducted on each of the six domains. Once the factor structure of each construct demonstrated adequate fit, the measurement model was tested.

In addition to fit indices, the measurement model provided estimates of path coefficients, which assessed the magnitude of the relationship between the individual item and its corresponding latent construct or subdomain. If the path coefficients are significant and greater than 0.400, this was deemed acceptable for an exploratory study.

Once the factor structure of each domain was confirmed, subscale scores were taken as the arithmetic mean of items within each domain. Mean scores were chosen over sum scores

for a variety of reasons. Following examination of the factor structure of the HSOPSC items, subscale scores were created by taking the mean of the items within each domain.

The Exploratory Factor Analysis (EFA) was used to explore the possible underlying structure of a set of interrelated variables without imposing any preconceived structure on the outcome. By performing exploratory factor analysis (EFA), the number of constructs and the underlying factor structure were identified. The goals of factor analysis are: to help determine the number of latent constructs underlying a set of items (variables); to provide a means of explaining variation among variables (items) using few newly created variables (factors), e.g. condensing information and to define the content or meaning of factors, e.g., latent constructs.

The assumptions underlying EFA are: interval or ratio level of measurement; random sampling; relationship between observed variables is linear; normal distribution (each observed variable); bivariate normal distribution (each pair of observed variables) and multivariate normality. Confirmatory Factor Analysis (CFA) allowed the testing of the hypothesis that a relationship between the observed variables and their underlying latent construct(s) exists. The main limitation of factor analysis is that no causal inferences can be made from correlations.

Factor Extraction

For the factor extraction, adjustment to the frames of reference by rotation methods improves the interpretation of factor loadings by reducing some of the ambiguities which accompany the preliminary analysis (Child, 1990). The process of manipulating the reference axes is known as rotation. The results of rotation methods are sometimes referred to as derived solution because they are obtained as a second stage from the results of direct solutions. Rotation applied to the reference axes means the axes are turned about the origin until some alternative position has been reached.

Hospital Comparisons

A MANOVA was conducted to assess the relationship between hospitals and following independent variables: personal manner, check-in/billing, explanation/listening, access/time, and technical skills/environment. For the MANOVA, the independent variables were entered as the continuous variables, whereas hospital location was used as the categorical variable. The data was reverse coded for negatively worded questions. For the HSOPSC questionnaire, negatively worded questions (e.g. “patient safety is never sacrificed to get more work done”) were reversely coded when calculating the percent “positive” response.

Levels of Reliability

For this study, the acceptable levels of reliability depended on the purpose of the instrument. Acceptable reliability of instruments developed for research purposes can be as low as 0.60. An acceptable reliability level of a diagnostic instrument used for making decisions about individuals (e.g., a psychological measure) should be much higher, e.g., 0.95. The reliability coefficient provides a basis for assessment instrument comparison when measurement is expressed in different scales.

Analysis of Variance: Differences across Hospitals

A one-way analysis of variance (ANOVA) was conducted on each of the 12 safety culture dimensions, and on the two single-item outcome measures (Number of Events Reported and Patient Safety Grade), to determine the extent to which composite scores on these safety culture scales were differentiated across the 3 hospitals. The analysis examined whether there was greater response variability on the safety culture dimensions between hospitals compared to within hospitals. In other words, it assessed how hospitals differ on each of the safety culture dimensions.

Furthermore, data from demographics, the Hospital Survey on Patient Safety Culture (HSOPSC) and the Patient Satisfaction Survey were analyzed. Demographic data of the respondents (hospital workers) on patient safety culture in the three private hospitals ($N = 156$), are outlined in *Table 1*. The results of preliminary analyses conducted to examine the state of the obtained data are presented in the Results section. Cross-tabulations, using Pearson's chi-square and Cramer's V tests, were used to test for relationships among sets of categorical variables; one-way analysis of variance (ANOVAs) and multivariate analysis of variance (MANOVAs) were used to test the relationships between continuous variables and categorical variables; and Pearson's correlations were used for sets of continuous variables.

Due to lack of normality in the some continuous variables, nonparametric methods (Mann-Whitney, Kruskal-Wallis, and Spearman's tests) were used. All nonparametric findings confirmed results from parametric analyses. Therefore, only the parametric results were presented in the Results section. Further analysis was conducted to identify any multicollinearity or other unexpected relationships.

CHAPTER 5

RESULTS

Hospital Survey of Patient Safety Culture (HSOPSC)

The primary purpose of this study was to evaluate current patient safety culture and in three private hospitals in Lagos, Nigeria. This chapter outlines the results of this study, starting with preliminary analyses and assumption testing, followed by primary analyses to empirically examine the specific research questions.

Sample Description

Frequencies and percentages for categorical demographic variables are presented in Table 1. The majority of participants were at Hospital B (59.6%) compared to those at Hospital A (24.4%) or Hospital C (16.0%). The details of positions held by respondents, frequency of event reporting, period worked in the hospital, total hours worked per week and whether they had contact with patients are also given in table 1. Most participants reported working in the same hospital for 1 to 5 years (42.7%), worked 40 to 59 hours per week (58.5%) and had been in that specialty or profession for 6 years or more (45.6%). Majority of participants had direct patient contact (89.0%). The details are provided in *Table 1* (below).

Table 1: Frequencies and Percentages for Demographic Variables of Study Participants

The majority of the survey respondents were Nursing personnel (22.4%); Physicians (14.1%); Environmental/Cleaning Personnel (10.9%); Pharmacy personnel (7.7%); IT personnel (5.8%) and Lab personnel (5.1%). The overall hospital respondents between the 3 hospitals were:

Study variable	Number	Percent
a) Hospital		
1) <i>Hospital A</i>	38	24.4
2) <i>Hospital B</i>	93	59.6
3) <i>Hospital C</i>	25	16.0
b) Event Reporting		
1) <i>In the past 12 months, how many event reports have you filled out and submitted</i>		
a) No Event Reports	70	50.6
b) 1 to 2 Event Reports	27	17.3
c) 3 to 5 Event Reports	12	7.7
d) 6 to 10 Event Reports	2	1.3
2) <i>Event Report Completed and Submitted</i>		
a) No Event Report	79	50.6
b) Any Event Reports	41	26.3
c) Length of Time at Hospital and Years in Current Specialty		
1) <i>How long have you worked at this hospital?</i>		
a) Less than 1 Year	41	26.3
b) 1 to 5 Years	64	41.0
c) 6 to 10 Years	26	16.7
d) 11 to 15 Years	15	9.6
e) 16 to 20 Years	1	0.6
f) 21 Years or More	3	1.9
2) <i>Years in Current Specialty/Profession</i>		
a) Less than 1 Year	33	21.2
b) 1 to 5 Years	47	30.1
c) 6 or More Years	67	42.9
d) Hours Worked per Week		
a) Less than 40 Hours per Week	31	19.9
b) 40 to 59 Hours per Week	83	53.2
c) 60 or More Hours per Week	28	17.9
e) Direct Patient Contact		
a) No	16	10.3
b) Yes	130	83.3

Note. Frequencies not summing to $N = 156$ and percentages not summing to 100 reflect missing data.

Table 2: Item-Level Average Percent Positive Response for the Hospital Survey on Patient Safety Culture, HSOPSC – U.S. Data and Lagos Data

Survey Year	2012	2013
Survey Items by Composite	U.S.	Lagos (Nigeria)
Number of Hospitals	74	3
Number of Respondents	7322	156
Study Variable (with Average Positive Response Percentage & 95% Confidence Interval)		
1) Teamwork within Units		
a) People support one another in this unit ^a	87 (45-100)	72 (33-82)
b) When a lot of work needs to be done quickly, we work together as a team to get the work done ^a	89 (50-100)	76 (44-90)
c) In this unit, people treat each other with respect ^a	80 (52-99)	69 (39-91)
d) When one area in this unit gets really busy, others help out ^a	72 (49-96)	55 (40-98)
2) Supervisor/Manager Expectations & Actions Promoting Patient Safety		
a) My supervisor says a good word when he/she sees a job done according to established patient safety procedures ^a	75 (41-95)	65(39-87)
b) My supervisor/manager seriously considers staff suggestions for improving patient safety ^a	78 (41-100)	73(44-92)
c) Whenever pressure builds up, my supervisor/manager wants us to work faster, even if it means taking shortcuts ^b	79 (43-100)	22 (16-51)
d) My supervisor/manager overlooks patient safety problems that happen over and over ^b	78 (52-100)	6 (0-31)
3) Organizational Learning - Continuous Improvement		
a) We are actively doing things to improve patient safety ^a	84 (19-100)	84 (16-98)
b) Mistakes have led to positive changes here ^a	67 (33-100)	58 (27-99)
c) After we make changes to improve patient safety, we evaluate their effectiveness ^a	70 (12-94)	62 (10-81)
4) Management Support for Patient Safety		
a) Hospital management provides a work climate that promotes patient safety ^a	85 (30-100)	79 (35-93)
b) The actions of hospital management show that patient safety is a top priority ^a	78 (36-100)	71 (33-94)
c) Hospital management seems interested in patient safety only after an adverse event happens ^b	66 (15-93)	18 (11-42)
5) Staffing		
a) We have enough staff to handle the workload ^a	65 (11-98)	26 (15-39)
b) Staff in this unit work longer hours than is best for patient care ^b	59 (9-87)	50 (17-97)
c) We use more agency/temporary staff than is best for patient care ^b	71 (0-100)	17 (9-28)
d) We work in "crisis mode", trying to do too much, too quickly ^b	59 (6-91)	39 (12-71)

Survey Year	2012	2013
Survey Items by Composite	U.S.	Lagos (Nigeria)
6) Teamwork Across Units		
a) Hospital units do not coordinate well with each other ^b	53 (5-91)	28 (13-50)
b) There is good cooperation among hospital units that need to work together ^a	67 (11-93)	59 (3-96)
c) It is often unpleasant to work with staff from other hospital units ^b	66 (7-100)	9 (3-92)
d) Hospital units work well together to provide the best care for patients ^a	76 (21-95)	71 (24-82)

Note. a - "Agree" and "Strongly Agree" are positive responses, b - "Disagree" and "Strongly Disagree" are positive responses

c - "Most of the time" and "Always" are positive responses. d - "The Number of Events Reported" item asked respondents how many event reports had been filled out and submitted

Table 3: Item-Level Average Percent Positive Response for the Hospital Survey on Patient Safety

Culture, HSOPSC – U.S. Data and Lagos Data (Errors, Communication and Handoffs)

Survey Year	2012	2013
	U.S.	Lagos (Nigeria)
Study Variable (with Average Positive Response Percentage and 95% Confidence Interval)		
1) Communication Openness		
a) Staff will freely speak up if they see something that may negatively affect patient care ^a	78 (47-100)	59 (32-90)
b) Staff feel free to question the decisions or actions of those with more authority ^a	49 (26-94)	21 (13-77)
c) Staff are afraid to ask questions when something does not seem right ^b	66 (7-100)	23 (16-82)
2) Handoffs & Transitions		
a) Things "fall between the cracks" when transferring patients from one unit to another ^b	54 (23-91)	13 (0-69)
b) Important patient care information is often lost during shift changes ^b	58 (29-94)	9 (3-34)
c) Problems often occur in the exchange of information across hospital units ^b	54 (10-100)	15 (3-47)
d) Shift changes are problematic for patients in this hospital ^b	57 (28-94)	8 (5-51)
3) Non-punitive Response to Error		
a) Staff feel like their mistakes are held against them ^b	56 (18-88)	35 (6-78)
b) When an event is reported, it feels like the person is being written up, not the problem ^b	51 (12-88)	43 (7-73)
c) Staff worry that mistakes they make are kept in their personnel file ^b	42 (12-71)	51 (13-79)

Survey Year	2012 U.S.	2013 Lagos (Nigeria)
Study Variable (with Average Positive Response Percentage and 95% Confidence Interval)		
4) Feedback & Communication About Error		
a) We are given feedback about changes put into placed based on event reports ^a	55 (18-90)	45 (10-88)
b) We are informed about errors that happen in this unit ^a	69 (35-93)	67 (29-81)
c) In this unit, we discuss ways to prevent errors from happening ^a	74 (33-100)	76 (43-91)

Note. a - “Agree” and “Strongly Agree” are positive responses, b - “Disagree” and “Strongly Disagree” are positive responses
c - “Most of the time” and “Always” are positive responses. d - “The Number of Events Reported” item asked respondents how many event reports had been filled out and submitted

As highlighted in the table (above), the average percent of positive survey response for the aggregate item-level survey responses among Lagos respondents regarding communication openness, handoffs/transitions and feedback/communication about error were all significantly (>20%) lower than that of U.S. respondents. The most significant differences in comparison between Lagos and U.S. respondents were reflected under “handoffs/transitions”, particularly with transferring patients from one unit to another and during shift changes. Lagos respondents also notably had a higher aggregate positive response to the question about staff worrying that mistakes they make are kept in their personnel file.

Table 4: Item-Level Average Percent Positive Response for the Hospital Survey on Patient Safety Culture, HSOPSC – U.S. Data and Lagos Data (Event-Reporting, Patient Safety Grade and Perception)

Survey Year	2012	2013
Survey Items by Composite	U.S.	Lagos (Nigeria)
Study Variable (Average Percentage of Respondents Reporting Events in the Past 12 Months)		
1) Frequent of Events Reported		
a) When a mistake is made, but is caught and corrected before affecting the patient, how often is this reported? ^c	58	50
b) When a mistake is made, but has no potential to harm the patient, how often is this reported? ^c	61	47
c) When a mistake is made that could harm the patient, but does not, how often is this reported? ^c	76	62
2) Number of Events Reported by Respondents ^c		
a) No Events	54	66
b) 1 to 2 events	28	23
c) 3 to 5 events	12	10
d) 6 to 10 events	4	2
e) 11 to 20 events	1	0
f) 21 events or more	1	0
3) Work Area/Unit Patient Safety Grade		
a) Excellent	32	38
b) Very Good	48	40
c) Acceptable	17	20
d) Poor	3	3
e) Failing	0	0
4) Overall Perceptions of Patient Safety		
a) It is just by chance that more serious mistakes don't happen around here ^b	69	22
b) Patient safety is never sacrificed to get more work done ^a	74	51
c) We have patient safety problems in this unit ^b	71	20
d) Our procedures and systems are good at preventing errors from happening ^b	74	72

Note. a - "Agree" and "Strongly Agree" are positive responses, b - "Disagree" and "Strongly Disagree" are positive responses
c - "Most of the time" and "Always" are positive responses. d - "The Number of Events Reported" item asked respondents how many event reports had been filled out and submitted

Table 5: Hospital-Level Patient Safety Culture Dimensions and their Descriptions

Hospital level patient Safety Culture Dimensions	Descriptions
1. Teamwork within units	Staff support one another, treat each other with respect and work together as a team
2. Supervisor/manager's expectations and actions promoting safety	Supervisors/managers consider staff suggestions for improving patient safety, praise staff for following patient safety procedures and do not overlook patient safety problems
3. Organizational learning – continuous improvement	There is a learning culture in which mistakes lead to positive changes and changes are evaluated for effectiveness
4. Management support for patient safety	Hospital management provides a work climate that promotes patient safety and shows that patient safety is a top priority
5. Overall perceptions of patient safety	Procedures and systems are good at preventing errors and there is a lack of patient safety problems
6. Feedback and communication about error	Staff are informed about errors that happen, given feedback about changes implemented and discuss ways to prevent errors
7. Communication openness	Staff freely speak up if they see something that may negatively affect a patient and feel free to question
8. Frequency of events reported	Mistakes of the following types are reported: (i) mistakes caught and corrected before affecting the patient, (ii) mistakes with no potential to harm the patient, and (iii) mistakes that could harm the patient, but do not
9. Teamwork across units	Hospital units cooperate and coordinate with one another to provide the best care for patients
10. Staffing	There are enough staff to handle the workload and work hours are appropriate to provide the best care for patients
11. Handoffs and transitions	Important patient care information is transferred across hospital units and during shift changes
12. Non-punitive response to error	Staff feel that their mistakes and event reports are not held against them, and that mistakes are not kept in their personnel file

Factor Analysis – Hospital Survey on Patient Safety Culture (HSOPSC)

Items on the HSOPSC were evaluated using the same methods as described in Chapter 4 for the Patient Satisfaction Survey. The HSOPSC was grouped into 8 domains including events,

mistake-reporting, communication/information exchange, work attitude, personal, patient safety/staffing, errors, and management. Each of the domains within the HSOPSC fitted well within a one factor solution and factor loadings. Reliability coefficients across subdomains were fair, α s ranging from 0.552 to 0.836 and the total variance explained by each factor ranged from 37.46 to 75.41.

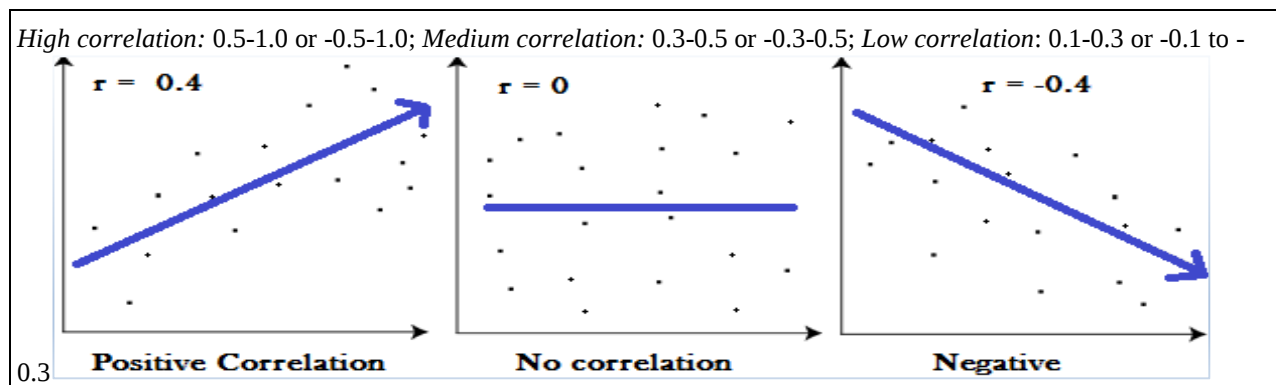
Results from the CFAs and measurement model demonstrated mediocre fit with the obtained data (χ^2 (df=467) = 846.27, $p < 0.001$, adj. $\chi^2 = 1.81$, RMSEA = 0.072, CFA = 0.721, SRMR = 0.090). The Root Mean Square Error of Approximation (RMSEA) is an adjusted index that takes the sample size into account. It measures the error of approximation, and is a “badness of fit” index. A value of zero indicates the best fit, where higher values (greater than zero) indicate worse fit. RMSEA values between 0.05 and 0.08 indicate a reasonable fit. Again, the lack of fit between the obtained data and theorized model is likely a function of limited sample size and missing data. Similarly, the Comparative Fit Index (CFI) assesses the relative improvement in fit in this model compared with the baseline mode. For CFI values greater than 0.90, there may be a reasonably good fit of the model. Furthermore, the Root Mean Square Residual (RMSR) is a measure of the mean absolute value of the covariance residuals, i.e. the overall differences

Overall, for the HSOPSC factor analysis, there was a mediocre fit between the study data and theorized model, since the RMSEA was only 0.072. This was most likely due to the small sample size of employees for the HSOPSC survey. In addition, the observed fit indices were determined to be acceptable. Coefficients from the overall measurement model ranged from weak to strong; however, they were all significant. As such, the factor structure was thus deemed adequate for the purposes of this pilot study.

Pearson's Product-Moment Correlation Coefficients

Norman (2010) and Uebersax (2006) reflect in their study on why Pearson's Correlation can be used with ordinal data. In reviewing their articles, it was noted that parametric statistics (such as Pearson's Correlation) can be used with likert data, especially with small sample sizes, unequal variances and non-normal distribution. The Pearson's Correlation was selected for this study, primarily, because with the small sample size, the differences in the correlation matrices were not significant.

Pearson's Product-Moment Correlation is a measure of association between two variables. It measures the strength and direction of a linear relationship. For example, if variable Z is a linear function of variable Y, a positive relationship is deemed to exist if the correlation is equal to 1. On the other hand, if the correlation is -1, a negative relationship exists. Conversely, if the correlation is 0, there is no linear predictability between variables Z and Y. The major drawback with Pearson's Correlation is that it does not predict causal relationships.



Furthermore, Pearson's product-moment correlation coefficients were calculated among HSOPSC variables. For communication/information exchange, results revealed significant positive relationships between communication/information exchange and the variables work attitude, patient safety/staffing, errors, management, and mistake-reporting, $p < 0.050$. In addition, results revealed positive correlations between work attitude and the variables errors,

management, and events, $p < 0.050$. Also, significant positive correlations were found between the variables; errors and management, $p < 0.010$. Significant positive relationships were also found between the variables patient safety/staffing and management, as well as events, $p < 0.050$.

In addition, positive correlations were found between the variables; errors and management, events, and mistake-reporting, $p < 0.050$. Moreover, significant positive correlations were found between the variables; management and all other HSOPSC variables, $p < 0.050$. These results suggest that for significant relationships, participants who scored high on one HSOPSC variable also scored high on another HSOPSC variable.

For the Pearson's product-moment correlation coefficients among HSOPSC variables by hospital, the negative correlations indicate that a higher score on one variable was associated with lower scores on the other variables and positive correlations indicated that participants who scored high on one HSOPSC variable also scored high on another HSOPSC variable. For Hospital A, there was a negative correlation between work attitude and mistake-reporting, $p = 0.030$, but was positive for errors and management, as well as mistake-reporting, $p < 0.050$. For Hospital B, positive correlations were found between communication/information exchange and management, $p = 0.0020$ and work attitude and personal, errors, management, and events, $p < 0.010$. Positive correlations were also found between personal and errors, as well as management, $p < 0.010$.

Significant positive correlations were found between patient safety/staffing and events, $p = 0.020$, errors and management, $p < 0.001$ and between management and events, $p = 0.001$. For Hospital C, positive correlations were found between communication/information exchange and management, as well as mistake-reporting, $p < 0.050$, work attitude and personal, errors, management, and events, $p < 0.010$. Further positive correlation was found between errors and

management, as well as events, $p < 0.050$ and management and events, as well as mistake-reporting, $p < 0.050$.

For events scores, HSOPSC results revealed that the final model predicted 40.1% of the variance, $F(12, 117) = 60.54$, $p < 0.001$, $R^2 = 0.401$, adjusted $R^2 = 0.340$. When covariates and other predictors in the model were controlled for, higher work attitude ($Beta = 0.237$), patient safety/staffing ($Beta = 0.199$), and errors scores significantly predicted higher events scores ($Beta = 0.179$), $p < 0.050$. In addition, the number of hours worked per week was a significant predictor in the model. Compared to those who worked less than 40 hours per week, participants who worked 60 or more hours per week ($Beta = -0.192$) predicted lower events scores, $p = 0.050$. Similarly, the number of years worked in hospital was a significant predictor of lower events score in the model. Compared to those who worked less than 1 year in hospital, those who worked 1 to 5 years ($Beta = -0.250$) predicted significantly lower events scores, $p = 0.029$.

For mistake reporting, the final model significantly accounted for 16.7% of the total variance, $F(8, 120) = 30.00$, $p = 0.004$, $R^2 = 0.167$, adjusted $R^2 = 0.1110$. After controlling for hours worked per week and the other predictors in the model, higher errors scores ($Beta = 0.212$) predicted higher mistake-reporting scores, $p = 0.041$. Compared to those who worked 60 hours or more per week, participants who worked less than 40 hours ($Beta = 0.223$) and 40 to 59 hours per week ($Beta = 0.322$) predicted more mistake-reporting when controlling for other predictors in the model, $p < 0.050$.

Hospital Comparisons

Results of cross-tabulations using Pearson's chi-square and Cramer's V tests to assess the relationships between several categorical variables and the hospitals showed that there was a significant relationship between hospital and direct patient contact, $\chi^2(2) = 90.20$, $p = 0.010$,

Cramer's $V = 0.2510$. Pairwise proportion z-tests using Bonferroni correction revealed that a greater proportion of staff at Hospital B had direct patient contact (93.0%) compared to participants at Hospital A (75.7%), $p < 0.050$. No significant relationships were found between hospital and the variables; position, event report completed and submitted, years worked at hospital, hours worked per week, and years in current specialty/profession, $p > 0.050$.

Results of MANOVA to assess the relationship between HSOPSC items by hospital are showed that there was a significant multivariate effect, $F(12, 276) = 20.67$, $p = 0.002$, $\eta^2_p = 0.1040$. Upon examination of the univariate effects, there was a significant effect of hospital on communication/information exchange, $F(2, 143) = 40.34$, $p = 0.015$, $\eta^2_p = 0.057$. Tukey's pairwise tests revealed that Hospital C reported higher communication/information exchange scores ($M = 40.06$, $SD = 0.42$) than did Hospital A ($M = 30.58$, $SD = 0.44$) and Hospital B ($M = 30.65$, $SD = 0.76$), $p < 0.050$. In addition, there was a significant effect of hospital on work attitude, $F(2, 143) = 30.41$, $p = 0.036$, $\eta^2_p = 0.0460$. Hospital C scored higher in work attitudes ($M = 40.11$, $SD = 0.80$) than did Hospital A ($M = 30.65$, $SD = 0.50$), $p = 0.0490$. Finally, there was a significant effect of hospital on hospital management $F(2, 143) = 90.38$, $p < 0.001$, $\eta^2_p = 0.116$. Hospital A reported lower management scores ($M = 30.45$, $SD = 0.64$) than did Hospital B ($M = 30.95$, $SD = 0.62$) or Hospital C ($M = 40.09$, $SD = 0.61$), $p = 0.001$.

Results from separate ANOVAs on differences across event scores revealed a significant effect of years at hospital on events scores, $F(2, 147) = 70.23$, $p = 0.001$, $\eta^2_p = 0.090$. Participants who spent less than 1 year at their hospital ($M = 30.16$, $SD = 0.74$) had higher average event scores than participants who had spent 1 to 5 years ($M = 20.69$, $SD = 0.84$) or 6 or more years at the hospital ($M = 20.51$, $SD = 0.87$), $p < 0.050$. In addition, there was a significant effect of hours per week on events scores, $F(2, 139) = 80.85$, $p < 0.001$, $\eta^2_p = 0.113$.

According to Tukey's tests, those who worked less than 40 hours per week ($M = 30.27$, $SD = 0.71$) had higher average event scores than did participants who worked 40 to 59 hours per week ($M = 20.59$, $SD = 0.84$) or 60 or more hours per week ($M = 20.63$, $SD = 0.69$), $p < 0.010$. Lastly, there was a significant effect of years in current specialty/profession on events scores, $F(2, 144) = 80.24$, $p < 0.001$, $\eta^2_p = 0.103$. Participants who spent less than 1 year in their current specialty/profession ($M = 30.20$, $SD = 0.83$) had higher average event scores than did those who spent 6 or more years in their current specialty/profession ($M = 20.51$, $SD = 0.81$), $p < 0.001$. The relationships were not significant between events and position, hospital, events report/submitted, and direct patient contact, $p > 0.050$.

With the comparison of mistake-reporting by position, hospital, event report completed and submitted, years at hospital, hours worked per week, years in current specialty/profession and direct patient contact, results revealed that there was a significant effect found for hours worked per week on mistake-reporting scores, $F(2, 134) = 30.74$, $p = 0.026$, $\eta^2_p = 0.053$. Participants who worked 60 hours or more per week ($M = 30.15$, $SD = 0.91$) had lower average mistake-reporting scores than did those who worked 40 to 59 hours per week ($M = 30.73$, $SD = 10.06$), $p = 0.024$. The relationships were not significant between mistake-reporting and position, hospital, events reported/submitted, years at hospital, years in current specialty/profession, and direct patient contact, $p > 0.050$.

Patient Satisfaction Survey

Sample Description

For the Patient Satisfaction Survey, there were 225 total respondents, drawn from the following hospitals: Hospital A 87 (38.7%), Hospital B- 83(36.9%) and Hospital C- 55 (24.4%).

Table 6: Patient Safety Culture Dimensions and Definitions

<i>Patient Satisfaction Dimensions</i>	<i>Definition: The extent to which....</i>
1. Cleanliness	Patients report their room and bathroom cleanliness
2. Communication (nurses)	Patients' report their nurses' communication
3. Communication (doctors)	Patients' report their doctors' communication
4. Recommend	Patients' are willing to recommend the hospital to their family and/or friends

Table 7: Item-Level Average Percent Positive Response for the Patient Satisfaction Survey

Elements – U.S. Patient Satisfaction (HCAHPS) Data and Lagos Data (Environment, Communication and Recommendation)

Patient Satisfaction Survey		
Survey Items by Composite – Average Positive Response Percentage		
HCAHPS Question	U.S. HCAHPS	Lagos
a) Patients who reported that their room and bathroom were "Always" clean	74	86
b) Patients who reported that their nurses "Always" communicated well	79	82
c) Patients who reported that their doctors "Always" communicated well	82	95
d) Patients who reported YES, they would definitely recommend the hospital	71	84

Factor Analysis – Patient Satisfaction Survey

Patient Satisfaction Survey - In order to evaluate the factor structure of the patient satisfaction survey items, exploratory factor analysis (EFA) was conducted using a principle component analysis. In order to conduct the EFA, the Patient Satisfaction Survey results were divided into 6 different domains. For the domain loading, the observed reliability ranged from 0.620 (for explanation/listening domain) to 0.732 (personal manner domain). The observed alphas were lower than ideal, but within the acceptable range for exploratory studies. Child et al (1990) indicate that the acceptable reliability should be greater than or equal to 0.60 for any study evaluating human behavior and interactions. According to Hu et al (1999), a good fit is usually indicated by a chi-square close to zero, an RMSEA < 0.06 and CFI and NNFI > 0.90.

The goodness of fit between the hypothesized model and the data obtained from this sample was assessed by the Standardized Root Mean Square Residual (SRMR), Root Mean Square Error of Approximation (RMSEA), and Comparative Fit Index (CFI). According to Hu and Bentler (1999), the maximum cutoff values for the SRMR and RMSEA are 0.08 and 0.06 respectively, and the minimum cutoff value for the CFI is 0.95 in order to conclude a good fit between the model and the data. Additionally, the adjusted chi square (χ^2/df) was also examined with a critical maximum value of 3.00. The fit of obtained data with the theoretical measurement model appeared to approach adequate fit, $\chi^2 (174) = 468.80, p < 0.001$, adj. $\chi^2 = 2.69$, RMSEA = 0.087, CFI = 0.783, SRMR = 0.077; however, given the pilot nature of the present study, these values were deemed adequate.

Furthermore, these results might suggest that the misfit between the data and theorized model may be a function of both limited sample size and missing data. It would be expected that greater number of cases would likely yield better fit with the theorized model. For the Patient

Satisfaction study, Pearson's product-moment correlation coefficients were calculated among patient satisfaction variables. The Pearson's product-moment correlation coefficients were determined among patient satisfaction variables by hospital.

Results revealed a significant positive correlation between each patient satisfaction variable and the other variables, suggesting that participants who scored high on one variable also scored high on another, $p < .001$. For Hospital A, results revealed a significant positive correlation between each patient satisfaction variable and the other variables (i.e. personal manner, check-in/billing, explanation/listening, access/time, technical skills/environment and future use), with the exception of two bivariate relationships, $p < 0.001$. For Hospital A, no relationship was found between both access/time and technical skills/environment or returning to doctor for further care and technical skills/environment. For Hospitals B and C, results revealed a significant positive correlation between each patient satisfaction variable and the other variables (listed above), $p < 0.001$. These results suggest that across each of the three hospitals, participants who scored high on one variable also scored high on another.

Hospital Comparisons

In terms of hospital comparisons, results revealed a significant multivariate effect, $F(10, 416) = 20.42, p = 0.008, \eta^2_p = 0.055$. Examination of the univariate analyses revealed a significant effect of hospital on check-in/billing, $F(2, 212) = 40.41, p = 0.013, \eta^2_p = 0.040$. Tukey's pairwise comparisons revealed that Hospital B had higher check-in/billing scores ($M = 40.02, SD = 0.78$) than did Hospital A ($M = 30.65, SD = 0.83$), $p = 0.016$. In addition, there was a significant effect of hospital on access/time, $F(2, 212) = 30.16, p = 0.044, \eta^2_p = 0.029$.

Pairwise comparisons revealed Hospital B ($M = 30.73, SD = 0.94$) had higher access/time scores than did Hospital A ($M = 30.36, SD = 0.97$), $p = 0.038$. There was also a significant effect

of hospital on technical skills/environment, $F(2, 212) = 70.51, p < 0.001, \eta^2_p = 0.066$. Hospital B also had higher technical skills/environment scores ($M = 40.42, SD = 0.53$) than did Hospital A ($M = 40.04, SD = 0.72$) and Hospital C ($M = 40.34, SD = 0.66$), $p < 0.050$. However, there was no significant relationship between hospital and future referral or care, $F(2, 207) = 0.228, p = 0.797$.

Regression Analyses

The result of multiple linear regressions conducted to predict future hospital use from several predictors, including personal manner, check-in/billing, explanation/listening, access/time, technical skills/environment, and hospital location. The model significantly accounted for 30.7% of the total variance, $F(7, 196) = 120.37, p < 0.001, R^2 = 0.307$, adjusted $R^2 = 0.282$. When other predictors in the model were controlled for, higher explanation/listening scores ($Beta = 0.251$) was the only variable that significantly predicted higher scores for future hospital use or referral, $p < 0.001$.

DISCUSSION

This study set out to measure the employees' perception of the patient safety culture and patient satisfaction at these 3 Lagos hospitals, using secondary data from cross-sectional surveys. In comparison of the HSOPSC percentage positive responses, Lagos and U.S. data showed differences in responses in the organizational learning, management support, communication openness and frequency of event reporting dimensions, with Lagos average positive responses being lower. However, respondents at Lagos hospitals were more positive about non-punitive response to error. One thing to note is that in Nigeria, there is no formal error, mistake or adverse event reporting mechanism. More so, there is no uniformity between the few healthcare facilities that have chosen to have this reporting mechanism in place.

In addition, within Nigeria, there are differences in reference terms for areas, departments, hospital units or facilities. For example, the public sector term for an acute care hospital is "hospital", while the private sector term is "medical centre" or "clinic" in some cases. The most commonly reported actions of patient safety and quality improvement indicate a retrospective and rule-based approach to quality improvement (Kuhn & Youngberg, 2002). Although essential components of a safe system, policies, protocols, and procedures-driven practices may neglect the root cause of errors based on a systems approach grounded in a safety culture. Little patient-safety specific training is conducted at the frontline, and learning from error may be difficult due to an existing culture perceived as being punitive (Ente, et al., 2010).

Although root cause analysis is being conducted, there is still much to learn about how human error is analyzed and understood from the systems perspective or from a non-punitive,

just culture lens (Dekker, 2007). Results from the management support dimension were highly encouraging. Most safety culture surveys show that leaders perceive management/leadership commitment to patient safety at levels significantly higher than perceptions of frontline professionals (AHRQ, 2011).

The HSOPSC study results demonstrate that this study can be used to identify components of culture that are in need of improvement, raise awareness of safety culture and create benchmarks for future studies in Nigeria. The study results demonstrate that Lagos hospitals can make improvements in safety culture by implementing practices supporting a safe culture. The practices should include a voluntary error reporting system that emphasizes the knowledge and skills necessary to function as a team within and across different units in the hospital to support a flexible safety culture.

The study results also demonstrate that safety culture varies by position and work area. For example, managers perceived the hospital's safety culture more positively than the frontline workers engaged in direct patient care. Hospitals with higher explanation/listening scores and higher access/time scores had higher scores for future hospital use. In addition, work attitude, patient safety/staffing, and hospital errors significantly predicted events scores. Participants who worked 60 or more hours per week and participants who had worked in the hospital for 1 to 5 years had lower event scores.

Safety culture originated from high reliability organizations (HROs) in the last several decades, which has gained much attention in health care fields to promote patient safety recently both in individual work units or hospitals (Cheng et al, 2002). This has improved since the Hospital Survey on Patient Safety Scale (HSOPSC) was introduced by the Agency for Healthcare Research and Quality (AHRQ). The HSOPSC survey has been translated into 24

languages in 45 countries to measure patient safety culture in their own healthcare organizations (Sorra et al, 2012). In the past, multiple types of improvement assessments were absent in most U.S. hospitals, as well (Conte, 2001). For example, in the U.S., the sub-dimension “staffing” received higher ratings, most likely because of the higher number of healthcare workers in U.S. hospitals than that in Nigeria, as a whole. In recent years, migration to foreign countries from Nigeria has declined, but there is still inadequate production and inequitable distribution of healthcare workers. The strikingly low ratio is currently at 1.95 per 1000 patients.

For this Lagos HSOPSC study, the data analysis showed that the participants in Lagos had different responses from the U.S. participants. The study in Lagos was conducted in 2013, and the AHRQ comparative data that is publicly accessible were from 2012 and 2014. It is possible that further studies can be focused on assessing the appropriateness of the HSOPSC questionnaires used in the U.S. and Nigeria. For instance, Zhu et al (2012) in their multi-center China HSOPSC study identified new items and domains suitable to Chinese hospitals. From their study, the identified that eight new items and three additional dimensions focused on staff training, mentoring of new hires and compliance with procedures needed to be added to their HSOPSC questionnaires.

For the HSOPSC study, the within-hospital positive correlations between communication, management, staffing, tenure at the hospital, number of hours worked and event or mistake-reporting, this finding was also in line with the Chinese hospital studies. The negative correlation between work attitude and mistake-reporting seemed to be a common finding among each of the 3 Lagos hospitals. It conflicts with the usual impact of patient safety culture, which is essentially, to decrease adverse patient outcomes or events.

Furthermore, the primary data collection that was done by SQHN for the 3 Lagos hospitals was based on a paper-only survey, which is similar to HSOPSC survey process in Taiwan (Sorra et al, 2013). Much like the Taiwan HSOPSC study, the survey methods, may have had some influence on differences between the U.S. survey responses and the Lagos survey responses.

Moreover, it is important to take the cultural context, healthcare infrastructure and country characteristics into account for the study design. In addition, it might have been helpful to further validate the accuracy of the HSOPSC data with subsequent interviews and observations (e.g. of the error-reporting mechanisms) within each hospital setting. In considering the historical context of the patient safety culture, the U.S. started its focus on initiating this culture right after the Institute of Medicine's landmark report "To Err is Human" from 2000 (Kohn et al, 2000); Taiwan began its efforts between 2002 and 2003 by establishing a "Patient Safety Committee"; Turkey began its efforts around 2010 (Bodur et al, 2010) and Sri Lanka conducted its first HSOPSC survey in 2013 (Amarapathy et al, 2013).

Overall, the Lagos HSOPSC survey results in this study demonstrated the need for a larger multi-center study, as well as the need for developing strategies to improve health quality and ensure patient safety. These strategies include: providing training and education on patient safety for health care workers in different levels (undergraduate education, continuing education, lectures and meetings); allocating enough staff and adequate workload; developing and fostering patient safety culture especially in the form of a non-punitive culture, creating an open communication atmosphere for reporting medical errors and speaking up when any problem arises (Sorra et al, 2012).

For the Patient Satisfaction, the within-hospital positive correlations between employees' (especially the doctors' and nurses') communication and technical skills and the patients' likelihood to return for care was predictable. To justify the validity with the pilot assessment of patient safety culture in Nigeria, results show that explanation/listening scores and access/time scores significantly predicted future hospital use or referral. It seems that a larger sample size study could explain the relationship between other factors (e.g. billing) and likelihood to return for care is needed.

This is one of the few large scale studies assessing patient safety culture in the 3 hospitals in Lagos. It is important to note that a negative response (i.e. "strongly disagree" or "disagree") on a negatively worded item indicates a positive response. For example, for the item: "we have patient safety problems in this work area": if 60% of the respondents strongly disagree and 20% disagree, the item-level percent positive response would be 80% positive (i.e. 80% of the respondents do not believe they have patient safety problems in their work area). For the HSOPSC comparison between U.S. and Lagos data, similarities were found in the highest average positive response to Teamwork within Units with the item "when a lot of work needs to be done quickly, we work together as a team to get the work done" (U.S. 89%, Lagos 76%) and Organizational Learning – Continuous Improvements with the item "we are actively doing things to improve patient safety" (U.S. 84%, Lagos 84%).

In addition, the findings were able to identify areas of strength (i.e. higher average positive responses) for multiple factors:

- Non-Punitive Response to Error ("staff worry that mistakes they make are kept in their personnel file")

- Feedback and Communication about Error (“in this unit, we discuss ways to prevent errors from happening”)
- Organizational Learning – Continuous Improvement (“we are actively doing things to improve patient safety”)

Furthermore, there were several areas with lower average positive responses, as follows:

- Communication Openness (“staff are afraid to ask questions when something does not seem right”)
- Handoffs and Transitions
- Staffing (“we use more agency/temporary staff than is best for patient care”)
- Supervisor/Manager Expectations and Actions Promoting Patient Safety (“whenever pressure builds up, my supervisor/managers wants us to work faster, even if it means taking shortcuts” and “my supervisor/manager overlooks patient safety problems that happen over and over”)
- Teamwork across Units (“hospital units do not coordinate well with each other” and “it is often unpleasant to work with staff from other hospital units”)
- Management Support for Patient Safety (“hospital management seems interested in patient safety only after an adverse event happens”)
- Teamwork within Units (“when a lot of work needs to be done quickly, we work together as a team to get the work done”; “in this unit people treat each other with respect” and when one area in this unit gets really busy, others help out”)
- Staffing (“we have enough staff to handle the workload)
- Communication Openness (“staff will freely speak up if they see something that may negatively affect patient care”)

- Feedback and Communication about Error (“we are given feedback about changes put into placed based on event reports”)

It is important to note that patient safety culture initiatives are novel in Nigeria, since the topic only started gaining attention within the past five years. On the other hand, patient safety has been a topic of debate, focus and attention in the U.S. since the publication of the Institute of Medicine (IOM) report “To Err is Human” in 2000 (Kohn et al, 2000). In addition, in 2004, the Institute for Healthcare Improvement (IHI) initiated a national patient safety campaign called the Hundred Thousand Lives Campaign here is a need to encourage healthcare workers (IHI, 2013).

Staffing also appears to a challenge to respondents in this study, as they indicated there is not enough staff to handle the workload. This finding is critical given multiple studies linking the availability of healthcare workers to population health outcomes (El-Jardali et al, 2007). Multiple studies have shown that in cases where the number of employees is lower than optimum to provide patient care, most staff are overworked, burned out, suffer from stress and sleeplessness, which may cause lapses in performance, which could, in turn, affect quality and patient outcomes (Sanders et al, 2007; Baldwin et al, 2003).

Another area of strength for the Lagos HSOPSC was with the handoffs and transitions component, all of which had a higher positive responses than the U.S. HSOPSC. Findings in Lebanon linked higher positive responses in handoffs and transitions to a greater likelihood of better perception of patient safety and greater likelihood of reporting a higher safety grade (El-Jardali et al, 2010).

Other strengths and limitations to this study should be acknowledged. One of the strengths of this study is its use of the HSOPSC which is the most commonly used tool to assess the culture of safety in hospitals. Despite the fact that most employees within the 3 hospitals are

required to speak the official English Language, it may have been beneficial to also have the HSOPSC questionnaire available in the 3 main native Nigerian languages (Yoruba, Igbo and Hausa). It is possible that providing employees with the native Nigerian language version of the survey could have allowed them to better understand and respond to specific items of the survey.

It should also be acknowledged that, while this study targeted a few of major healthcare organizations in Lagos, the results should be interpreted with caution and may not be generalizable. However, it does offer insight into the current status of patient safety culture. Furthermore, for the Society for Quality in Healthcare in Nigeria (SQHN) only used paper-only surveys when conducting the primary data collection. In contrast, the U.S. HSOPSC involves the use of paper, web or mixed methods for HSOPSC data collection. Overall, the large sample size in the U.S. HSOPSC resulted in more sensitive results, with greater statistical power and smaller confidence intervals compared to the Lagos data.

The advantages of using secondary data include: its economical and potentially timely nature; the help for making future primary data collection efforts more specific once gaps and deficiencies are identified in the secondary data collection and analysis processes. In addition, it also could provide a vital basis for data comparison on HSOPSC and Patient Satisfaction surveys in Nigeria.

However, there are certain limitations of conducting this secondary data collection and analysis. The primary data collection was done by SQHN Consultants at the three different hospitals in Lagos from April 2013 through November 2013. The secondary data collection was conducted through site visits to each of the three hospitals, as well as retrieval of SQHN files on the survey background, condition and results. Only one person was responsible for this aggregate secondary data collection process with SQHN.

The secondary data collection nature of this study is a limitation since this analysis of secondary data will be based on previously collected data which would limit the data analysis expert's ability to minimize the selection bias of the survey respondents; and to guarantee that the primary data is indeed clean. It could also be assumed that the 3 Lagos hospitals in this study may have been more willing to evaluate their safety culture and patient satisfaction because they may have a more open culture than the average Nigerian hospital and hence selection bias.

Other disadvantages of using secondary data include: limited accessibility; data inadequacies; possibly outdated information; variation in definitions and other inaccuracies or bias; difficulty with determining the quality of some data; the data available only indirectly measures the problems, challenges and success of patient safety culture in Nigeria and the secondary data may not necessarily reveal individual or group beliefs, values or trends, and the small study sample was not a representative sample of the overall patient safety culture in Lagos or Nigeria, as a whole. The small sample size limited the power of this analysis. Furthermore, in agreement with Vartanian's outline of secondary data limitations (Vartanian, 2010), secondary data is usually designed for specific purposes. The primary data collection was done by SQHN to provide just the initial assessment of a small sample size of hospitals in Lagos.

In the absence of stakeholder-driven mandates for patient safety and quality improvement in some African countries, grassroots groups such as the SQHN are attempting to define an agenda for improving patient outcomes that are culturally relevant to their unique challenges. Positive safety culture attitudes provide encouragement that patient safety is not only important to a larger, international healthcare community, but particularly important to Nigerian quality leaders. Nigerian leaders are keen to develop the knowledge, skills and evidence-based safe behaviours necessary to create organizational and system-wide changes to accurately measure

and assess patient harm, develop and prioritize improvement initiatives, and evaluate whether changes have improved the quality of care.

Without a common set of quality measures or clinical guidelines in place against which care is judged, widespread clinical improvements will remain challenging at best. Understanding the current Nigerian culture of safety presents an opportunity to capture attitudes and perceptions related to patient safety across a wider Nigerian audience, especially at the point of care.

Resources are needed in Nigeria to enable widespread safety culture surveying that would inform and create potential opportunities to prioritize education, training, and resource allocation for scalable patient safety improvement.

Summary and Consideration for Future Studies

This study was conducted to serve as a comparison of a Lagos pilot study and the U.S. data. The study results show the differences that exist between study settings, especially countries when implementing the questionnaires. HSOPSC may have been measured under different settings than the benchmark U.S. settings, but there are still some similarities. The study explicitly points to the necessity of large-scale multi-center studies in Lagos to further examine HSOPSC and Patient Satisfaction survey use more closely in Lagos.

For future studies in Lagos, the key priority areas of focus should include: comparisons between larger scale Lagos data to the U.S. data; an examination of the relationship between the 12 dimensions of the HSOPSC survey across multiple hospitals, and in the aggregate data for Lagos. A larger-scale study would provide a systematic assessment and quantification of opportunities in hospitals across different culture of safety domains. In addition, with a broader system-based approach, it permits comparison over time, with regard to improvements made in the level of the patient safety culture and patient satisfaction, processes and outputs. In addition,

by identifying issues as systematic problems, the concept of non-blame and non-punitive patient safety culture can be introduced to Nigeria, as a whole. Most importantly, future studies will support the long-term implementation and sustainability of risk-reducing strategies that can further help with reducing the risk of harm and adverse events to patients.

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