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Registered nurses' practicing in the emergency department: 'attitudes and practices' towards vital sign monitoring in Gauteng

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REGISTERED NURSES' PRACTICING IN THE EMERGENCY DEPARTMENT: 'ATTITUDES AND PRACTICES' TOWARDS VITAL SIGN MONITORING IN GAUTENG

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A research report submitted to the Faculty of Science, University of the Witwatersrand, in partial fulfilment of the requirements for the degree of

Master of Science in Nursing

Johannesburg, 2021

DECLARATION

I, Elisa Tshegofatso Katlholelo Moseki declare that this research report is my own, unaided work. It is being submitted for the degree of Masters of Science in Nursing at the University of the Witwatersrand, Johannesburg. It has not previously been submitted for any degree or examination at this or any other university.



……

Signature

7th day of June 2021 in Johannesburg

Protocol Number: M170544

DEDICATION

I dedicate this research study to God Almighty, my creator, my strong pillar, source of my inspiration, wisdom, knowledge and understanding. On His wings only, I have soared. I also dedicate this work to my family and my husband Thato Mphahlela, they always encouraged me all the way and their encouragement has made sure that I give it all it takes to complete that which I have started.

To my adorable mother, Seapei Moseki, thank you so much mommy for all the nurture, support, love and care. Indeed, you raised me up so that I can stand on the mountains. You sacrificed a lot so that I can always have the best for my future, you prioritized my needs over your needs. I am proud of you mommy and love you always. I thank God for your life. My love for you all can never be quantified. God bless you.

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I am especially indebted to my supervisor Vivien Herbert who have been supportive of my career goals and who worked actively to provide me with the protected academic time to pursue my goals. She became my mentor throughout the research study. Let me also acknowledge Burchill Christian, the author who gave me a permission to utilise her instrument for data collection. My research study was not going to be complete without the instrument.

Nobody has been more important to me in the pursuit of this research study than members of my family. I would like to thank my parents; whose love and guidance are with me in whatever I pursue. They are the ultimate role models. Most importantly, I wish to thank my loving and supportive husband Thato Mphahlela who provide me with unending inspiration. His efforts in ensuring that I achieve my goals has brought me this far. Lord I thank thee, I am honoured.

ABSTRACT

The practices of standard vital signs (blood pressure, heart rate, respiratory rate, temperature and oxygen saturation) monitoring in the clinical setting were based on the most part on tradition “the way it has been done in the past” and were undertaken as historical routines and rituals rather than directed by clinical judgement and contemporary knowledge. In the literature the first step in challenging these traditional practices was to understand the attitudes, practices of the emergency nurses in order to implement evidence-based practices that are patient centred.

The purpose of this study was to describe the attitudes and practices of the registered nurses towards vital signs monitoring in the emergency department of a central hospital in Gauteng in order to provide recommendations for clinical practice and nursing education for registered nurses working in the emergency department.

A quantitative, descriptive and cross sectional study design using a questionnaire was used in this study. A developed questionnaire named “Practices and attitudes of vital signs instrument for emergency nurses” (PAVSI-EN) tool was used for data collection. This developed questionnaire tool (PAVSI-EN) consisted of two sections. Section one was the demographic section which consisted of 5 questions and section two consisted of 20 statements which needed to be completed according to a likert scale. The 20 statements were divided into eleven statements with regards to practices and nine statements with regards to attitudes. A Convenience sampling method, which included all the registered nurses working in the emergency department of one central hospital in Gauteng was used in this study. The total population for this study was also used (N=70)**,** but only (n=66) participated. The statistical program that was used for this study was descriptive, comparative and multiple linear regression. A statistician was consulted to assist in analysing the data collected for this study. The variables were correlated using the spearman statistician.

Results: A total of 66 registered nurses participated in this current research, all of which were working at the emergency departments. Participants were mainly females and between the ages of 25 to 60 years. Majority of the registered nurses working in the emergency departments had a diploma as the highest qualification in

nursing and mostly had less than five years of work experience in the emergency department.

Attitudes are the beliefs and feelings that the registered nurses have concerning vital sign monitoring in the emergency department. The beliefs explored whether vital signs reflected a patient`s condition and whether vital signs were done according to evidence-based practices, Whereas the feelings concerning vital signs monitoring explored whether the registered nurses felt that regular vital sign monitoring was necessary for different patients or it was time consuming and if a case to case or universal protocol for the frequency of monitoring vital signs should be devised. In this study attitude response concerning vital signs taken in triage was denied by the majority of the participants (82 %) to be an accurate reflection of a patient`s condition. The majority of the participants (90.91%) disagreed or strongly disagreed that vital signs taken in the emergency department are performed according to evidence-based practice guidelines.

Practices are referred to as reviewing and repeating of vital signs at various times during the patient`s admission to the emergency department. The various times are not only when the initial assessment is done but prior to evaluating the patient, giving the medication, developing a nursing care plan and on discharge. Related to practices, the majority of participants reviewed triage vital signs most of the time prior to evaluating the patient (95.45%), but to a lesser degree, use those vital signs in developing initial plan of care (78.79 most of the time, 13.64% sometimes). Similarly, respondents only sometimes (78%) often (25%) or most of the time (92.42%) used them in altering the plan of care. For non-critically ill patients, the lesser of the participants (37.88%) sometimes repeated vital signs as part of their initial assessment compared to 93,94% that repeated them most of the time for critically ill patients.

Conclusion: Studies that examine the practices and attitudes of vital sign by registered nurses that work in emergency departments in hospitals in South African health care facilities are scarce. However, the findings of this study support the conclusions of the majority of studies conducted overseas that reported and highlighted practices and attitudes of vital sign monitoring as a problem amongst registered nurses working in hospitals.

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LIST OF ABBREVIATIONS

EFA	Exploratory Factors Analysis
IQR	Interquartile range
PAVSI-EN	Practices and Attitudes of Vital Signs Questionnaire for Emergency Nurses
SANC	South African Nursing Council
SD	Standard Deviation
TEWS	Triage Early Warning Score

CHAPTER ONE

OVERVIEW OF THE STUDY

1.0 INTRODUCTION

For over 100 years nurses have been performing the monitoring of vital signs using the same measurements of a patients: temperature, respiratory rate, pulse and recently oxygen saturation has been added (Elliot and Coventry, 2012). Vital signs have been seen as early warning signs of changes in a patient's condition; however, little research has been conducted to determine how often vital signs are monitored in the emergency department (Johnson *et al.,* 2014).
Monitoring of vital signs are being addressed as a basic skill task that is usually emphasised during nursing training, yet there is no standardised guideline on how often vital signs need to be monitored in the emergency department (McGhee *et al.,* 2016).

Nevertheless, several studies have indicated that vital signs are not consistently measured, recorded, or reported (Kamio, Kajiwara, Lizuka, Shiotsuka and Sanui, 2018). The measurements of vital signs determine the physiological states of the emergency patient's health, and viability, and allow for the prompt detection of delayed recovery or potential complications (Teixeira, Boaventura, Souza, De Brito Parangua, Bezerra, Bachion and Brasil, 2015). The importance of vital signs values is that they can influence the care of treatment the patient receives in the emergency department and is viewed as the marker of nursing vigilance (Elliot and Coventry, 2012).

According to Mok et al., 2015, in their study factors such as knowledge, workload and communication influences nurses' attitudes towards vital sign monitor. Burchill and Polomano (2015) have suggested that perhaps the first step in challenging the latter factors and the existing policies related to vital sign monitoring in the emergency department should be to determine the attitudes, practices of the registered nurses towards vital sign monitoring.

1.1 BACKGROUND OF THE STUDY

The practices of standard vital signs (blood pressure, heart rate, respiratory rate, temperature and oxygen saturation) monitoring in the clinical setting are based for the most part, on tradition, “The way it has been done in the past” and are undertaken as historical routines and rituals rather than directed by clinical judgement and contemporary knowledge (Mok *et al.,*2015). The latter statement agreed with by (Burchill and Polomano, 2015) whom reported that (Storms-Versloot, *et al.,* 2013) reported that clinical practice was often based on tradition and is regimental, with no patient-specific or according to evidence-based practice, thus implying “the way it has been done in the past.”

According to (Burchill and Polomano, 2015), the attitude of nurses may be a factor that maintains this ritualized practice, and they do suggest that understanding this may be the first step in challenging this ritual in order to implement evidence-based practices. In addition, (Henderson and Fletcher, 2014; Zeitz and McCutcheon, 2005) highlighted that to implement the evidence-based practices regarding vital signs monitoring in the emergency department is a challenge, and it is even more difficult to address practices entrenched in nursing culture. Furthermore, it is essential to understand the nurse’s practices and perceptions because without understanding, it was reported it would be difficult to transform the vital signs practices to align with evidence-based practice (Burchill and Polomano, 2015).

In order to guide emergency nurses, doctors and paramedics in taking vital signs, in South African triage group SATG developed the South African triage Scale, (SATS) which was to be for use throughout South Africa (Twomey,2018). The South African Triage Scale (SATS), is a physiology and symptom-based scale which uses four colours in order to prioritises patients and can be used in hospital Emergency Centres as well as in the pre-hospital setting. The SATS has been validated in the public, private health care setting as well as pre-hospital (Twomey, 2018). The frequency of taking vital signs according to the latter scale depends on the patient’s acuity but the frequency (how often) vital signs need to be taking according to the patient’s acuity have not been stipulated in the SATS.

The nurse's attitudes towards vital signs monitoring in the emergency department is still seen as a concern based on the fact, they have different perceptions. A study conducted by (Burchill and Polomano, 2015) reported that 76% of the nurses indicated it was unnecessary to monitor the vital signs frequently of certain patient populations, while 69% of the nurses felt that monitoring of vital signs was to protect their practice in the event of legal structure. According to (Zeitz and McCutcheon, 2005), clinicians focus more on hospital policy as a source of information that guides current practice whereas research has shown that evidence-based practice provides best patient-centred care. Mok *et al.* (2015) found in their study that nurses did not know or had only a limited understanding on the key factors that determine the deterioration of a patient's condition. Several studies also reported that vital signs were not being repeated, or interpreted, timeously in the emergency department resulting in inadequate care being rendered to the patient which can often result in the death of these patients. Vital sign monitoring has become a task that is being neglected by nurses (23.9%), as evidenced in a report done by (Mok *et al.,* 2015). The rationale for the latter finding was that 21% of these nurses reported it was time-consuming to perform vital signs monitoring (Mok *et al.,* 2015).

According to (Armstrong, Clancy and Simpson, 2008), most nursing institutions allocate extra time in their nursing curriculum, as well as a significant amount of effort by nursing educators, in teaching nurses how to perform vital signs because it is an essential component in the emergency setting. Interestingly, multiple studies conducted internationally reported there is no national standard policy regarding the optimal frequency of vital signs monitoring in the emergency department (McGhee *et al.,*2016; Armstrong *et al.,* 2008, and Johnson *et al.,* 2014). In South Africa, the Scope of Practice for registered and enrolled nurses (R2598) states that *"A registered and enrolled nurse (under the direction and delegation of a registered nurse) must deliver treatment and care which includes patient`s vital signs and their reaction to diseases, trauma, stress, anxiety."* A registered nurse must, therefore, have the knowledge and skills to assess the individual patients' condition, of which vital signs are apart to determine the emergency patients' baseline vital signs and how frequently their vital signs need to be monitored.

As stated before, there is controversy in literature relating to the frequency of performing vital sign monitoring in the emergency department, as some researchers want nurses to be independent and make their own decisions regarding the frequency of monitoring vital signs which is also supported by the Scope of Practice for registered nurses in South Africa, while others suggest that frequency needs to be determined by the doctor's order.

1.2 PROBLEM STATEMENT

Vital signs parameters are known as the signs of life, because of the significant information they reveal regarding the condition of every patient visiting the emergency department. Previous studies have indicated that vital signs are seen by nurses as time consuming and there is a lack of consistency in monitoring vital signs which are factors that can influence the registered nurses working in the emergency department. The first set of vital signs that are done in the emergency department is part of triaging the patient and is done to prioritise the patients' illness.

In South Africa, the South African Triage Scale (SATS) has been developed which is linked to the patient's priority and the vital signs forms part of the Triage Early Warning Score (TEWS) compartment of the SATS (Augustyn, 2011). Even though this is a guide for emergency nurses to use in the emergency department for emergency care situation, it doesn't refer to the frequency (repeating) of vital signs according to the patient's priority. The South African Nursing Council, according to the Scope of Practice for the registered and enrolled nurses (R2598), Chapter 2, states *"A registered nurse shall entail the treatment and care of and the administration of medicine to a patient, including the monitoring of the patient`s vital signs and his reaction to disease conditions, trauma, stress, anxiety, medication and treatment.* The latter statement also doesn't state how often (frequency or repeating) vital signs need to be taking on patients.

According to Carona et al., (2015) the selection of vital signs measured and responded to appears to rely on nurse's clinical judgement. In South Africa this is also stated according to the South African nurse's competencies, developed by the

South African nursing council that emergency nurses must use clinical judgement and critical reasoning skills to manage the emergency patient.

As no studies have been conducted in South Africa regarding the attitudes and practices of the registered nurses with regards to the frequency of performing vital signs in the emergency department (which guidelines should be evidence based), this study is necessary. The findings from this study may enable hospital management and nursing educators make valid suggestion in the emergency department regarding hospital practice.

1.3 PURPOSE OF THE STUDY

The purpose of this study was to describe the attitudes and practices of the registered nurses towards vital signs monitoring in the emergency department of a central hospital in Gauteng in order to provide recommendations for clinical practice and nursing education for registered nurses working in the emergency department.

1.4 RESEARCH QUESTION

What are the attitudes and practices of the registered nurses practicing in the emergency department towards vital sign monitoring in a central hospital in Gauteng?

1.5 RESEARCH OBJECTIVES

- To describe the attitudes of the (registered nurses with a postgraduate diploma or master's degree in emergency nursing as well as registered nurses working in the emergency department with more than three months experience) in emergency department.

- To describe the practices of (the registered nurses with a postgraduate diploma or master's degree in emergency nursing as well as registered nurses working in the emergency department with experience) in emergency department.

1.6 SIGNIFICANCE OF THE STUDY

This significance of this study is to describe the attitudes and practices of the registered nurses in order to determine if these two factors influence their frequency of monitoring vital signs that forms part of the patients' assessment. This is extremely important as patients who arrive for treatment in the emergency department can become unstable at any time, thus registered nurses must assess these patients timeously and continuously in order to be able to identify if the condition is deteriorating. Presently, no studies have been done on what the attitudes and practices are of the registered nurses regarding the frequency of vital signs in South Africa. The results of this study will determine what their attitudes and practices are of the registered nurse in emergency departments regarding the frequency of vital signs in South Africa.

1.7 OPERATIONAL DEFINITIONS

Emergency Department: is a medical treatment area in the hospital that is specializing in emergency care to critically ill and injured patients (Booyens, 2000; Dolan and Holt, 2013). In this study, the emergency department is a unit that operates 24 hours to render immediate emergency care for all paediatrics and adults. The emergency department is divided into three categories namely: Paediatric emergency department, Medical emergency department and Trauma emergency department.

Triage: Is a dynamic decision-making process used in the emergency department, walk in centres, general practise in order to prioritize patient`s needs according to the severity of illness or injury on arrival to the emergency department (Weller and Pratt, 2005)

Vital signs: The signs of life namely pulse, respiration and temperature. These are the primary objectives with information used to indicate the health status of the patient. This is commonly obtained in triage (Venkatesh, Curley, Chang and Liu, 2015) and is part of the early warning signs that are done in triage. In this study as per triage process in the three emergency departments vital signs includes blood pressure, heart rate, respiration, temperature, saturation, and pain. On arrival to

either of the three emergency departments, the vital signs will be obtained as an initial procedure.

Registered nurse: Is a nurse who has underwent a nursing training for a bridging course or a four-year diploma or degree in nursing. Furthermore, a registered nurse in this study is a nurse who has experience in working in the emergency department and some nurses even have an advanced nursing qualification in Trauma and Emergency nursing.

Trauma and Emergency Nursing advanced qualification: Is an advanced nursing qualification obtained by the registered nurses working in the emergency department, this is regarded as a speciality qualification. This advanced nursing qualification can be obtained in a form of an advanced diploma or a master's degree and they must register with the South African Nursing Council in order for them to practise. (Augustyn, 2006; Dolan and Holt, 2013).

South African Nursing Council: Is the controlling body which serves to safeguard the position of the patient in health services in the country and has a function in setting the standards for performance (Booyens, 2006).

Attitude: a settled way of thinking or self-confident behaviour (Kavanagh, 2006). In this study attitudes are: the beliefs and feelings the nurses have on the frequency of vital sign monitoring.

Practice: The customary or expected procedure or way of doing something in the business or at your workplace (Kavanagh, 2006). Practices in this study refers to the reviewing and repeating of vital signs at various times during the patient's admission in the emergency department.

1.8 AN OVERVIEW OF THE RESEARCH METHODOLOGY

According to Singh (2026), methodology refers to the overarching strategy and rational of a research project.

A quantitative, descriptive, and cross-sectional design was used in this study. A developed questionnaire, “Practices and attitudes of vital signs questionnaire for emergency nurses” (PAVSI-EN) developed by Burchill and Polomano (2015), was as used in the study. The study was conducted in a central emergency department in Gauteng.

Ethical clearance and permission to conduct the study was obtained from the Human Ethics Research Committee (Medical) of the University of the Witwatersrand, the hospital Chief Executive Officer (CEO) and Director of Nursing Services for the Gauteng Department of Health. Participation in the study was voluntary, and respondents were free to withdraw at any time.

After permission was obtained from the hospital and relevant nurse managers, consent was obtained from emergency department nurses who agreed to participate in the study. Descriptive statistics were used to analyse the results of the study with STATISTICA version 13.2 used for data analysis. Categorical data (demographic and questionnaire schedule) were analysed using frequencies and percentage. Inferential statistics (Mann Whitney test, t-test, Exploratory Factor Analysis, Kaiser-Meyer Olkin Measure and Bartlett’s test of Sphericity were used. Testing was done on the 5% level of significance ($p<0.05$).

Reliability of the study was maintained by ensuring the researcher adhered to the guidelines provided by the developer of the questionnaire. The researcher was the sole data collector. The convenience sampling method was used to achieve the study sample. Face and content validity of the questionnaire was achieved prior to the onset of the study by ensuring the questionnaire used for data collection was verified by a small group of local domain experts to ensure applicability of the study for the South African context.

1.9 OUTLINE OF THE STUDY

The study will be presented as follows:

Chapter One: Overview of the study

Chapter Two:	Literature review
Chapter Three:	Research methods
Chapter Four:	Results
Chapter Five:	Discussion of findings, conclusions and recommendations

1.10 SUMMARY

In this chapter, an outline study, which includes the problem statement, the purpose of the study, research questions, research objectives and the significance of the study, has been discussed. An overview of the research methodology, validity and reliability and ethical considerations have been outlined.

CHAPTER TWO

LITERATURE REVIEW

2.1 INTRODUCTION

This chapter will review past studies done and previous data that has been collected and published, highlight the significance of vital signs and the frequency of monitoring them in the emergency department. The purpose of this literature review is to understand the attitudes and practices of emergency nurses towards the frequency of vital signs monitoring.

A manual and electronic literature search was conducted to obtain the literature published on several facets of the research topic and to choose the appropriate resources for the review. Electronic databases such as Pubmed, Science direct, Cinahl, British and American journals, and Google scholar engine search were used to search for literature. The keywords used were triage, the frequency of vital signs assessment in the emergency department, vital signs monitoring, emergency nurses and vital signs.

The literature review will be compiled according to the subheadings derived from the research objectives and research question. They are as follows:

- Overview of the emergency department
- Overview of vital signs
- The frequency of monitoring vital signs in the emergency department
- Attitudes and practices of the registered nurses towards vital signs
- Monitoring in the emergency department
- Implications of not monitoring vital signs frequently
- Summary of the literature review

2.2 OVERVIEW OF THE EMERGENCY DEPARTMENT

Hospital emergency departments (EDs) play a vital role in the acute health care system, providing care for patients with acute illness and injury, and access to the health system. The workload in South African emergency departments is one of the highest worldwide. This is due to the poor resourced, overcrowded, understaffed and underfunded hospitals.

Emergency departments around South Africa are having to deal with the so called ‘quadruple burden of disease’: communicable diseases, non-communicable chronic diseases, injuries, and HIV/AIDS. According to (Rosendale *et al.,* 2010), there is, 2.5 million cases of non-fatal injuries that occur in South Africa nationally that require emergency care. Sadly, and an estimated 60,000 South Africans are known to die of homicides and road traffic accidents each year.

Patients (with the conditions mentioned above) that arrived at the emergency department requires prompt emergency treatment. If the prompt emergency treatment is not performed their condition can lead to them deteriorating and can become fatal even resulting in death (Elliott and Coventry, 2012).

Obtaining the patients primary vital signs (Blood pressure, pulse rate, respiratory rate and temperature) on admission to the emergency department is essentially the first step according to (Evans, Hodgkinson and Berry, 2001) in assessing the patients presenting condition. Depending on the patient’s vital signs that are recorded, the patients are then triaged, and the promptness of care then determined (Mok *et.al.,* 2015).

2.3 OVERVIEW OF TRIAGE AND VITAL SIGNS

Vital signs and other triage scales such as the (AVPU) Alert, response to voice, response to pain and unresponsive) scale are essential components that are utilized when triaging patients in the emergency department.

Triage is a word derived from the French verb “trier,” which means to separate, sort, or select (Augustyn, 2011; Siddiqui, 2012; Azhough *et al.,* 2015). It is an essential function and a complex decision-making process in the emergency department (Considine, Botti and Thomas, 2007; Hegazy, Sayed and Ahmed, 2012). The process of triage begins at the door of the emergency department and is a continuous process that evolves the management of the patient (Aloyce, Leshabari and Brysiewicz, 2013; Hegazy *et al.,* 2012; Smith, 2012). The triage system aims to ensure that emergency care is initiated in response to clinical needs rather than the time of arrival (Ali *et al.,* 2013). The accuracy of triage has a significant benefit on a patient’s outcome and can save lives as well as reduces mortality rates (Considine et al., 2007; Dadashzadeh *et al.,* 2014; Naidoo, Rangiah and Naidoo, 2014).

In South Africa the Western Cape in 2005 developed the Cape Triage Score which was expanded in 2007 into the South African Triage Scale (SATS) (Augustyn, 2011). The latter triage scale was developed by the South African triage group (SATG) and is a system that is frequently used to detect early deterioration of the patient (Augustyn, 2011; Twomey, 2018). In South Africa, the Triage Early Warning Score (TEWS) is a component of the SATS which include the daily vital signs that are done. The TEWS is a composite score representing the physiological parameters of a patient and is a component of the South African triage scale (Augustyn,2011).

The South African Triage Scale (SATS) is a first measure of patient acuity in the emergency department (Twomey, Wallis, Thompson and Myers, 2012). This scale determines the medical urgency of the patient’s condition determined by using a list of clinical discriminators. Unfortunately (SATS) does not provide a guide on how often the patient’s individual vital signs need to be monitored.

The South African Triage Scale has been used in both public and private health care sectors in South Africa since 2006 (Twomey, 2018). Patients are being categorised or prioritized in four colour coding’s namely red, which indicates the sense of emergency and treatment to be rendered immediately to the patient, orange indicating very urgent and patient should be seen within 10 minutes, then yellow

indicating the urgent need of which patient should be seen in less than 60 minutes and green which indicates no urgency and patient can be seen in less than four hours (Twomey et al., 2012).

The first person that a patient should encounter when visiting the emergency department is the emergency nurse (Aloyce, Leshabari and Brysiewicz, 2013). The assurance of the best possible care in emergencies depends on the knowledge and skills of triage that the emergency nurses have (Ali et al., 2013; Hegazy et al., 2012). The one advantage that the South African Triage Scale has, is that it's easy follow, thus allowing even the most junior nurses to triage patients (Augustyn, Ehlers and Hattingh, 2009; Augustyn, 2011; Rominski *et al.,* 2014). According to (Considine et al., 2007; Rominski et al., 2014) a nurse- friendly triage systems can half the mortality rates in an emergency department, as well as decrease the patients waiting time dramatically.

For over 100 years nurses have performed vital signs monitoring on patients, measuring the patients: respiratory rate, pulse rate, blood pressure and temperature. This was done to evaluate the physiological status of an individual and in part determine the patients' health status (Tysinger,2014). Recently with advancing complexity of patients in both the inpatient and outpatient settings, vital signs have become the means of identifying patients who may be at risk of deteriorating and adverse reactions (Tysinger, 2014). In most countries pain has been added as the 'fifth vital sign' but recently there has been an outcry in the USA about the increase in opioid abuse and this has however raised concern about pain being a vital sign **(**Levy, Sturgess and Mills, 2018). Recently oxygen saturation has been added as additional vital signs because in some incidences the patient's physiological functions was still unclear when just checking the traditional vital signs (Athrens, 2008).

- Respiratory Rate

Respiration is several breaths inhaled in one minute. A patient's respiratory rate is an important vital sign, and the correct reading is essential towards the evaluation of a patient`s condition (Elliott and Coventry, 2012; Hogan, 2006; Parker, 2011) reported that although respiration is the first clinical sign to identify a patient`s

condition is deteriorating; the respiration rate is poorly recorded. Failure to obtain a full set of vital signs, especially respiration, might delay the process of early recognition of a patient`s deterioration (Gabayan *et al.,* 2017). The first vital sign indicating that a patient is deteriorating is a change in a patient`s respiratory rate (Gabayan *et al.,* 2017; Mok *et al.,* 2015).

According to (Gabayan *et al.,* 2017), in their study their findings indicated that the vital signs records of 104,025 elderly, 65 and above, were evaluated and blood pressure, heart rate, temperature and saturation were recorded, but the respiration rate was not reflected. Incomplete recording of the vital signs may lead to the failure to recognise the clinical and physiological deterioration of the patient or inappropriate management (Brekke *et al.,* 2019; Cioffi *et al.,* 2006).

The recommendation made by the latter study was that respiration rate has to be counted for 60 seconds, and nurses, while counting the respiration, should assess the depth of inspiration, use of accessory muscles and the equality of the thoracic expansion (Elliott and Coventry, 2012). Furthermore, (Elliott and Coventry, 2012) highlighted that the counting of the respiration rate could be mostly achieved while watching the chest rise and fall in 60 seconds without telling the patient, or a hand may be placed on the chest and stomach while feeling the number times the chest rises and falls.

- Blood pressure

Blood pressure can be defined as the pressures of the blood flowing in the main arteries (Elliot and Coventry, 2012). Blood pressure is divided into two parts: the systolic, which is a pressure exerted when the heart is contracting, and the diastolic, which is a pressure exerted when the heart muscles relax (Elliot and Coventry, 2012; Mok *et al.,* 2015). Blood pressure can be obtained from every patient through the use of sphygmomanometer or automated blood pressure machine and is one of the most incorrectly measured vital sign (Elliott and Coventry, 2012; Mok *et al.,* 2015).

A study done by Mok *et al. (*2015), whereby nurses where questioned on “What is the first vital sign that changes when a patient starts deteriorating”, the majority of

their nurses in their study thought blood pressure was one of the first signs and not changes in respiration. The study thus indicated that there was a gap in knowledge and nurses were not aware, that any changes in a respiratory rate is actually the first sign indicating a patient is deteriorating (Gabayan *et al.,* 2017; Mok *et al.,* 2015). In addition, Mok *et al.,* (2015) recommended that education, including vital signs, especially counting of respiration rate, must be emphasised in a pre-graduate curriculum and be strengthened, augmented throughout the postgraduate programme

- Pulse Rate

A pulse is several heartbeats, whereby the wave of the blood passes through an artery. The heartbeats are counted in 60 seconds (Mok *et al.,* 2015). The strength of a pulse rhythm is a strong, steady force felt in the radial artery, femoral artery or carotid artery (Elliott and Coventry, 2012; Gabayan *et al.,* 2017). Interestingly a study was conducted by Elliott and Coventry, (2012) concerning measurement of the pulse rate and it was indicated that pulse oximetry is used to determine the pulse, however it was emphasised that nurses should not rely on a pulse oximetry, they should skilfully count the pulse manually.

- Temperature

Temperature is described as an amount of heat in the body and it can be obtained through the use of a mercury-free or glass thermometer, a digital thermometer, tympanic or rectal thermometer (Elliott and Coventry, 2012). There are factors that can contribute to incorrect measurements of the temperature such as not calibrating the device, hence literature emphasised that it is significant to calibrate the device before using it to ensure accurate results (Elliott and Coventry, 2012). According to (Gabayan *et al.,* 2017), elderly patients have a problem in regulating their body temperature and in most instances, their temperatures are low.

- Oxygen saturation

Pulse oximetry is a tool that is used to measure the oxygen saturation in the patient`s blood, and for this measurement to be achieved correctly there has to be adequate blood flow in the peripheral area (Elliott and Coventry, 2012). The literature indicated that in cases of anaemia, where there is reduced blood flow to the peripheral area, saturation readings might be incorrect (Elliott and Coventry, 2012).

2.4 FREQUENCY OF MONITORING VITAL SIGNS IN THE EMERGENCY DEPARTMENT

Vital signs play a fundamental role as an indicator of assessing and monitoring the patient`s condition (Evans, Hodgkinson and Berry, 2001). In addition, the monitoring of vital signs is significant in predict and intervene when the patient's condition start deteriorating (Mok *et al.,* 2015).

This section aims to discuss vital signs monitoring and evidenced-based practice, including literature versus policies.

2.4.1 Monitoring of Vital signs

Vital signs are an important part of a patient assessment and do form part of the early warning signs of changes in a patient's condition, however, little research has been conducted to determine how often vital signs are monitored in the emergency department (Johnson *et al.,* 2014).

However, vital sign monitoring has been addressed as a task that is not consistently done, and poorly done by nurses (Miltner, Johnson and Deierhoir, 2014). Poor compliance in monitoring vital signs have increased significantly (Ansell, Meyer and Thompson, 2010; Parker, 2011). Ongoing research is still necessary in order to determine, define and quantify the optimal frequency of vital sign monitoring in both the specific and the general settings (McGhee *et al.,* 2016). Vital signs monitoring is an indicator that can serve to assist the nurses in establishing and recognising that a patient`s condition is deteriorating (Elliott and Coventry, 2012; Quinten, *et al.,*

2018). According to Shulman, (2010), because the frequency of vital sign monitoring is significant, this task should be done according to a patient`s individual need instead of being divided according to specific time intervals.

The study of (Quinten *et al.,* 2018), was conducted to identify if repeated vital signs measurement in the emergency department predicted the patient`s deterioration within 72 hours. This study revealed that more than one in four patients who visited the emergency department with a suspicion of infection or sepsis deteriorated significantly within 72hours. Furthermore, the literature indicated it is essential to frequently monitor vital signs. Evidently one-third of medically ill patient`s vital signs may change from being normal to abnormal (Quinten *et al.,* 2018). In addition, this study highlighted that to predict possible potential life-threatening illnesses, such as sepsis, it is essential to monitor the vital signs in the emergency department (Quinten *et al.,* 2018).

Hogan (2006) and Parker, (2011) highlighted in their studies that vital signs are obtained but the respiration rate is not counted by the nurses. In a systematic research study, which was conducted by (Odell, Victor and Olivier, 2009) their results indicated that a patient`s condition deteriorated with the nurses being unaware until the family alerted them. The suggestion was that if the nurses frequently monitored the patient's vital signs, they would have been alert to the patient's condition deteriorating.

McGhee *et al.,* 2016 indicated that through vital sign monitoring healthcare providers can predict the early warning of the changes in a patient`s condition. In addition, the study indicated there were incidences in the emergency department where the patient`s condition deteriorated, but due to lack of monitoring vital signs healthcare providers were unable to predict that situation. Literature findings also indicated that vital signs monitoring does not only assist in predicting the patient`s deterioration, it also helps to prevent delay in discharging patients (Armstrong, Clancy and Simpson, 2008).

An exploratory study was conducted in 94 different emergency departments, and of the 43.232 patients that visited these, only blood pressure documentation was done every 2hours 30minutes for all patients (McGhee *et al.,* 2016). In addition, a study conducted in Singapore revealed that nurses perceived blood pressure to be used as an early sign of deterioration (Mok *et al.,* 2015), however according to (Elliott and Coventry,2012; Hogan, 2006), the least recorded vital sign parameter is the respiratory rate even though it has been highlighted as the most sensitive parameter that can indicate the deterioration of a patient`s condition when abnormal.

2.4.2 Literature versus Policies

The dilemma in the emergency department remains to be in how frequent patients' vital signs should be monitored. The challenge is due to there not being one standard policy or guideline nationally in place addressing this (Johnson *et al.,* 2014; McGhee *et al.,* 2016). This has been echoed by (Cardona- Morrell *et al.,* 2016) whom also state that most often in the literature, the optimal frequency of vital signs monitoring is not addressed, there is less research and there is still a lack of information. Surveys were conducted regarding the frequency of vital sign monitoring and evidently proved that limited information exists concerning the frequency of vital signs monitoring (Tysinger, 2015).

In a review of the Emergency Nurses guidelines by (McGhee *et al.,* 2016) their findings were that the latter guidelines don't provide a recommendation for assessing vital signs but suggested that it's up to the facility to determine the frequency of reassessment based on the cliental served.

In 2010 one of the studies conducted stated that three key aspects are outlined when guidelines are to be developed for the frequency of vital sign monitoring (Schulman, 2010). The first criteria recommended that the frequency of vital sign monitoring should be based on the standards that meet the needs of the majority of patients in the clinical area, the second criteria on the assessment and documentation policies, and the third criteria should allow divergence from the standard policy on the nurse`s judgement (Schulman,2010).

According to (McGhee *et al.,*2016), consensus was reached that for all priority one patient's, vital signs must be monitored between five to 15 minutes depending on the policy, and upon discharge vital signs are to be monitored within 30 minutes of a patient being discharged. Furthermore, the vital signs of patients with a mental health diagnosis should be determined by the clinical patient`s presentation at an estimated minimum of eight hours (McGhee *et al.,*2016).

Armstrong *et al.,* (2008), state that vital signs monitoring must be repeated every 15 minutes provided they are abnormal, while (Burchill and Polomano, 2015; Evans *et al.,* 2001) indicated the role, nature and optimal frequency of vital sign monitoring has not been researched enough and thus cannot make a scientific claim regarding the frequency of monitoring vital signs in the emergency department.

A survey study was conducted to evaluate the attitudes towards vital sign monitoring in the detection of clinical deterioration, and the results highlighted the lack of time to determine a patient`s vital signs was identified by nurses (Mok *et al.,* 2015). The study also indicated 35.3% of the nurses indicated it was time-consuming to monitor vital signs, while 32.1% disagreed. Furthermore, the study suggested that the frequency of vital signs monitoring should be according to patient-centred care and be obtained individually by having a specific time interval (Mok *et al.,* 2015).

2.5 ATTITUDES AND PRACTICES OF THE REGISTERED NURSES TOWARDS VITAL SIGNS MONITORING IN THE EMERGENCY DEPARTMENT.

Three factors will be discussed in this section, namely: nursing educational training, attitudes and practices of the nurses working in the emergency department and the use of equipment for vital signs monitoring. This section aims to discuss how the factors mentioned above contribute towards attitudes and practices towards vital signs monitoring in the emergency department.

2.5.1 Attitudes and Practices of Registered Nurses.

The practices of standard vital signs (blood pressure, heart rate, respiratory rate, temperature and oxygen saturation) monitoring in the clinical setting are based for the most part on tradition worldwide, “the way it has been done in the past,” and are undertaken as historical routines and rituals rather than directed by clinical judgement and contemporary knowledge (Elliot and Coventry, 2012). The first step in challenging these traditional practices is to understand the attitudes and practices of the emergency nurses in order to implement evidence-based practices that are patient-centred (Burchill and Polomano, 2015).

According to (Zanin, da Cunha, deRosso, Capriles and Stedefeldt, 2017), the link between attitudes (feelings towards a specific subject, as well as any preconceived ideas that one may have towards the subject) and practices (the ways in which one demonstrates one’s knowledge and attitude through ones actions) appears to be knowledge (facts, information, and skills acquired through experience or education; the theoretical or practical understanding of a subject.

Therefore, as the task of obtaining the vital signs has been known to be performed by junior nurses (less qualified or inexperienced nurses) (Elliott and Coventry, 2012; Hogan, 2006). Studies have highlighted that it is imperative that the emergency nurse interprets the results correctly in the context of a patient`s condition and must have the knowledge and skills towards intervening if there is a problem (Mok *et al.,* 2015).

Similarly, in a study done in Western Sydney it was highlighted that in the clinical records of a patient who was haemodynamically stable but tachycardic, with a blood pressure of 80/90, the agency staff did not record any output and never reported to the senior nurses the above findings (Cioffi *et a*l., 2006). The latter study thus identified that a lack of experience and lack of confidence are the key characteristics that lead to poor judgement and failure to communicate to others (Cioffi *et al.,* 2006). Furthermore, one of the studies highlighted that despite delegating the task of obtaining vital signs to the junior nurses, the senior nurses still account for

patient`s care, interpreting the vital signs and intervening towards patient`s care (Elliott and Coventry, 2012).

According to (Mok *et al.,* 2015), failure to prioritise vital sign monitoring has been reported as professional negligence because of the impact it causes on the patient`s condition. In addition, regarding the barriers to good compliance towards the frequency of vital signs monitoring, literature reported that the nurse's attitudes translated to the task being tedious, overwhelming and time-consuming (Mok *et al.,* 2015; Tysinger, 2015).

Furthermore, emergency nurse's attitudes towards vital signs monitoring contributes a lot towards their practice and has a great impact in the quality and performance of nursing care rendered to the patients in the emergency department (Burchill and Polomano, 2015). There are studies that have revealed that monitoring vital signs is not seen as a priority by registered nurses (Mok *et al.,* 2015).

According to (Johnson *e.t al.,* 2014; Mok *e.t al.,* 2015) the belief is that the attitude of the registered nurse is the contributing factor to why vital sign monitoring is not seen as a priority. Burchill and Polomano (2015) indicated that their participants confirmed that vital signs monitoring at frequent intervals was unnecessary for a specific patient population but concluded that the practice was possibly essential in order to protect them against any legal litigations.

2.5.2 Nursing Education and Training

In universities and colleges, training is in place for all students who enrol for nursing studies regarding obtaining and monitoring of vital signs (Armstrong *et al.,* 2008; Mok *et al.,* 2015). Literature has proved that this training is comprehensive and crucially shared amongst the students. Too much time and endless effort is spent in the practice of obtaining and monitoring vital signs even though there`s no national standard agreed for frequent monitoring of vital signs in the emergency department (Armstrong *et al.,* 2008). Although the nurses underwent training in their nursing curriculum, there is a recommendation from the literature that emphasises more

efforts to educate, train and evaluate nurses in obtaining vital signs using the relevant techniques are essential in order to close the gap (Tysinger, 2015). In South Africa, according to the nurse's scope of practice, principle R2598 states that "*treatment and care of and the administration of medicine to a patient`s vital signs and of his reaction to disease conditions, trauma, stress, anxiety, medication and treatment.".* The significance to train registered nurses for an advanced diploma course or master's degree in trauma and emergency nursing should also be emphasized, because their advanced knowledge is seen as one of the advantages towards decision making regarding vital signs monitoring and this forms a great impact towards rendering quality nursing care in the emergency department (Burchill and Polomano, 2015). A continuous empowerment and the importance of training the registered nurses for an advanced diploma or master's degree in trauma and emergency nursing should be seen as a priority to support emergency nursing care in the hospitals.

2.5.3 The Use of Equipment for Vital Signs Monitoring

People have been monitoring vital signs of others since the dawn of s of others since the dawn of mankind, using various methods to track heart rate, body temperature, respiratory rate and arterial blood pressure.

In 1625 Santorio of Venice and his friend Galileo started measuring body temperature with a spirit thermometer and timed one's pulse rate using a pendulum. Their findings were ignored and in 1707 Sir John Floyer published the first scientific report pertaining to the pulse rate titled "Pulse-watch". Through the 1800s Ludwig Taube plotted the first fever in a patient and added respiratory rate to the list of trackable vital signs. The first blood pressure using a sphygmomanometer introduced in 1896 as the 4th vital sign in patient monitoring. Only seven years later in 1903 did Willem Einthoven invent the string galvanometer for measuring the ECG.

The next step was then to devise a monitor that could record all the above vital signs at once, over an indefinite period of time. Himmelstein and Scheiners invention of the 'cardiotachoscope' in 1952, and advances in physiological monitoring system technologies by electronics companies in the 1960s, meant that patient monitoring

systems were improving almost year on year. During the 1980s, patient monitoring systems evolved to include bedside arrhythmia analysis and larger, colour screens that allowed for more waveforms to be displayed at once. With advances in display technologies through the 1990s and 2000s, and the advent of the touch screen, patient monitor systems have become easier to use (Elliott and Coventry, 2012; Tysinger, 2015).

Although emergency nurses make use of advanced technology devices is in the clinical practice in obtaining a patient's vital signs, literature has revealed that the emergency nurses play a major role, obtaining and documenting inaccurate vital signs measure (Evans *et al.,* 2001). The literature recommended that nurses must undergo similar standardised training in order to obtain vital signs to limit the differences due to techniques (Evans *et al.,* 2001). Interestingly, literature indicated that nurses are relying more on advanced technology devices rather than adhering to criterion standards (Parker, 2011; Tysinger, 2015). One such device used recently is an automated blood pressure machine, which nurses have confidently viewed as a time saving device especially during the times of heavy workloads (Elliott and Coventry, 2012).

Lack of confidence in terms of utilising the device has been a challenge that increases the chances of inaccurate vital signs measured, and solutions must be generated to prevent the latter (Elliott and Coventry, 2012; Tysinger, 2015). Elliott and Coventry (2012) in their study, emphasised that vital signs monitoring should be an accurate reflection of a patient`s condition. In addition, towards the reliability of nurses, literature indicated that the lack of a valid tool influences the attitude of nurses towards vital signs monitoring (Mok *et al.,* 2015). Mok *et al.,* (2015), in their study, believes that knowledge may serve as a cognitive behavioural change to vital sign monitoring and improve compliance. In parallel, a research study conducted at Wake Forest's School of Medicine, indicated the use of electronic sensors to obtain vital signs rather than adhering to standards criteria could be the cause of lack of compliance towards vital sign monitoring (Tysinger, 2015).

There was a comparison study of digital and aneroid monitors with a sphygmomanometer, and the results revealed that out of 95 patients only 34% of

the systolic blood pressure measured with a digital device was within 5mmHg of the sphygmomanometer (Elliott and Coventry, 2012). The study indicated that while using an advanced technology device, if any variation is identified, sphygmomanometer must be used (Elliott and Coventry, 2012). In contrast, advanced technology devices have affected vital signs monitoring, while some studies indicated there was an improvement in vital signs accuracy through the use of advanced technology (Bianchi *et al.,* 2013; Yeung, *et al.,* 2012).

2.6 IMPLICATIONS OF NOT MONITORING VITAL SIGNS FREQUENTLY

Failure to monitor vital signs for the patients in the emergency department leads to mismanagement of patients, which in turn can be detrimental to the patients returning home with abnormal vital signs (Gabayan *et al.,* 2017). The literature revealed the age group that is mostly at risk of being mismanaged is the elderly, above 65 (Gabayan *et al.,* 2017). In 13 hospitals in Los Angeles, California, 104,025 elderly patients above 65 in their first visits to the emergency department, were reviewed and records revealed that due to mismanagement, they ended up going back for consultation within 7 days post discharge. Following their consultation, they were admitted to either a general ward or the Intensive Care Unit with most being diagnosed under six major illnesses such as renal failure, neoplasms, non-infectious lung conditions, mental illness, cardiac condition and blood disorders (Gabayan *et al.,* 2017). Failure to monitor vital signs increases the risk of patient`s harm that could be a consequence of an adverse event and resulting in a poor outcome for the patient (Cardona- Morrell *et al.,* 2016; Cioffi *et al.,* 2006).

2.7 SUMMARY

The literature has shown there is a knowledge gap in terms of knowing the frequency of vital sign monitoring and which parameters significantly indicate that a patient`s condition is deteriorating (Hogan, 2006). Despite this identified knowledge gap, the nurse`s acknowledged the task of doing vital signs monitoring but indicated it was time-consuming and augmented work overload in the emergency department (Mok *et al.,* 2015).

The frequency of vital signs monitoring in the emergency department needs to be extensively researched, as policies have not been defined and few studies conducted (Burchill and Polomano, 2015; Evans *et al.,* 2001). Most of the literature identified no national standard for vital signs monitoring in the emergency department and the recommendations were that each facility must develop one (McGhee *et al.,* 2016). The use of an automated blood pressure machine has been recommended by many studies (Elliott and Coventry, 2012; Mok *et al.,* 2015). To address vital sign monitoring, a continuous nursing education curriculum is important in order to improve the nursing standards towards this task in the emergency department (Tysinger, 2015).

CHAPTER THREE

RESEARCH METHODS

3.1 INTRODUCTION

The focus of this chapter was to describe in detail the research design and method used to describe the attitudes and practices of registered nurses (with a postgraduate diploma or master's degree in emergency nursing as well as registered nurses working in the emergency department with experience) towards vital signs monitoring in the emergency departments. The research design discussed is followed by a description on the study setting, population, sample and sampling and the data collection process.

3.2 OBJECTIVES:

To ensure consistency in the study the objectives of this study are repeated:

- To describe the attitudes of the (registered nurses with a postgraduate diploma or master's degree in emergency nursing as well as registered nurses working in the emergency department with more than three months experience) in emergency department.

- To describe the practices of (the registered nurses with a postgraduate diploma or master's degree in emergency nursing as well as registered nurses working in the emergency department with experience) in emergency department.

3.3 RESEARCH DESIGN:

A research design is the plan for addressing a research question, including the specifications for enhancing the integrity of the study (Polit and Beck, 2012). A quantitative, descriptive and cross sectional design will be used in this study. The survey design questionnaire will be used in this study to explore the attitudes and

practises of the registered nurses practicing in the emergency departments towards vital sign monitoring in the emergency departments in a hospital.

3.3.1 Quantitative Research

Quantitative research is a structured, systematic and empirical investigation of a specific phenomenon that is observable via statistical, mathematical procedures (Polit and Beck, 2012). It also focuses on measurable aspect of human behaviour and found its roots in logical positivism (Brink, 2012).

3.3.2 Descriptive Research

Descriptive research refers to an observation, describing and documenting the events that occurs in a natural setting of a situation (Polit and Beck, 2012). In addition, it reflects the accurate portrayal of people`s characteristics or circumstances and the frequency of a certain phenomenon occurs (Polit and Beck, 2012). Furthermore, (Burns and Grove, 2011) indicated that this design might be used for identification of a problem within the current practice, justification of the current practice, as well as comparison of other professions in similar situations. The aim of the descriptive approach in this study was to explore the attitudes and practices of the registered nurses practicing in the emergency departments towards vital signs monitoring.

3.3.3 Cross-sectional

According to (Creswell, 2009; Polit and Beck, 2004), a cross sectional research design is a design used to obtain information about prevalence, distribution and interrelations of variables within a population and this is done at one point in time. In this study the data was collected using a self-administrated questionnaire.

3.4 STUDY SETTING:

A study setting refers to a specific place where the data collection process will occur (Polit and Beck,2012). This study was conducted in the three emergency departments

in a central hospital in Gauteng. A central hospital is an institution that provide tertiary hospital services and central services, provide referral services. In addition, they also provide training of healthcare providers, conduct research, receives patients referred from more than one province. An emergency department is the area of a hospital devoted in rendering organised, emergency care to both medical and surgical patients in need of immediate care. The department is equipped with an emergency medicine specialist and emergency nurses who have the skills, competency and basic resources to diagnose, treat, resuscitate and treat patients in cases of an emergency. This hospital is one of the academic, central and specialised hospitals that has 1,080 beds usable. It is also accredited to be a teaching hospital for the University of Witwatersrand, Faculty of Health Sciences. Undergraduate and postgraduate training in all areas of health occur in this hospital. The tertiary services provided by this hospital are accessible to the population of Gauteng and neighbouring provinces. The emergency department in this hospital is divided into three sections, namely paediatric emergency department, trauma emergency department and medical emergency department and each department has its own unit manager.

The total amount of emergency department beds in the central hospital is: 54 The number of patients admitted to these units are 47 520 per annum. Each Emergency department has an operational manager who has a specialized qualification in Emergency nursing care. On researching the hospitals nursing emergency rooster the total number of specialized Emergency nurses in the central hospital are: 20 and the amount of registered nurses with experience working in the emergency departments are:50 The latter number doesn't include the enrolled and nursing assistance that current work in the emergency departments of this central hospital where the study was performed.

3.5 RESEARCH METHODS

The research methodology refers to the steps, procedure of gathering and analysing of data. Research methods in this study will revolve around the population, sample and sampling methods, data collection, survey questionnaires, validity and reliability of the instrument and data analysis.

3.5.1 Population

This refers to a well-defined collection of individuals known to have similar traits or characteristics of which a researcher is interested (Polit and Beck, 2012). In this study the population included all the registered nurses practising in the paediatric, medical and trauma emergency departments in the central hospital in Gauteng. The total population for this study N= 70. The total population was used in this study.

3.5.2 Sample and Sampling Methods

A Sample according to (Polit and Beck, 2012) is a part or fraction of a whole or subset of a large set, selected by the researcher to participate in a research study. Sampling: refers to the process of selecting a certain portion of the population to represent the entire population in the study (Polit and Beck, 2012). A convenience sampling method will be used in the study.

Inclusion criteria for sample are:

- All the registered nurses, registered with the South African Nursing Council as a registered nurse and who is working in the paediatric, medical and trauma emergency departments with experience in the central hospital in Gauteng.
- All the registered nurses, registered with the South African Nursing Council as a specialized Trauma and Emergency nurses (Diploma or MSc) working in the paediatric, medical and trauma emergency departments in the central hospital in Gauteng.

Exclusion criteria:

- All nurses registered with the South African nursing council as an enrolled nurse or nursing axillary currently working in the central hospital in Gauteng.

3.5.3 Data Collection

3.5.3.1 Survey Questionnaire

The data collection instrument used for this study was a survey questionnaire, originally developed by (Burchill and Polomano, 2015) titled “Practices and attitudes of vital signs instrument for emergency nurses” (PAVSI-EN). Permission to use the above questionnaire was obtained from the developers.
According Burchill and Polomano 2015, the original questionnaires’, 20 items were tested by all the experts in the emergency department for validity content. The 20 items were constructively developed to address the four main concerns as identified: reliance, frequency, trust and value of vital signs.

This questionnaire consists of two sections. Section one is the demographical section, which consists of 5 questions (Age, Sex, Years working in the emergency department, Qualification in trauma and emergency nursing and the position in the emergency department that nurse has been employed in.

Section two of the questionnaire consists of 20 statements, which need to be completed according to a Likert scale. The 20 statements are divided into eleven (11) statements with regards to practices and nine (9) statements with regards to attitudes.

Practices were captured on a four-point scale using “never, sometimes, often, or most of the time,” while attitudes were captured using a five-point scale using “strongly disagree, disagree, neither, agree or strongly agree.”

3.5.3.2 Validity & reliability of the instrument

According to (Brink, Van Der Walt & Van Rensburg, 2012) reliability is defined as the extent to which an instrument used in a research study can be depended upon to yield consistent if used on the same or similar target population at different points in time. Only participants that met the inclusion criteria was included in the study to guarantee the reliability. An accurate and consistent representation of all data was ensured and the researcher was the only person whom collected the data.

According to (Gray, Groves and Sutherland, 2017), validity is defined as the degree to which an instrument used in research, performed, evaluate, measure or represent that which it was supposed to. A valid instrument originally developed by Burchill et al was used in this study for data collection. Face and content validity were achieved in this study by using experts in the field of Trauma and Emergency nursing in order to determine if the study was appropriate for the South African context. No changes were made to the original instrument thus maintaining the validity of this study.

The original questionnaire had a cumulative content validity index of 0.97 that was calculated, which demonstrated a high content validity. Also, in the original questionnaire there were measures of consistent reliability for the 11 practice items which was 0.71, exceeding the lower accepted threshold of >0.70 for Cronbach's alpha. Cronbach's alpha for the 9 attitude items was 0.68, in the original study which approached the acceptable level (Burchill and Polomano, 2015).

3.5.3.3 Procedure

The registered nurses in the emergency department that fitted the inclusion criteria were recruited by the researcher and a short presentation about the study was shown to the day and night shift. All the registered emergency nurses who met the inclusion criteria was also given an information sheet and invited to answer the questionnaire. By completing the questionnaire, it was accepted as consent was given by the participants which was highlighted in the information letter. Collection boxes for the return of the completed questionnaires were placed at a designated area in the staff duty room of each emergency department. The collection boxes were collected and emptied weekly, provided they were posted into the boxes. The day and night shift of each week was visited and encouraged to participate in the study. The staff were also encouraged again to participate in the study. Data collection was done over 7 months due to the researcher being hospitalized and thus the study had to be put on hold. The researcher did phone the emergency departments every two weeks to remind the operational manger to invite the staff to participate and return the answered questionnaires.

3.5.4 Data analysis

Data analysis: is the systematic organisation of research data through the manipulation of numeric data through statistical procedure for the purpose of defining and describing a phenomenon (Polit and Beck, 2012). The data analysis in this study was done using Excel in order to analyse the collected data. The values that the participants choose was recorded against the options that the questionnaire had.

The descriptive tests (frequencies and proportions) were used to synthesise the respondent's demographic data and questionnaire schedule. Statistical tests included Shapiro Wilk test, Cronbach alpha test, Mann Whitney test, student t-test and an Exploratory Factor Analysis (EFA) using Kaiser-Meyer Olkin Measure of sampling adequacy and Bartlett's test of Sphericity. Testing was done on the 5% level of significance ($p<0.05$).

To describe the demographic characteristics of the study sample, frequencies and proportions were reported. A Shapiro Wilk test of normality was used to determine the distribution of the items on practices and attitudes towards vital sign monitoring. To describe the practices and attitudes of the registered nurses towards vital sign monitoring, medians and interquartile ranges where reported in cases were data were skewed (a Shapiro Wilk test with p-value<0.05); means and standard deviations (SD) were reported in cases where the data were normal (i.e., a Shapiro Wilk test with p-value >0.05) (Royston, 1992).

To report response frequencies on practices, three categories were created that denote: never, sometimes and often/most of the time. To report response frequencies on attitudes, three categories were created that denote: agreement (by combining strongly agree and agree), neutral (using 'neither') and disagreement (by combining strongly disagree and disagree). The internal consistency reliability of the items in the practices (item 1-11) and attitudes (items 12-20) of nurses towards vital sign monitoring was calculated using a Cronbach alpha test. A Mann Whitney test (to compare medians) and t-test (to compare means) were used to compare nurses' practices and attitudes towards vital sign monitoring based on years of experience.

The individual items on the questionnaire where combined to cover the following four domains: *reliance on vital signs* (items: 1,2,6,7,8,9,10,11), *frequency of vital signs* (items: 15,16,17,18), *trust in vital signs* (items: 1,3,4,20) and *value of vital signs* (5,12,13,14,19). To determine the degree to which the questionnaire/ survey actually measures the domains of interest (construct validity), an exploratory factor analysis (EFA) was computed together with a Cronbach alpha test. An EFA is a variable reduction technique that reduces variables into constructs, e.g. in this case reducing items 1, 2,6,7,8,9,10 and 11 into the *reliance on vital signs* domain. An EFA also estimates factors which influence responses on observed variables as well as the amount of variance in the instrument explained by these factors. To check if the data was suitable for factor analysis, a Kaiser-Meyer Olkin Measure of sampling adequacy and Bartlett's test of Sphericity were used (Osborne, Costello and Kellow, 2008). Different factor solutions will be examined to yield a factor solution that presents the best variance in the instrument.

A biomedical statistician was consulted to assist with the analysis of data.

3.6 ETHICAL CONSIDERATIONS

The ethical considerations in this study will address the process undertaken to ensure that informed consent, permission to conduct research, anonymity and confidentiality principles are adhered to.

3.6.1 Informed Consent

Informed consent means the participants have comprehensive, clear understanding and adequate information regarding the research study and they can comprehend that information and have the ability to consent to or decline to participate voluntarily (Polit and Beck, 2012). The participants were fully informed about the significance of this research study. Information sheets were distributed conveniently to the participants to read and understand the context of the study. The information sheet explained that if a questionnaire had been completed by the participant, consent then had been given.

3.6.2 Permission to Conduct the Study

The permission to conduct the research study process was as follows:

- The research proposal and the survey questionnaire instrument were submitted to the Committee for Research on Human Subjects of the University of the Witwatersrand.
- Permission was also obtained from the Faculty of Health Sciences of the University of the Witwatersrand through a submission of a research proposal and the survey questionnaire instrument.
- Permission was obtained to utilise the survey questionnaire instrument named A, a developed questionnaire named “Practices and attitudes of vital signs instrument for emergency nurses” (PAVSI-EN) from previous work of Burchill and Polomano.
- Prior to obtaining the research study, approval was obtained from a level the central hospital in Gauteng.

3.6.3 Anonymity

Anonymity was maintained throughout this study, as the respondents did not add their names and personal identifiable information to the questionnaire. That which was identifiable to the respondents had been represented in code form.

3.6.4 Confidentiality

A sealed three boxes were provided in the three Emergency departments for the completed questionnaires to be posted in. To ensure that confidentiality was maintained, the boxes where placed in the staff duty room, which was a neutral place and thus the researcher did not have to collect the questionnaires individually. The researcher was the only person that removed the questionnaires from the box.

3.7 VALIDITY AND RELIABILITY OF THE STUDY

According to (Brink, Van Der Walt and Van Rensburg, 2012) reliability is defined as the extent to which an instrument used in a research study can be depended upon

to yield consistent if used on the same or similar target population at different points in time. Only participants that met the inclusion criteria was included in the study to guarantee the reliability. An accurate and consistent representation of all data was ensured.

According to (Gray, Groves and Sutherland, 2017), defined validity as the degree to which the instrument used in research, performed, evaluate, measure or represent that which it was supposed to. A valid instrument originally developed by Burchill and Polomano 2015, was used in this study for data collection. The researcher adhered to guidelines provided by the developers of the questionnaire tool in order to avoid measurement errors and to ensure that there is consistency throughout the study.

The data collected by the participants was examined and checked with the other responses from participants to achieve consistency in the study and the data was verified by a statistician for accuracy of the findings for data analysis. An accurate and clear description of the data collection procedure has been described in this study. The researcher was the sole collector of data hence reducing the risks of inconsistencies in the data collection process. Face and content validity were established through a consultation of a small group of local domain expert registered nurses to comment on the relevance of the study and the need for any additions before data collection was commenced. The research study was conducted under the supervision of an experienced research supervisor.

3.8 SUMMARY

In this chapter the research methodology was extensively elaborated. Appropriate selection for research design was considered to ensure that the purpose and the objectives of this study are met. The self-administered survey questionnaires were adapted by the authors (Burchill and Polomano, 2015). Data was successfully collected and prepared for analysis.

CHAPTER FOUR

RESULTS OF THE STUDY

4.1 INTRODUCTION:

This chapter describes the results of the study in describing the attitudes and practices of the registered nurses towards vital sign monitoring in the emergency departments. This was achieved through a quantitative, descriptive and cross-sectional design. The population was all registered nurses practicing in the emergency departments in a central hospital in Gauteng. A sample size of sixty-six (n=66) respondents, was obtained using convenience sampling. Data was collected using a questionnaire (see Appendix A)

Data was analysed using descriptive and comparative statistics as described in chapter three. The statistics used to analysis the demographics of the respondents where: frequencies and proportions (numbers). Statistical tests included Shapiro Wilk test, Cronbach alpha test, Mann Whitney test, student t-test and an Exploratory Factor Analysis (EFA) using Kaiser-Meyer Olkin Measure of sampling adequacy and Bartlett's test of Sphericity. Testing was done on the 5% level of significance ($p<0.05$).

In this chapter, the results of the data are presented. Firstly, the demographic aspects of the respondents are described. The responses to the data collection questionnaire are presented on item level in table and graphical formats. Lastly, the degree to which the questionnaire measures the domains of interest are examined.

4.2 RESULTS AND FINDINGS

4.2.1 Response Rate:

By the end of the data collection period of seven months, sixty-six questionnaires were returned, which is a response rate of 94.2% . This is considered an acceptable response rate (Fincham, 2008) for a convenience sampling method.

4.2.2 Demographic Characteristics

Table 4.1: Demographic characteristics of the study sample (n=66)

Characteristic	**N**	**%**
Age		
25-30 years	34	**51.52**
31-40 years	17	25.76
41-50 years	7	10.61
51-60 years	8	12.12
Sex		
Male	15	22.73
Female	51	**77.27**
Years working in the emergency department		
<5 years	29	43.94
5-9 years	21	31.82
10-20 years	9	13.64
20+ years	7	10.61
Do you have a post graduate qualification as a specialized nurse in trauma and emergency nursing (MSc or Diploma) registered with SANC (Answer: yes or no)		
No: Don't have an additional diploma or degree in trauma and emergency nursing that is registered with SANC	58	87.88
Yes: Degree	6	9.09
Yes: Diploma	2	3.03
Position in the emergency department		
Registered nurse	43	**65.15**
Registered nurse shift leader	16	24.24
Registered nurse: Clinical facilitator	3	4.55
Registered Nurse: Unit manager	4	6.06

Table 4.1 shows the demographic characteristics of the study sample (n=66). The majority of the participants were female (77.27%) and held the position of registered nurse (65.15%) in the emergency department. The registered nurses referred to in the latter statement either had working experience of more than 3 months in the emergency department or had an additional post graduate qualification in Trauma and Emergency nursing

4.2.3 Descriptive Data on Practices and Attitudes of the Registered Nurses towards Vital Sign Monitoring

Table 4.2 and Figure 4.1 show the distribution of registered nurses' responses on practices towards vital sign monitoring. More than 75% of the registered nurses carried out all practices listed in Figure 1 often/ most of time except for two practices. Having someone else repeat triage vital signs and then checking vital signs as part of their assessment often/most times was reported by 60.61% of nurses, while 54.55% reported repeating vital signs of non-critically ill patients as part of their initial assessment often/most times.

Figure 4.1 displays the practice items with percentages of the registered nurses responding "never," "sometimes" and "often/most of the time", which is followed by the presentation of items in Table 4.2.

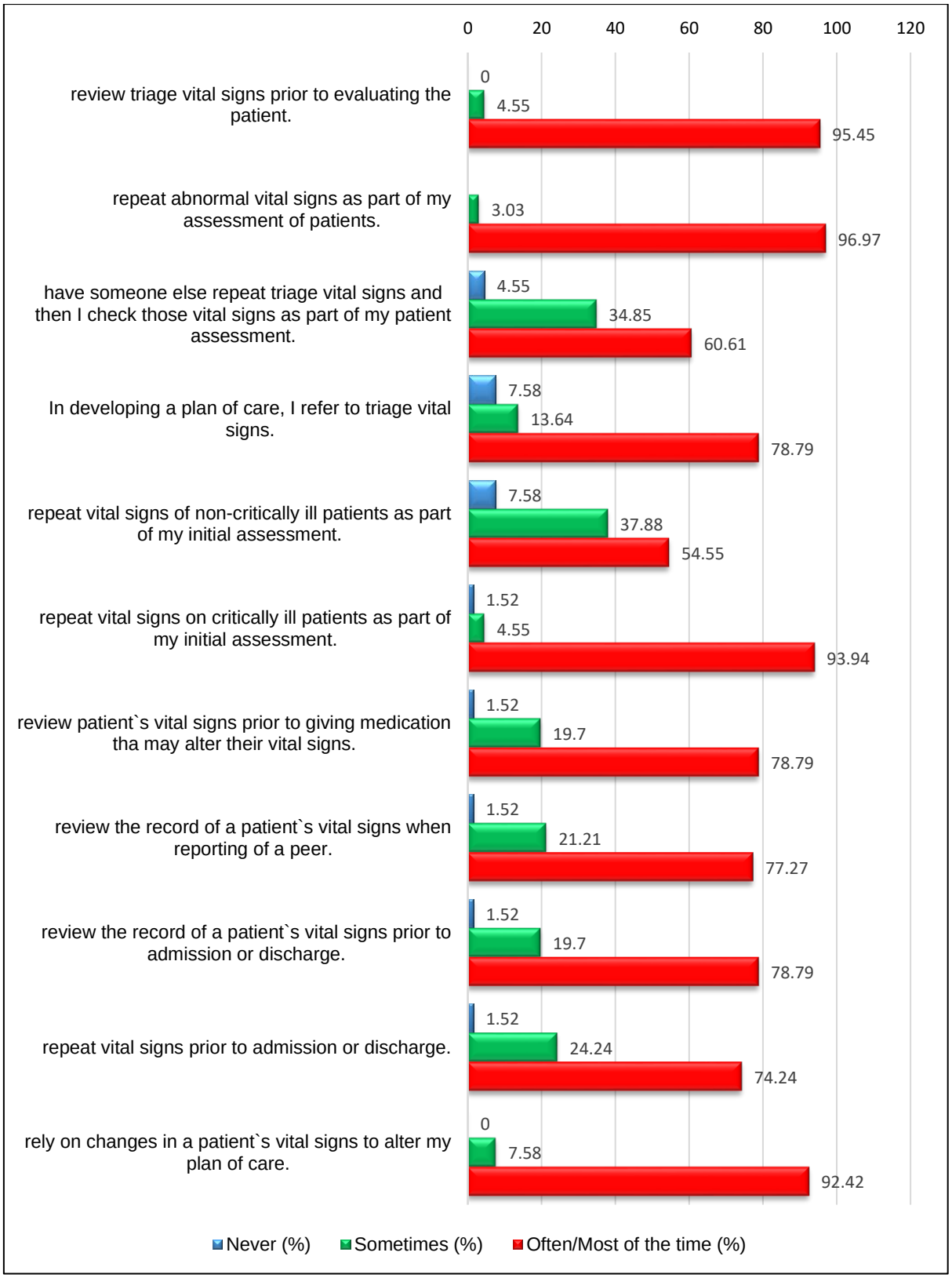

Figure 4.1: Practice items with percentages of the registered nurses responding "never," "sometimes" and "often/most of the time."

Table 4.2: Descriptive statistics on practices towards vital sign monitoring

Item	Practice statement	Median	IQR
1	I review triage vital signs prior to evaluating the patient.	4	4-4
2	I repeat abnormal vital signs as part of my assessment of patients.	4	4-4
4	In developing a plan of care, I refer to triage vital signs.	4	3-4
6	I repeat vital signs on critically ill patients as part of my initial assessment.	4	4-4
7	I review patient`s vital signs prior to giving medication tha may alter their vital signs.	3.5	3-4
9	I review the record of a patient`s vital signs prior to admission or discharge.	3	3-4
11	I rely on changes in a patient`s vital signs to alter my plan of care.	4	3-4
		Mean	**SD**
3	I have someone else repeat triage vital signs and then I check those vital signs as part of my patient assessment.	2.82	0.88
5	I repeat vital signs of non-critically ill patients as part of my initial assessment.	2.79	0.98
8	I review the record of a patient`s vital signs when reporting of a peer.	3.15	0.81
10	I repeat vital signs prior to admission or discharge.	3.20	0.86

Table 4.3 and Figure 4.2 show the distribution of the registered nurses' responses on attitudes towards vital sign monitoring. More than 80% of the registered nurses disagreed/strongly disagreed to the following statements: believing that vital signs taken in triage are an accurate reflection of the patient's condition (81.82%); believing that vital signs taken in the emergency department are performed

according to evidence based practice guidelines (90.91%); feeling that repeating vital signs regularly is necessary to protect their practice and the institution in case of a lawsuit (98.48%); believing that clinicians should determine the frequency of vital signs on a case –by –case basis (80.30%); believing that clinicians value having frequent vital signs on their patients to guide clinical care (89.39%). Only 42.42% of the nurses disagreed that too much time was spent repeating vital signs. Only a few nurses (33.33%) disagreed that taking vital signs at regular intervals to document that a patient has been observed is often unnecessary for patients who are stable with non-life-threatening conditions.

Figure 4.2 displays the results of the attitude items with percentages of the registered nurses responding “agree/strongly agree”, “neutral” and “disagree/strongly disagree”, which is followed by presentation of items in Table 4.3

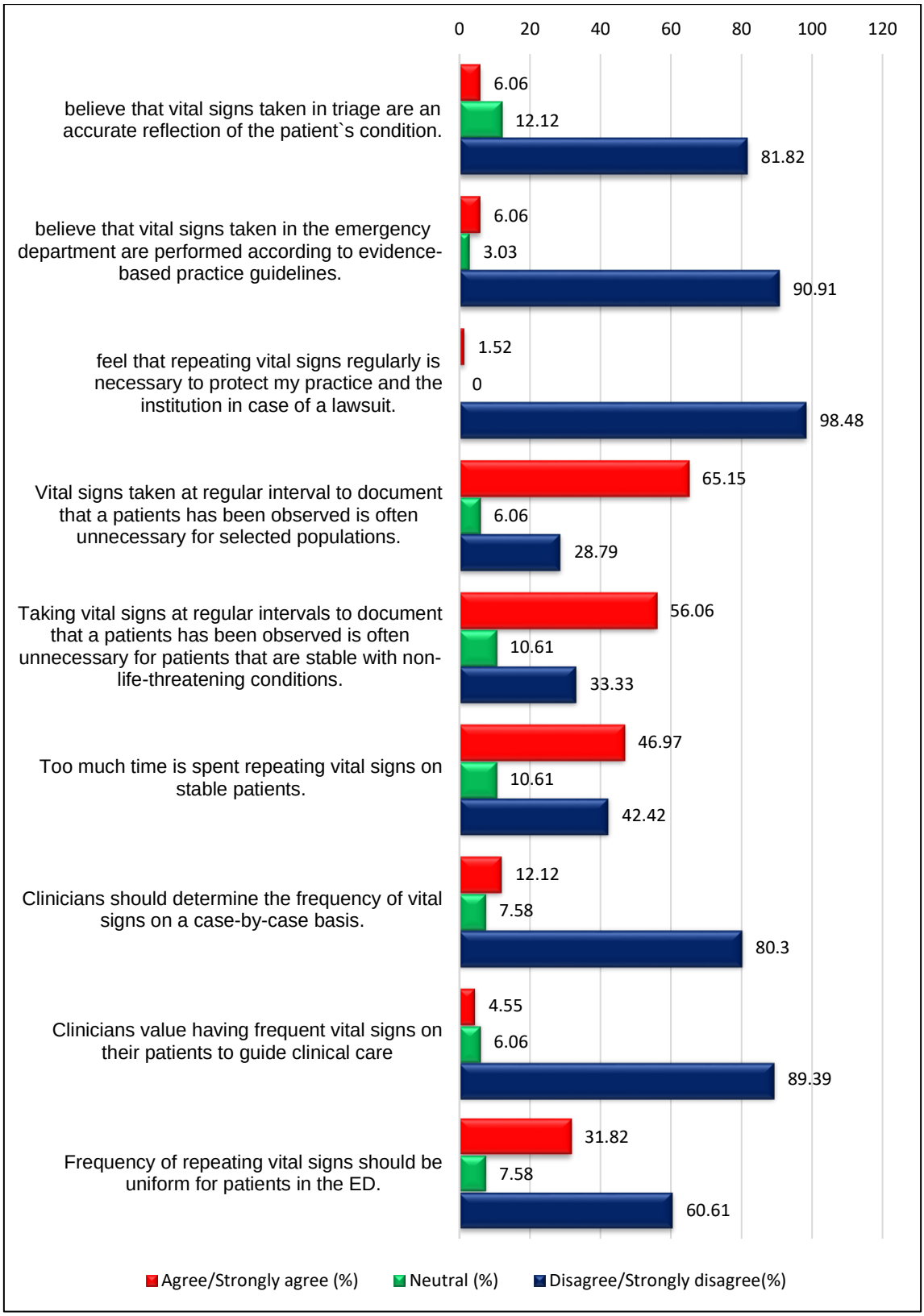

Figure 4.2: Attitude items with percentages of the registered nurses responding "agree/strongly agree", "neutral" and "disagree/strongly disagree."

Table 4.3: Descriptive statistics on attitudes towards vital sign monitoring

Item	Attitude statement	Median	IQR
12	I believe that vital signs taken in triage are an accurate reflection of the patient`s condition.	4	4-5
13	I believe that vital signs taken in the emergency department are performed according to evidence-based practice guidelines.	4	4-5
14	I feel that repeating vital signs regularly is necessary to protect my practice and the institution in case of a lawsuit.	5	4-5
18	Clinicians should determine the frequency of vital signs on a case-by-case basis.	4	4-5
19	Clinicians value having frequent vital signs on their patients to guide clinical care	4	4-5
		Mean	**SD**
15	Vital signs taken at regular interval to document that a patients has been observed is often unnecessary for selected populations.	2.58	1.41
16	Taking vital signs at regular intervals to document that a patients has been observed is often unnecessary for patients that are stable with non-life-threatening conditions.	2.67	1.23
17	Too much time is spent repeating vital signs on stable patients.	2.94	1.24
20	Frequency of repeating vital signs should be uniform for patients in the ED.	3.42	1.31

4.2.4 Reliability Testing of the Items in the PASVI-EN

The Cronbach alpha test to assess the internal consistency of the 11 “Practice” items was 0.72, which is above the accepted threshold of ≥0.70. The Cronbach alpha test to assess the internal consistency of the nine “**Attitude**” items was **0.351, which is below the accepted threshold of ≥0.70, showing poor internal consistency** (Bland and Altman, 1997). According to (Mohsen and Reg, 2011), poor consistency means that there are items or sets of items which are not correlating well with each other. This could be that related items are not relevant to one’s sample or population (Mohsen and Reg, 2011). In this study the attitudes and practices of the trauma and emergency nurses contradicted each other. Attitudes and clinical practices were not in alinement as one would expect.

4.2.5 Comparison of the Registered Nurses’ Practices and Attitudes towards Vital Sign Monitoring Based on Years of Experience

Table 4.4 and Figure 4.5 show the results of the comparison of the registered nurses’ practices and attitudes towards vital sign monitoring based on years of experience. There was no significant association between nurses’ years of experience and their practices and attitudes towards vital sign monitoring **except for the statement “I review triage vital signs prior to evaluating the patient”. Registered Nurses with less than 10 years of nursing experience had a higher median score** on the statement on reviewing triage vital signs prior to evaluating the patient **than nurses with 10 or more years of experience (p=0.044).**

Table 4.4: Comparison of the registered nurses with less than 10 years of experience and those with more than 10 years of experiences on practices towards vital sign monitoring

Item	Practice statement	<10 years of nursing experience (n=50)	≥10 years of nursing experiences (n=16)	p-value
		Median (IQR)	**Median (IQR)**	
1	I review triage vital signs prior to evaluating the patient.	4 (4-4)	3 (3-4)	0.044*
2	I repeat abnormal vital signs as part of my assessment of patients.	4 (4-4)	4 (4-4)	0.468
4	In developing a plan of care, I refer to triage vital signs.	4 (3-4)	3.5 (3-4)	0.665
6	I repeat vital signs on critically ill patients as part of my initial assessment.	4 (4-4)	4 (4-4)	0.462
7	I review patient`s vital signs prior to giving medication that may alter their vital signs.	3 (2-4)	4 (3-4)	0.282
9	I review the record of a patient`s vital signs prior to admission or discharge.	3.5 (3-4)	3 (3-4)	0.519
11	I rely on changes in a patient`s vital signs to alter my plan of care.	3.5 (3-4)	4 (3-4)	0.274
		Mean (SD)	**Mean (SD)**	
3	I have someone else repeat triage vital signs and then I check those vital signs as part of my patient assessment.	2.76 (0.85)	3.00 (0.97)	0.344
5	I repeat vital signs of non-critically ill patients as part of my initial assessment.	2.68 (0.96)	3.13 (1.02)	0.116
8	I review the record of a patient`s vital signs when reporting of a peer.	3.08 (0.80)	3.38 (0.81)	0.206
10	I repeat vital signs prior to admission or discharge.	3.10 (0.9)	3.50 (0.63)	0.107

Key: *=statistical significance

Table 4.5: Comparison of the registered nurses with less than 10 years of experience and those with 10 or more years of experiences on attitudes towards vital sign monitoring

Item	Attitude statement	<10 years of nursing experience (n=50)	≥10 years of nursing experiences (n=16)	p-value
		Median (IQR)	**Median (IQR)**	
12	I believe that vital signs taken in triage are an accurate reflection of the patient`s condition.	4 (4-4)	4 (4-5)	0.199
13	I believe that vital signs taken in the emergency department are performed according to evidence-based practice guidelines.	4 (4-4)	4 (4-5)	0.064
14	I feel that repeating vital signs regularly is necessary to protect my practice and the institution in case of a lawsuit.	5 (4-5)	5 (4.5-5)	0.812
18	Clinicians should determine the frequency of vital signs on a case-by-case basis.	4 (4-5)	4 (3.5-5)	0.777
19	Clinicians value having frequent vital signs on their patients to guide clinical care	4 (4-5)	4 (4-5)	0.675
		Mean (SD)	**Mean (SD)**	
15	Vital signs taken at regular interval to document that a patients has been observed is often unnecessary for selected populations.	2.56 (1.33)	2.63 (1.71)	0.874
16	Taking vital signs at regular intervals to document that a patients has been observed is often unnecessary for patients that are stable with non-life-threatening conditions.	2.68 (1.19)	2.63 (1.41)	0.877
17	Too much time is spent repeating vital signs on stable patients.	2.88 (1.27)	3.13 (1.15)	0.495
20	Frequency of repeating vital signs should be uniform for patients in the ED.	3.50 (1.33)	3.19 (1.28)	0.412

4.2.6 Variance in the PAVSI-EN instrument

Table 4.6 below shows the results of the exploratory factor analysis to determine the variance in the PAVSI-EN instrument. The Kaiser-Meyer- Oikin Measure of sampling adequacy (KMO=0.622) and Bartlett's Test of Sphericity (chi-square =72.61; p<0.001) both confirmed that the data points in the PAVSI-EN questionnaire met the criteria for factor analysis to be conducted. The **total amount of variance** in the PAVSI-EN instrument **accounted for by the factors was low** (28.85%) meaning the domains: ***reliance on vital signs, frequency of vital signs*****,** ***trust in vital signs*** **and** ***value of vital signs*** **were not efficient** in measuring practices and attitudes of the registered nurses towards vital sign monitoring in this study.

Table 4.6: Exploratory factor analysis for the PAVSI-EN

Total variance in the instrument explained by the 4 factors =28.35%		Factors			
<u>Factor 1-Reliance on vital signs</u> Cronbach alpha; 0.65; Variance explained =18.85%		**1**	**2**	**3**	**4**
2	I repeat abnormal vital signs as part of my assessment of patients.	0.575			
6	I repeat vital signs on critically ill patients as part of my initial assessment.	0.817			
7	I review patient`s vital signs prior to giving medication tha may alter their vital signs.	0.581			
8	I review the record of a patient`s vital signs when reporting of a peer.	0.765			
9	I review the record of a patient`s vital signs prior to admission or discharge.	0.535			
10	I repeat vital signs prior to admission or discharge.	0.571			
11	I rely on changes in a patient`s vital signs to alter my plan of care.	0.729			
<u>Factor 2-Frequency of vital signs</u> Cronbach alpha; 0.55; Variance explained =3.10%					
15	Vital signs taken at regular interval to document that a patients has been observed is often		0.683		

	unnecessary for selected populations.				
16	Taking vital signs at regular intervals to document that a patients has been observed is often unnecessary for patients that are stable with non-life-threatening conditions.		0.601		
17	Too much time is spent repeating vital signs on stable patients.		0.650		
18	Clinicians should determine the frequency of vital signs on a case-by-case basis.		0.777		
Factor 3-Trust in vital signs Cronbach alpha; 0.52; Variance explained =3.49%					
1	I review triage vital signs prior to evaluating the patient.			0.805	
3	I have someone else repeat triage vital signs and then I check those vital signs as part of my patient assessment.			0.624	
4	In developing a plan of care, I refer to triage vital signs.			0.626	
20	Frequency of repeating vital signs should be uniform for patients in the ED.			0.784	
Factor 4-Value on vital signs Cronbach alpha; 0.56; Variance explained =2.95%					
5	I repeat vital signs of non-critically ill patients as part of my initial assessment.				0.828
12	I believe that vital signs taken in triage are an accurate reflection of the patient`s condition.				0.680
13	I believe that vital signs taken in the emergency department are performed according to evidence-based practice guidelines.				0.718
14	I feel that repeating vital signs regularly is necessary to protect my practice and the institution in case of a lawsuit.				0.860
19	Clinicians value having frequent vital signs on their patients to guide clinical care				0.590

4.3 SUMMARY OF THE STUDY RESULTS

Sixty-six registered nurses participated in this study. The latter were affiliated with one of the following emergency departments: Trauma, Paediatrics or medical in the central hospital in Gauteng, where the study was performed. Participants were mainly females and between the ages of 25 to 60 years. The majority had a diploma as the highest qualification in nursing and held the position of registered nurse in the emergency department. The largest group of the registered nurse participants had less than five years of work experience in the emergency department.

Related to practices, the majority of participants reviewed triage vital signs most of the time prior to evaluating the patient (95.45%), but to a lesser degree used those vital signs to develop an initial plan of care (78.79 most of the time, 13.64% sometimes). Similarly, respondents only sometimes (78%), often (25%) or most of the time (92.42%) used them in altering the plan of care. For non-critically ill patients, a few participants (37.88%) sometimes repeated vital signs as part of their initial assessment compared to 93.94% who repeated them most of the time for critically ill patients. Just as when reporting off to a peer at change of shift handover, respondents reviewed the vital signs record (77.27% of the time or often) or repeated vital signs (74.24% most of the time or often) prior to admission or discharge. Most of the participants (78.79%) reviewed the record of patient`s vital signs as compared to 74.24% who repeated the vital signs prior to admission or discharge. In the practice's statements, never had equal percentage that ranged from 1.52% to 7.58% compared too often or most of the times.

In regard to attitudes, about 4.5% of the sample felt that clinicians valued having vital signs to guide clinical care, however 6.06% neither agreed nor disagreed, and 89.39% disagreed. Attitude responses regarding triage as being vital as a true reflection of the patients overall condition were more evenly divided (6.06% agreed, 12.12% neither agreed nor disagreed, and 81.82% disagreed). The distribution of responses related to the belief that vital signs assessment in the emergency department was performed according to evidence-based guidelines was 6.08% agreed, 3.03% neither agreed nor disagreed and 90.9% disagreed. The majority (98.48%) believed that documentation of frequent vital signs would protect their

practice and the organisation in case of a lawsuit. The majority (56.06) agreed or strongly agreed that assessing vital signs in a standardised manner to document patient assessment was often unnecessary with stable patients. Approximately 46.97% of the participants agreed that too much time was spent repeating vital signs on stable patients, but 42.42% disagreed with the statement.

In the current study, there was no significant association between the registered nurses' years of experience and their practices and attitudes towards vital sign monitoring, except for the statement *"I review triage vital signs prior to evaluating the patients"* Registered nurses with less than 10 years of nursing experience had a higher mean score (IQR 4; n = 50) on the statement on reviewing triage vital signs prior to evaluating the patient compared to the registered nurses with 10 or more years of experience (IQR 3; n = 16) (p=0.044). The Kaiser Meyer test of Sphericity (Chi-Square 72.61; p <0.001) verified that the data met acceptable criteria for a factor analysis. The total amount of variance in the PAVSI-EN instrument accounted for by the factors was low (28.85%), meaning that the domains: reliance on vital signs, frequency of vital signs, trust in vital signs and value of vital signs were not efficient in measuring practices and attitudes of nurses towards vital sign monitoring in this study. Measures of internal consistency reliability (Cronbach's alpha) for the 11 practice items was 0.71, exceeding the lower accepted threshold of >0.70 for Cronbach's alpha; the nine attitudes items were 0.33, which is below the acceptable level.

Studies that examined practices and attitudes of vital signs against registered nurses that work in emergency departments in hospitals in South African health care facilities are scarce. However, the findings of this study support the conclusions of the majority of studies conducted overseas that reported and highlighted practices and attitudes of vital sign monitoring as a problem amongst the registered nurses working in hospitals.

4.4 SUMMARY

This chapter presented the results of the study.

In the next chapter, the findings of the study will be discussed in relation to relevant literature including the limitations, recommendations for nursing practice, education, and future research and conclusion of the study.

CHAPTER FIVE
SUMMARY OF STUDY, MAIN FINDINGS, RECOMMENDATIONS AND CONCLUSION

5.1 INTRODUCTION

This chapter provides a description of the results of the study. The results will be discussed under the demographics, practices, attitudes and the relationship between practices and attitudes towards the frequency of vital sign monitoring in the emergency department. The study's justifications are also presented together with limitations. The chapter concludes with recommendations for clinical nursing practice, nursing education, future nursing research and a conclusion from the main results.

5.2 SUMMARY OF THE STUDY

5.2.1 Purpose of the Study

The purpose of this study was to describe the attitudes and practices of the registered nurses towards vital signs monitoring in the emergency department of a central hospital in Gauteng in order to provide recommendations for clinical practice and nursing education for registered nurses working in the emergency department.

5.2.2 Objectives of the study

- To describe the attitudes of the (registered nurses with a postgraduate diploma or master's degree in emergency nursing as well as registered nurses working in the emergency department with more than three months experience) in emergency department.

- To describe the practices of (the registered nurses with a postgraduate diploma or master's degree in emergency nursing as well as registered nurses working in the emergency department with experience) in emergency department.

5.3 SUMMARY OF THE MAIN RESEARCH FINDINGS

In this study the majority of the participants in this study were female registered nurses (77.27%) compared to the male registered nurses (22.73%). Historically nursing has been seen as a female dominated profession, although more males are joining (Ross *et al.,* 2017). The finding of this study confirms the above statement (Ross *et al.,* 2017). In the study conducted by (Burchill and Polomano, 2015), the participants were not divided according to their gender. Most of the participants in this study were from 18 to 30 years (51.52%). The study conducted by (Mok *et al.,* 2015) indicated the majority of the participants were <30 years (72,4%).

The highest level of education for registered nurses who participated in the study showed that the majority (87.88%) had only a diploma post graduate qualification in emergency nursing. In the study conducted by (Burchill and Polomano, 2015) 88.9% of the participants had a Bachelor`s degree or higher as a post graduate qualification in emergency nursing. A post graduate qualification in emergency nursing has been associated with the concept that the nurses would be able to determine the frequency of vital signs through their assessment (Burchill and Polomano, 2015).

The *first objective* was to describe the attitudes of the registered nurses practicing in the emergency department towards vital signs monitoring in a central hospital in Gauteng.

In this study, the attitude response concerning vital signs taken in triage has been denied by the majority of the participant (81.82%) to be an accurate reflection of a patient`s condition. The same findings in a study conducted by **(**Burchill and Polomano, 2015) indicated the participants mentioned that triage vital signs do not reflect a patient`s clinical condition accurately. The triage vital signs are used as an element to allocate the triage classification or priority, as per the triage system in the emergency department (Augustyn, 2011).

In this study, the majority of the registered nurses (90.91%) disagreed or strongly disagreed that vital signs taken in the emergency department are performed

according to evidence- based practice guidelines. Burchill and Polomano, (2015) highlighted that the standard of monitoring vital signs is not of evidence-based practice and this is due to the nurse`s attitude, which is a contributing factor. Interestingly, the nurse's attitudes toward vital signs monitoring has not been explored, reportedly due to lack of a valid tool (Mok, *et. al,* 2015). In addition, there would be more efficiency and effectiveness achieved for patient's monitoring if vital signs were obtained following the evidence-based practice guidelines.

This study revealed that 65.15% of the registered nurse`s attitudes indicated that vital signs taken at regular intervals to document that a patient has been observed is often unnecessary for selected populations. The same response was reported by the majority (76%), who believed that for selected populations it was often unnecessary to document the vital signs at a regular interval (Burchill and Polomano, 2015). Interestingly, (Mok *et, al.,* 2015) indicated that the best approach to determine how frequently monitoring of vital signs needed to be practically done should be based on patient-centred assessment, not on selected populations.

With regard to vital signs and law suit, (98.48%) of the registered nurses in this study strongly disagreed that repeating vital signs regularly was necessary to protect their practice and the institution in case of a lawsuit. Conversely, another study revealed the opposite, as 69% of the participants addressed that monitoring and reflecting the vital signs on the patient`s file would protect their institution in case of any law suit (Burchill and Polomano, 2015).

Vital signs monitoring for stable patients: 56.06% of the registered nurses in this study indicated there was no significant indication to monitor the vital signs for the stable patients in the emergency department. The same results were indicated by 73% of the participants in another study who said there was no necessity in monitoring the vital signs of stable patients (Burchill and Polomano, 2015).

With regard to registered nurse's attitude towards vital sign monitoring in this study, 46.97% agreed or strongly agreed that too much time was spent repeating vital signs on stable patients. A mutual feeling was identified in other literature, where (Mok *et al.,* 2015; Burchill and Polomano, 2015) indicated that their participants mentioned

it was time consuming to perform the vital signs, and 35.3% of their participants further stated that they felt overwhelmed, and this put too much workload on their duties.

Eighty percent of the registered nurses in this study indicated that vital sign monitoring should be determined by clinicians rather than policy. The same findings were reported in the study “Certification in emergency nursing associated with vital signs attitudes and practices,” where 84.0% of the participants were in agreement of policy being determined by clinicians (Burchill and Polomano,2015). Furthermore, (McGhee *et al.,* 2016) indicated that vital signs reassessment should be based not only on clinicians’ orders but must also include the clinical judgement from the nurses. In contrary to the above results, a study conducted by (Mok *et al.,* 2015) found the participants rationalised that the monitoring of the vital signs should be practically related and be a centred approach to a patient.

Uniform for vital signs monitoring: the majority of the registered nurses (60.61%) disagreed that the frequency of repeating vital signs should not be uniform for patients in the emergency department. Mok *et al.,* (2015); Burchill and Polomano, (2015) further support this statement and highlighted that the method to be used should be more of a patient-centred approach, concerning the patient`s condition rather than a uniform approach. According to findings, a challenge to applying a patient-centred approach is that there is no national standard indicating the frequency of vital signs monitoring in the emergency department (McGhee *et al.,* 2016). This is still a concern, because little research has been explored concerning how often vital signs should be monitored, especially in the emergency department (Johnson *et, al.,* 2014).

The *second objective* was to describe the practices of the registered nurses practicing in the emergency department towards vital signs monitoring in a central hospital in Gauteng.

The results of the study illustrated that the registered nurses demonstrated they understand that the frequency of vital signs monitoring is an essential practice when working in the emergency department. More than 75% of them carried out all the

practices often or most of the time, except for two practices in the study. The same findings were identified on the study conducted by (Burchill and Polomano, 2015), as more than 75% of the participants carried out all duties often or most of the time, except in one practice.

Often or most of the times, 95.45% of the registered nurses indicated they review triage vital signs prior to evaluating the patient, and in developing a care plan, however the majority of (78.79%) refer to the triage vital signs. Burchill and Polomano (2015) identified a difference with regard to this as their participants indicated that patient`s clinical condition cannot be focused on triage vital signs in order to develop a care plan, knowing they are not the accurate findings of the patient`s condition.

In this study, 96.97% of the participants commented that they repeat the abnormal vital signs of a patient as part of assessment while in the emergency department. The same findings in the study conducted by (Hogan, 2006) highlighted the study registered nurse`s response to abnormal vital signs as an essential task in order to identify early clinical deterioration of the patient`s condition. In addition, 77.8% of the participants in another study indicated they absolutely repeat the abnormal vital signs as part of the assessment (Burchill and Polomano, 2015). This task is being carried out, as the literature proved that abnormal vital signs are the crucial elements of predicting clinical deterioration in a patient`s condition (McGhee *et, al.,* 2016).

Although the majority (75%) of the participants, were committed to their practice towards vital signs monitoring, in this study 60.61% of the registered nurses reported they have someone else repeat triage vital signs and then they check the vital signs as part of their assessment often or most of the time. A study conducted by (Elliott and Coventry, 2012) highlighted that vital sign monitoring is a task allocated to the junior nurses, such as the enrolled nursing assistant or enrolled nurses rather than being performed by the registered nurses. Thus, there is a similarity in this study and that of (Elliott and Coventry, 2012) as the registered nurses delegate the vital sign monitoring to other colleagues. In addition, the statement has been further supported by (Wotton, 2009), whereby the participants stated that the registered

nurses are also responsible and accountable for interpreting the vital signs and ensuring they plan for the patient`s care.
For non-critically ill patients: 54.55% of the registered nurses in this study reported that they often or most of the times repeat the vital signs of non-critically ill patients as part of their initial assessment. In the study conducted by (Burchill and Polomano, 2015), 52% of their participants sometimes repeated the vital signs instead of performing the task often or most of the time.

Critically ill patients are those the registered nurses prioritise, as reported by the majority of the participants (93.94%); this task is being crucial as part of their initial assessment in this study. The same findings were reported by other participants, where 87.7% of them repeated the vital signs of critically ill patients most of the time (Burchill and Polomano, 2015).

Prior to giving medication, 78.79% of the registered nurses reviewed the patient`s vital signs in this study. In supporting literature, the same was indicated, that the registered nurses have the understanding that medication administration may have an alternative effect towards changing the vital signs parameter, hence they initially review them prior to medication administration (Johnson *et al.,* 2014).

In this study, 77.27% of the registered nurses ensured they reviewed the vital signs when reporting or exchanging shifts. The same findings were indicated by the majority, as 84% of them most of the time and often review the vital signs when handing over to a peer. Interestingly, although this task is being carried out, sometimes during hand over the abnormal vital signs are not highlighted due to the business of the emergency department, or poor communication as a result of a noisy environment (Venkatesh et al., 2015).

This study indicated that about 74.24 % of the participants reviewed the vital signs record prior to admission or discharge. This is an important practice because literature indicated that failure to address the abnormal vital signs in the emergency department most likely contributes to the mortality of patients following discharge (Burchill and Polomano, 2015).

In altering the care plan, the majority of the participants 92.42% of them in this study relied on changes in vital signs in order to alter the care plan. Contrarily, sometimes only 38% relied on the vital signs in order to make changes in the care plan.

This study revealed there was no significant relationship, but that there were differences between how the registered nurses were practicing and how their attitude affected their practice. According to the participant`s practice in this study, they understand the significance of vital sign monitoring but their attitudes as expressed by themselves as the participants disagreed and strongly disagreed at all times. The varying differences identified, according to the practices, were that more than 75% of the registered nurses in this study often or most of the time were practising according to the statements and 80% of the registered nurse`s attitudes disagreed and strongly disagreed to the statements.

The same findings were observed and as a result there is a broad difference in vital signs monitoring in the emergency department concerning the practice standards and the registered nurse`s attitudes (Burchill and Polomano, 2015).Burchill and Polomano, 2015 suggested their study was intended to provide guidance to the practice of the registered nurse and attitudes towards vital signs monitoring, as there was no tool to evaluate the attitudes and practices of the registered nurses, and the results indicated there was inconsistency in nurses` attitudes, (Mok *et al.,* 2015) indicated that the nurses do not regard vital sign monitoring as a priority and they are neglecting to perform this task.

The study intended to describe the attitudes and practices of registered nurses towards vital sign monitoring in the emergency departments of a level one hospital in Gauteng. The main objectives were: to explore the 1) the practices and 2) the attitudes of the registered nurses practicing in the emergency department towards vital signs monitoring in a level one hospital in Gauteng.

Before commencement of the study, ethical approval was granted by the Human Research Ethics Committee (Medical) of the University of the Witwatersrand and approval from the Postgraduate Research Committee of the School of Therapeutics

in the Faculty of Health Sciences, and the Chief Executive Officer and Director of Nursing Services in the hospital.

The emergency departments at the public hospital in Gauteng were used to conduct the study. Registered nurses were selected using the total sample of 87 registered nurses affiliated to the selected study sites at the hospital. A self-administered questionnaire developed by (Burchill and Polomano, 2015) was used to collect the data.

To achieve the study objectives a descriptive and cross-sectional design was used. Data was collected from 66 respondents over a period of 12 weeks (3 months). Sixty-six completed surveys were available for data analysis. Results were discussed using descriptive and inferential statistics.

The study demonstrated that registered nurses in this current study have a different attitude compared to how they are practising; their practices represented an understanding of monitoring of vital signs while their attitudes differ to how they practice. The registered nurses' attitudes cannot be changed by any protocol, but this can be achieved if they can commit themselves to changing their attitudes. Protocols can be put in place to accelerate the change in practice in order for an improvement. This study has to be repeated in South Africa using other hospitals in Gauteng.

5.4 LIMITATIONS AND IMPLICATIONS FOR PRACTICE

The researcher acknowledges the following limitations to the study.

- This study was conducted in only one central hospital in Gauteng.
- Only the registered nurses working in the three emergency departments were included and not all categories of nurses who also participate in doing the vital signs.
- The original study had all the qualified categories of nurses and the doctors whereas this study did not include all the nursing categories and did not include doctors at all.

- Taking these limitations into consideration, the findings of this study cannot be generalised, unless the study is replicated in other emergency departments, both in private and public hospitals.

5.5 RECOMMENDATIONS OF THE STUDY

The findings of this study provide an insight into the attitudes and practices of registered nurses towards vital sign monitoring in the emergency departments. These findings have significant implications for vital sign monitoring regarding nursing practices, education and further nursing research.

5.5.1 Recommendation for Clinical Practice and Management

The registered nurses need to drive the vital signs monitoring in the emergency department. In each patient`s file the time must be allocated for vital signs monitoring. Standardised policies according to evidence-based practice, needs to be developed for the emergency department and these policies are to be discussed with every nursing staff member working in the emergency department. In each shift, time slots have to be allocated to each and every nursing staff to monitor patient`s vital signs with the registered nurses driving this task.

5.5.2 Recommendation for Nursing Education

Education awareness regarding vital signs monitoring should be included in the curriculum for the undergraduate and post graduate nursing students. Seminars, workshops, symposiums, conferences to reinforce the significance of vital signs monitoring have to be considered. Greater efforts must be initiated to train and educate registered nurses to frequently measure the vital sign signs. The training should include the method of measuring the vital signs using different standardised equipment.

5.5.3 Recommendation for Future Nursing Research

This study was only done in the emergency departments of one central hospital in Gauteng and therefore the findings obtained could only afford the researcher's generalisation to be based on this one institution. The researcher recommends that a replication of this study is performed in other local public hospitals as well as in private sector hospitals. The content of triage has been studied in South Africa, but no other studies have been done regarding the frequency of vital sign monitoring. The researcher also recommends that future research in vital sign monitoring and patient outcomes also needs to be researched in South Africa.

5.6 CONCLUSION

Vital signs monitoring plays a significant role towards early recognition of deterioration of patient`s condition. A study conducted by (McGhee *et al.,* 2016) indicated that due to lack of knowledge regarding vital signs monitoring there were multiple errors identified in the emergency department, vital signs were not monitored and patients deteriorated while the nurses were unable to identify that. In addition, (Tysinger, 2015) identified there was evidence that suggested the compliance of performing vital signs monitoring was still lacking. Similar to the above studies, this study also identified there was an ongoing lack of knowledge regarding vital sign monitoring in the emergency department.

Registered nurses must not only know how to monitor the vital signs, but also to analyse them in order to detect early deterioration in a patient`s condition. They must simultaneously, review the patient and repeat the vital signs for patients in the emergency department. The registered nurses` attitude have to be changed and this can only take place when they understand the significance of monitoring the vital signs of patients in the emergency department. Further research is needed in South Africa to understand the concept.

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APPENDIX: A

PRACTICE AND ATTITUDES OF VITAL SIGNS INSTRUMENT FOR EMERGENCY NURSES (PAVSI-EN)

SECTION: 1: DEMOGRAPHIC INFORMATION

Please read each item below and write your answer or mark an "X" in the appropriate block. Do not write your name, as the questionnaire is anonymous.

1. Age

18 – 30	31 -40	41- 50	51-60	61-70

2. Sex

Male	Female

3. Years working in the emergency department

< 5	5-10	10-20	20+

4. Do you have qualification in trauma and emergency nursing?

Degree	Diploma	None

- **Indicate your current position in the emergency department**

Registered nurse	Registered Nurse-Shift leader	Clinical facilitator	Unit manager

SECTION 2: PRACTICES STATEMENTS

PRACTICE STATEMENTS Place a mark in the box that best represents the frequency with which you perform vital signs for each statement listed below.	Never	Sometimes	Often	Most of the time

I review triage vital signs prior to evaluating the patient.				
I repeat abnormal vital signs as part of my assessment of patients.				
I have someone else repeat triage vital signs and then I check those vital signs as part of my patient assessment.				
In developing a plan of care, I refer to triage vital signs.				
I repeat vital signs of non-critically ill patients as part of my initial assessment.				
I repeat vital signs on critically ill patients as part of my initial assessment.				
I review patient`s vital signs prior to giving medication tha may alter their vital signs.				
I review the record of a patient`s vital signs when reporting of a peer.				
I review the record of a patient`s vital signs prior to admission or discharge.				
I repeat vital signs prior to admission or discharge.				
I rely on changes in a patient`s vital signs to alter my plan of care.				

ATTITUDE STATEMENTS Place a mark in the box that best represents how you feel about each of the statements listed below.	Strongly disagree	Disagree	Neither	Agree	Strongly Agree
I believe that vital signs taken in triage are an accurate reflection of the patient`s condition.					
I believe that vital signs taken in the emergency department are performed according to evidence-based practice guidelines.					
I feel that repeating vital signs regularly is necessary to protect my practice and the institution in case of a lawsuit.					

Vital signs taken at regular interval to document that a patients has been observed is often unnecessary for selected populations.					
Taking vital signs at regular intervals to document that a patients has been observed is often unnecessary for patients that are stable with non-life-threatening conditions.					
Too much time is spent repeating vital signs on stable patients.					
Clinicians should determine the frequency of vital signs on a case-by-case basis.					
Clinicians value having frequent vital signs on their patients to guide clinical care					
Frequency of repeating vital signs should be uniform for patients in the ED.					

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APPENDIX: B

Registered Nurses practising in the two emergency departments: attitudes and practices towards vital sign monitoring in Gauteng.

INFORMATION LETTER

Dear Colleague,

My name is Tshegofatso Moseki. I am a second year student at University of the Witwatersrand, in the Department of Nursing Education, doing the degree of Master of Science in Nursing (Trauma and Emergency Nursing). I am hoping to conduct a research project to explore if there is a relationship between emergency nurses vital sign practices, attitudes and their demographic factors in order to provide recommendations for clinical practice and nursing education at two level one trauma units in Gauteng.

Participation in the study is entirely voluntary. If you wish to participate in the study, do so by signing the consent form and returning it back to me in the addressed and stamped envelope enclosed. You may withdraw from the study anytime if you wish to. I assure you that your personal information will not be given in writing of this research report to ensure confidentiality.

Please note there will be no be any personal benefit attached to participating in this study, but it may help to make suggestions to Hospital Management on their policy of monitoring vital signs and inform the Nursing Educators on what to include in their Nursing Curriculums regarding the monitoring of vital signs in the Emergency setting.

The appropriate authorities and research committees of the University of the Witwatersrand, Gauteng Department of Health and Hospital Management have approved the study and its procedures.

Thank you for taking the time to read this information letter. For further information regarding the study or your rights as a study participant please contact me in the Department of Nursing Education or on the following telephone number: 079 070 2286

Yours faithfully

Tshegofatso Moseki

Date_____

APPENDIX: C

Registered Nurses practising in two emergency departments: attitudes and practices towards vital sign monitoring in Gauteng.

CONSENT FORM

I _____ (name) give permission to be included in the study.

I have read and understood the information sheet and I have been given the opportunity to ask questions I might have regarding the procedure and my consent to my being included in the study.

_____ _____

Date Signature

_____ (Witness)

APPENDIX: D 1

Ethical clearance certificate

UNIVERSITY OF THE WITWATERSRAND, JOHANNESBURG

HUMAN RESEARCH ETHICS COMMITTEE (MEDICAL)

Office of the Deputy Vice-Chancellor (Research & Post Graduate Affairs)

TO: Ms T Moseki
School of Therapeutic Sciences
Department of Nursing Education
Medical School
University

E-mail: mosekitshego@gmail.com

CC: Supervisor: Ms V Herbert <Viv.Herbert2@wits.ac.za>
and <HREC-Medical.ResearchOffice@wits.ac.za>

FROM: Iain Burns
Human Research Ethics Committee (Medical)
Tel: 011 717 1252

E-mail: Iain.Burns@wits.ac.za

DATE: 07/03/2018

REF: *R14/49*

PROTOCOL NO: **M170544** *(This is your ethics application study reference number. Please quote this reference number in all correspondence relating to this study)*

PROJECT TITLE: *Registered nurses practising in two emergency departments: attitudes and practices towards vital sign monitoring in Gauteng*

Please find attached the Clearance Certificate for the above project. I hope it goes well and that an article in a recognized publication comes out of it. This will reflect well on your professional standing and contribute to the Government funding of the University.

MSWorks2000/Iain0007/Clearscan.wps

Ethical clearance certificate

APPENDIX: D (2)

UNIVERSITY OF THE WITWATERSRAND JOHANNESBURG

R14/49 Ms T Moseki

HUMAN RESEARCH ETHICS COMMITTEE (MEDICAL)
CLEARANCE CERTIFICATE NO. M170544

NAME: (Principal Investigator)	Ms T Moseki
DEPARTMENT:	School of Therapeutic Sciences Department of Nursing Education Medical School University
PROJECT TITLE:	Registered nurses practising in two emergency departments: attitudes and practices towards vital sign monitoring in Gauteng
DATE CONSIDERED:	26/05/2017
DECISION:	Approved unconditionally
CONDITIONS:	
SUPERVISOR:	Ms V Herbert
APPROVED BY:	Professor CB Penny, Chairperson, HREC (Medical)
DATE OF APPROVAL:	07/03/2018

This clearance certificate is valid for 5 years from date of approval. Extension may be applied for.

DECLARATION OF INVESTIGATORS

To be completed in duplicate and **ONE COPY** returned to the Research Office Secretary on 3rd floor, Phillip V Tobias Building, Parktown, University of the Witwatersrand, Johannesburg.
I/We fully understand the conditions under which I am/we are authorised to carry out the above-mentioned research and I/we undertake to ensure compliance with these conditions. Should any departure be contemplated from the research protocol as approved, I/we undertake to resubmit to the Committee. **I agree to submit a yearly progress report**. The date for annual re-certification will be one year after the date of convened meeting where the study was initially reviewed. in this case, the study was initially reviewed in **May** and will therefore be due in the month of **May** each year. Unreported changes to the application may invalidate the clearance given by the HREC (Medical).

Principal Investigator Signature _____ Date _____

PLEASE QUOTE THE PROTOCOL NUMBER IN ALL ENQUIRIES

ANNEXURE E

Hospital Permission to Conduct Research

GAUTENG PROVINCE
HEALTH
REPUBLIC OF SOUTH AFRICA

CHARLOTTE MAXEKE JOHANNESBURG ACADEMIC HOSPITAL

Enquiries:
Ms. G. Ngwenya
Office of the Nursing Director
Tell: (011): 488-4558
Fax: (011): 488-3786
21 February 2018

Ms. Tshegofatso Moseki
Department of nursing education
Faculty of Health Sciences
University of Witwatersrand
NHRD REF: GP_201711_038

Dear Tshegofatso Moseki

RE: "Registered nurses practicing in two emergency departments attitudes and practices towards vital signs monitoring in Gauteng"

Please note that permission to conduct the above mentioned study is provisional approved. Your study can only commence once ethics approval and supporting letter from Head of Department is obtained. Please forward a copy of your ethics clearance certificate as soon as the study is approved by the ethics committee for the CEO's office to give you the final approval to conduct the study.

Supported ~~/ not supported~~

Ms. M.M Pule
Nursing Director
DATE: 21/02/2018

Approved / not approved

Ms. G. Bogoshi
Chief Executive Officer
DATE: 22.02.2018

ANNEXURE F

Permission to use Research Instrument

Viv Herbert

From: tshego moseki <mosekitshego@gmail.com>
Sent: 15 October 2016 06:46 AM
To: Viv Herbert
Subject: Re: FW: Permission to used your research questionnaire for as study in our country.

Thanx Viv let's meet thursday

On 14 Oct 2016 13:23, "Viv Herbert" <Viv.Herbert2@wits.ac.za> wrote:

The author has sent this.

Now we can go forward.

Please make an appointment next week with me. Not Monday- Wednesday.

Viv

From: Burchill, Christian [mailto:BURCHIC@ccf.org]
Sent: 12 October 2016 05:04 PM
To: Viv Herbert
Subject: RE: Permission to used your research questionnaire for as study in our country.

Viv – Please find attached the user version of the PAVSI-EN. Feel free to adjust the language so that it makes sense to your local population of nurses, just let me review that copy before you begin distribution so that I can assure the construct has not been changed by the change in language. I look forward to hearing about your results. Please let your master's degree student know that I am available for any questions or concerns that they may have about using the instrument. There is a scoring instrument in the packet that needs to be used in tabulating the final score for each section. Please keep in mind that some items are reverse scored since they do not represent current understanding of vital signs best practices. As an example, the first statement in the attitude section, "I believe that vital signs taken in triage are an accurate reflection of the patient's condition," is not in line with the evidence on vital signs performed during the triage process. Triage vital signs are generally not performed according to evidence-based standards (sitting for five minutes undisturbed, arm raised and supported at heart level, quiet environment, etc.) and one research study has shown a dramatic difference based on the person performing vital signs, the patient's history, and organizational factors.

Warmest Regards,

Chris

Warmest Regards,

Chris

Cleveland Clinic

Christian N. Burchill, PhD, RN, CEN Senior Nurse Researcher | Office of Nursing Research and Innovation, Nursing Institute | Cleveland Clinic | 9500 Euclid Avenue/T4-37 | Cleveland, OH 44195 | office (216) 445-9317 |

cell (216) 903-9242

From: Viv Herbert [mailto:Viv.Herbert2@wits.ac.za]
Sent: Tuesday, October 11, 2016 2:47 AM
To: Burchill, Christian <BURCHIC@ccf.org>; tshego moseki <mosekitshego@gmail.com>
Subject: Permission to used your research questionnaire for as study in our country.

11/10/2016

Good afternoon Dr Burchill

My name is Viv Herbert and am a lecturer at the University of the Witwatersrand in South Africa. My MSc student and myself would like to ask you permission if we could replicate your study in our country. The title of your article that enlightened us to this topic is **"Certification in Emergency nursing associated with vital signs attitudes and practices"** We also appear to have differences in opinions with regards to how offend to do a patients vital signs in our emergency triage set up among the trauma fraternity I our country .

We are willing to acknowledge you and will send you our completed study when finished if you allow us permission.

Thanking you kindly

Viv Herbert

This communication is intended for the addressee only. It is confidential. If you have received this communication in error, please notify us immediately and destroy the original message. You may not copy or disseminate this communication without the permission of the University. Only authorised signatories are competent to enter into agreements on behalf of the University and recipients are thus advised that the content of this message may not be legally binding on the University and may contain the personal views and opinions of the author, which are not necessarily the views and opinions of The University of the Witwatersrand, Johannesburg. All agreements between the University and outsiders are subject to South African Law unless the University agrees in writing to the contrary.

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ANNEXURE G

Language Editing and Proofing

Gill Smithies

Proofreading & Language Editing Services

59, Lewis Drive,Amanzimtoti, 4126, Kwazulu Natal

Cell: 071 352 5410 E-mail: moramist@vodamail.co.za

Work Certificate

To	Ms. V Herbert
Address	Dept. of Nursing Research, University of Witwatersrand.
Date	03/11/2019
Subject	Research Report:Registered Nurses practising in the two emergency departments: attitudes and practices towards vital sign monitoring in Gauteng, by T. Moseki
Ref	GS/VH/02

I, Gill Smithies, certify that I have proofed the following for language, grammar and style,

Research Report:Registered Nurses practising in the two emergency departments: attitudes and practices towards vital sign monitoring in Gauteng,by T. Moseki to the standard as required byWits Dept. of Nursing Education.

Gill Smithies