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EXPERIENCES OF PROFESSIONAL NURSES CARING FOR PATIENTS WITH OPEN ABDOMEN IN AN INTENSIVE CARE UNIT IN GAUTENG

BY

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ABSTRACT

Managing patients with open abdomen post-operatively has become a daily procedure in intensive care units as it reduces mortality rates in patients with abdominal hypertension, abdominal compartment syndrome and abdominal sepsis. The routine nursing care is more challenging because these nurses should constantly observe the open abdomen which is only covered with a temporary dressing. The researcher has observed that nurses prefer not to nurse patients with open abdomen as they fear that the abdominal contents will protrude.

The purpose of the study was to explore and describe the experiences of professional nurses taking care of patients with open abdomen in intensive care in an academic hospital in Gauteng and to describe the recommendations for assisting professional nurses in taking care of patients with open abdomen. The research design used was a qualitative, exploratory, descriptive and contextual design. The target population was professional nurses with more than one year experience caring for patients with open abdomen and are working in a specific adult intensive care unit. Four focus group interviews were conducted and each comprised of six participants. The research question which was addressed was: What are the experiences of the professional nurses caring for patients with open abdomen in intensive care unit? What recommendations can be made for assisting professional nurses in taking care of patients with open abdomen in intensive care unit?

Data saturation was reached on the fourth interview. Data were analysed using Tesch’s method. Three themes also emerged: difficulty in nursing care, complications suffered by patients and poor hospital administration. Recommendations for assisting professional nurses in taking care of patients with open abdomen were then described from the findings of four focus group interviews. Ethical principles and measures of trustworthiness were adhered to throughout the research study. This study revealed that professional nurses in intensive care unit have difficulties in caring for patients with open abdomen due to lack of protocols, lack of equipment, lack of knowledge and skill by the nurses and doctors. This lead to patients developing complications such as infections and fistulas while nurses develop psychological problems. In-service programs and debriefing sessions should be conducted to assist professional nurses in caring for patients with open abdomen.
KEY WORDS

Open abdomen, intensive care unit (ICU), intra-abdominal hypertension (IAH), abdominal compartment syndrome (ACS), professional nurses, vacuum-assisted closure (VAC).
DEDICATION

Almighty God who gave me strength, wisdom, courage, understanding and good health. He gave me the perseverance to carry on with my studies when days were tough and I felt like quitting.

This study is also dedicated to my late grandmother Emily Mma-Daniel, who passed away before I completed the dissertation. Phaustinah Mokgadi Chipu, my mother, who raised me as a single parent but ensured that I achieve my dreams.

My lovely sisters, Kholofelo and Tshepo, who supported me with the kids while I studied. My beautiful daughter, Joy, and lovely son, Reatlegile, for being patient with me when I spend long hours in the library. I love you dearly.
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All participants who were involved in the focus group interviews and who gave me their wonderful experiences.
Lebo Tsamai for assisting with computer skills.
ABBREVIATIONS
Abdominal compartment syndrome (ACS)
Abdominal perfusion pressure (APP)
Acute respiratory distress syndrome (ARDS)
American Society for Parenteral and Enteral Nutrition (ASPEN)
Behavioural Pain Scale (BPS)
Carbon dioxide (CO₂) Central venous pressure (CVP)
Central venous pressure (CVP)
Centre for Disease Control and Prevention (CDC)
Continuing Professional Education (CPE)
C-reactive protein (CRP)
Critical Care Nurse (CCN)
Critical Care Pain Observation Tools (CPOT)
Employment Assistance Programme (EAP)
Full blood count (FBC)
Gastro intestinal (GI)
Intensive care unit (ICU)
Intra-abdominal hypertension (IAH)
Intra-abdominal pressure (IAP)
Kinetic Concepts, Inc. (KCI)
Liver function test (LFT)
Multidisciplinary team (MDT)
Parenteral nutrition (PN)
Partial pressure of oxygen (Pao₂)
Patient-controlled analgesia (PCA)
Personal protective equipment (PPE)
Positive end expiratory pressure (PEEP)
Registered nurse (RN)
Total parenteral nutrition (TPN)
Vacuum-assisted closure (VAC)
Ventilator associated pneumonia (VAP)
Ventilator induced lung injury (VILI)
Wound ostomy continence nurse (WOCN)
World Society of the Abdominal Compartment Syndrome (WSACS)
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CHAPTER 1
ORIENTATION OF THE STUDY

1.1 THE INTRODUCTION/BACKGROUND AND RATIONALE
Open abdomen is a surgical procedure also known as laparotomy done in theatre where the peritoneal cavity in open abdomen is deliberately left open anteriorly (Leppäniemi, 2010:1). The abdominal contents of open abdomen are exposed and are only closed with a transparent dressing such as opsite dressing. Worhunsky, Magee and Spain (2013:33) stated that open abdominal surgery was first done way back by Ogilvie in 1940 and during that time he used “canvas light” or cotton cloth sterilised in Vaseline to cover the abdomen temporarily.

Since 1940, open abdominal surgery has become a daily procedure used mostly in ICUs to manage critical and unstable trauma patients with abdominal injuries. The benefits of doing open abdomen are the following: facilitating accessibility when doing repeated relook laparotomies, and facilitating healing and prevention of abdominal compartment syndrome (Worhunsky, Magee & Spain, 2013:33). Navsaria, Nicol, Hudson, Cockhill and Smith (2013:4) agree with Worhunsky et al., (2013:33) by saying that open abdomen assists in decreasing mortality rate and preventing abdominal compartment syndrome. Open abdomen also assists in early identification of abdominal complications. Open abdominal surgery is done mostly in trauma patients who suffer from penetrating injuries, blunt injuries, or a combination of blunt injuries and penetrating injuries. Penetrating injuries occur due to gunshots wounds or abdominal stab wounds. Blunt abdominal injuries are usually due to assault or caused by pedestrian vehicle accidents, motor vehicle accidents and fall from height (Kman, Kneapel, Hays & Menaker, 2012:1-4).

Stuijt (2009:1) stated that trauma units were like war zones. The Groote Schuur Hospital admitted close to 11,000 trauma patients in 2008, while South African academic hospitals admitted 127,000 patients with bullet wounds in 2008. Trauma patients are treated as emergencies and exploratory laparotomies are usually performed to exclude internal bleeding in the abdomen. If the bullet wound is in the abdomen, a damage control laparotomy is done which results in the abdomen being left open to prevent abdominal hypertension, abdominal compartment syndrome and abdominal infection (Demetriades, 2012:17).
Although open abdomen is considered a life-saving intervention it is not without complications. These include severe abdominal sepsis, abdominal dehiscence, paralytic ileus, fistulas and acute respiratory failure are complications of open abdomen, irrespective of its life-saving benefits. Acidosis, hypotension, hypothermia, coagulopathy and oliguria occur in these patients (Cheatman, Malbrain, Kirkpatrick, Surgue, Parr, Waele, Balogh, Leppaniemi, Olvera, Ivatury’ Armours, Wendon, Hillman & Wilmer, 2007:954). These critically ill patients mostly lose proteins and fluids. Patients with open abdomen has increased length of hospital and ICU stay. Patients with open abdomen are at risk of developing pneumonia, pressure ulcers, thromboembolism and abdominal abscess (Cheatman et al., 2007:951-962).

According to Pretorius (2015: 3) open abdomen is a challenge to nursing staff because of high complication rate such as bowel desiccation, fluid loss, protein loss, nutritional implications, loss of domain, fistulation, infection and sepsis. The management of patients with open abdomen is labour intensive for nursing staff. The opsite Bogota bag leaks and needs to be changed daily. If patients has temporary ileostomy then application becomes difficult (Campbell, Kuhn & Barker, 2010:114-115).

The literature on open abdomen is very limited especially the ones written by nurses and no literature was found regarding experiences of professional nurses in caring for patients with open abdomen in South Africa.

1.2 PROBLEM STATEMENT
Patients with an open abdominal wound make the nursing care difficult because they are usually hemodynamically unstable. Their nursing care differs from other hemodynamically unstable patients in the sense that nurses have to constantly observe the open abdominal wound for bleeding, abdominal distention and abdominal compartment syndrome.

The researcher has observed that nurses in a specific intensive care unit prefer not to nurse patients with open abdomen. Nurses become stressed and some refuse openly to nurse these patients and would rather be transferred to other units where there are no patients with open abdomen. The questions therefore arising are: What are the experiences of professional nurses caring for patients with open abdomen in intensive
care units? What recommendations can be made for assisting professional nurses in taking care of patients with open abdomen in intensive care units?

1.3 RESEARCH PURPOSE
The purpose of the study was to explore and describe the experiences of professional nurses caring for patients with open abdomen and to describe the recommendations for assisting professional nurses in taking care of patients with open abdomen in an intensive care unit in an academic hospital in Gauteng.

1.4 RESEARCH OBJECTIVES
The objectives of this study are as follows:
To explore and describe the experiences of professional nurses who are caring for patients with open abdomen in intensive care unit.

To describe the recommendations for assisting professional nurses in caring for patients with open abdomen in an intensive care unit in an academic hospital in Gauteng.

1.5 DEFINITION OF TERMS

1.5.1 Experiences
Experience is described as the knowledge that comes from being personally involved in an event, situation or circumstance. In nursing, experience enables one to gain skills and expertise by providing care to patients and families in clinical settings (Burns, Grove & Gray, 2013: 10). In this study experience refers to the thoughts, values, emotions, preferences and perceptions of professional nurses.

1.5.2 Professional nurses
A person who is registered as a nurse or midwife as defined in Nursing Act 33 of 2005. In this study professional nurse refers to registered nurses who have managed patients with open abdomen in ICU.

1.5.3 Open abdomen
A surgical treatment method in which the peritoneal cavity is opened anteriorly and deliberately left open. It is also known as laparotomy (Leppäniemi, 2010:1). Open abdomen is used for diagnostic purposes or as a surgical treatment (Peters, 2007:333).
For the purpose of this study open abdomen refers to a surgical procedure done during laparotomy whereby the abdomen is left open post-operatively to prevent abdominal compartment syndrome.

1.5.4 Caring
Jesse and Alligood (2014:96) described caring as the ethical and moral ideal of nursing with interpersonal and humanistic qualities. Caring in nursing is care that ensures comfort and support to the patients being cared for by nursing professionals. A caring nurse should be able to cultivate a humane, understanding and compassionate approach in providing care and should understand the importance of humanity of the healing service (Searle, Human & Mogotlane, 2009: 15). For the purpose of this study caring refers to tasks done by nurses regarding basic nursing care, hygiene, nutrition, fluid and electrolyte balance, ventilation and abdominal wound dressings, suction dressings and measuring intra-abdominal pressure in patients with open abdomen.

1.5.5 Patients
According to the National Health Act (Act 61 of 2003) a patient is defined as a user or person receiving treatment in a health care establishment, including receiving blood or blood products, or using a health care service (McQuoid-Mason & Dada, 2011). In this study, patients refer to persons admitted in an adult trauma ICU requiring open abdominal surgery following a traumatic incident.

1.5.6 Intensive care unit
Intensive care unit refers to clinical units concerned with providing the highest level of monitoring and support for patients experiencing severe physiological dysfunction (Chan, 2004:86-89). Peters (2007:312) defines intensive care unit as hourly monitoring of critically ill patients using cardiac monitor to observe heart rate, blood pressure and oxygen saturation. For the purpose of this study intensive care unit refers to an adult trauma intensive care unit.

1.6 RESEARCH DESIGN AND RESEARCH METHODOLOGY

1.6.1 Research design
The researcher used a qualitative, exploratory, descriptive and contextual design. Qualitative research is a systematic, interactive, subjective approach used to describe
life experiences and give them meaning (Burns et al., 2013:705). The study explored and describes the experiences of critical care nurses who are caring for patients with open abdomen in trauma intensive care unit in Gauteng. The design was contextual as it was done in a specific context whereby critical care nurses in intensive care units were interviewed in an academic hospital in Gauteng.

1.6.2 Research methods
The methodology of this research will be described in detail in chapter 2 under 2.4.1, 2.4.2, 2.4.3, 2.4.4, and 2.4.5.

1.7 MEASURES TO ENSURE TRUSTWORTHINESS
Trustworthiness is the degree of confidence the researcher has in the data collected (Polit & Beck, 2008:539). The trustworthiness of this study was ensured by using strategies of credibility, transferability, dependability, confirmability and authenticity from Lincoln and Guba (Polit & Beck, 2008:539; Shenton, 2004:63-75). Credibility was ensured by engaging patients for a long time. The interviews lasted 45 to 90 minutes in order for the researcher to build trust, rapport and understanding with participants. The criterion for transferability is applicability, which means that the study result can be generalised to a larger population. The researcher used transferability by choosing the sample of nurses purposefully and using direct quotations from participants. Dependability was ensured by making sure that the audio-recordings were transcribed verbatim and interviews were conducted until data saturation. Confirmability was ensured by ensuring the study represented the information provided by the participants and the findings of this research was derived from the data collected and not the researcher’s imagination. Authenticity was ensured by the researcher making sure that all the voices of the participants were honoured. The measures of trustworthiness will be described in more detail in chapter 2.

1.8 ETHICAL CONSIDERATIONS
Approval for doing this research was given by the Academics Ethics Committee AEC01-91-2014 (Annexure A) and Higher Degrees Committee HDC-01-77-2014 (Annexure B) at the University of Johannesburg, and approval was also granted by the CEO of the hospital (Annexure D) and the head of the trauma department (Annexure E). The researcher obtained approval from the Gauteng Department of Health Protocol number GP2015RP27148 (Annexure C). Ethical considerations will be discussed using the four
principles of the Belmont Report: the principle of respect for autonomy, the principle of non-maleficence, the principle of beneficence and the principle of justice (Dhai & McQuoid-Mason, 2011:14). Confidentiality, right to privacy and informed consent were described.

1.8.1 The principle of respect for autonomy
The principle of respect for autonomy takes self-determination into consideration and is the basis of informed consent and respecting confidentiality (Dhai & McQuoid-Mason, 2011:14). In this study the researcher told the participants the truth about the research so that they could make free, independent and informed choices. The researcher started data collection after approval from the Gauteng Department of Health, Academic Research Committee, Higher Degree Committee and the CEO of the hospital. The researcher obtained informed consent from participants before conducting focus groups interviews. The participants were informed of the risks and benefits of doing this research, as well as their right to withdraw from the research at any time if they felt uncomfortable.

1.8.2 The principle of non-maleficence and beneficence
The principle of non-maleficence means to do no harm. There is a duty to prevent harm (physical, psychological, emotional, social and economic) and to do good to protect weak, vulnerable and incompetent participants (Moule & Goodman, 2014:460). In this study the principle of non-maleficence was considered. The research was held in a quiet and non-threatening environment where participants felt comfortable. The boardroom was free from noise and interruptions. Beneficence means doing good for others and promoting the interests and wellbeing of others. The principle requires researchers to act in the best interest of the participants and aim at promoting their positive welfare (Dhai & McQuoid-Mason, 2011:14). The researcher considered the principle of beneficence. The participants would benefit from this study by being given recommendations on how to take care of patients with open abdomen, and the study posed no risks as the experiences of professional nurses caring for patients with open abdomen were explored.

1.8.3 The principle of justice
The principle of justice refers to the fair allocation of scarce healthcare resources (Dhai & McQuoid-Mason, 2011:15). This principle of justice assists in determining whether the
benefits are distributed fairly among the participants. The researcher, in this study took into consideration the principle of justice by ensuring that all professional nurses to be interviewed were treated fairly and equally. Participants were chosen purposively without discrimination. They were all given feedback on the research after completion of the study.

1.8.4 Right to confidentiality
The participants were assured by the researcher that the confidentiality of their records will be maintained. The records were kept in safe keeping and no names will be revealed in presentations, reports and publications (Burns et al., 2013:177).

1.8.5 Right to privacy
Burns et al. (2013:169) define privacy as the right of an individual in determining the time, extent and general circumstances whereby the researcher share personal information with others or withheld it. In this study the researcher treated participants with dignity, and data from participants were not gathered without their knowledge. The participants were informed about the venue for doing this research which was comfortable for everyone. Participants were allocated numbers during interviews for the sake of confidentiality and anonymity. Audio-tapes were kept safe and were only used by the research team. Participants were informed that the audio-tapes would be destroyed after two years when research had been published.

1.8.6 Informed consent
The consent is accepted both legally and professionally when the participants have been informed properly, have agreed without any coercion and are deemed competent to give consent (Moule & Goodman, 2014:63). In this study the researcher communicated clearly with professional nurses and informed them about the purpose and objectives of the study. When it was clear that they fully understood and agreed then the researcher obtained a written consent (Annexure G). The participants were informed by the researcher about their right to withdraw from the study without facing penalty at any given time.

1.9 QUALITY OF THE STUDY
The research was done and the researcher was supervised by two supervisors. One supervisor is a professor and the other a lecturer. Both are lecturing at the University of
Johannesburg. The data was analysed by an independent coder who is an expert in qualitative interviews and has PhD prepared nursing specialising in psychiatric nursing science. The researcher has worked in an intensive care unit for a period of 14 years and she completed diploma in critical care nursing and a one year course in Research Methodology.

1.10 OUTCOME OF THE STUDY
The findings of the research resulted in the formulation of recommendations which will assist professional nurses in caring for patients with open abdomen in intensive care unit.

1.11 OUTLAY OF THE STUDY
The chapters of this study will be as follows:
Chapter 1: Orientation of the study
Chapter 2: Research methodology
Chapter 3: Research findings
Chapter 4: Recommendations, limitations and conclusion of the study

1.12 CONCLUSION
This chapter introduced the topic of this study, namely the experiences of professional nurses caring for patients with open abdomen in an intensive care unit. The background, rationale, problem statement, research question, purpose, objectives, research design, research methods, measures of trustworthiness and ethical considerations were discussed. Chapter 2 focuses on the research methodology in more detail.
CHAPTER 2
RESEARCH METHODOLOGY

2.1 INTRODUCTION
Chapter 1 described the overview and rationale of conducting the research. The purpose of Chapter 2 is to describe and justify the research design and research methodology in detail. Chapter 2 describes the research strategies, such as qualitative, exploratory, descriptive and contextual. Data were collected using focus group interviews, a pilot study, observations and field notes. Trustworthiness was also described in detail in Chapter 1. Data analysis was done using Tesch’s method. The researcher wants to explore and describe the experiences of professional nurses caring for patients with open abdomen and to describe the recommendations for assisting professional nurses in caring for patients with open abdomen in intensive care unit.

2.2 PURPOSE AND OBJECTIVES OF THE STUDY
The purpose of the study was to explore and describe the experiences of professional nurses caring for patients with open abdomen and to describe the recommendations for assisting professional nurses in caring for patients with open abdomen in an intensive care unit in an academic hospital in Gauteng.

The objectives of the study were as follows:
To explore and describe the experiences of professional nurses caring for patients with open abdomen.
To describe the recommendations for assisting professional nurse caring for patients with open abdomen in intensive care unit in an academic hospital.

2.3 RESEARCH DESIGN AND RESEARCH METHODOLOGY

2.3.1 Research design
A research design is the design that addresses a research question that includes the outline, plan or strategy which enhances the study integrity (Boswell & Cannon, 2014:452). Burns et al., (2013:692) define a research design as the blueprint for conducting a study that maximises the factors that could affect the trustworthiness of the study findings. Creswell (2014:247) describes the research design as a type of inquiry within qualitative, quantitative and mixed methods that provide specific direction
for procedures in a research study. In this study the researcher used a qualitative
design that was exploratory, descriptive and contextual (LoBiondo-Wood & Haber, 2006:131).

2.3.1.1 Qualitative design
Qualitative research is defined as a means to explore and understand the meaning that
individuals or groups ascribe to a social or human problem. The process of research
involves emerging questions and procedures, collecting data in the participants’ setting,
analysing data inductively, building from particular to general themes and interpreting
the meaning of the data (Creswell, 2014:247). The researcher was interested in
exploring and describing the experiences of professional nurses who are taking care of
patients with open abdomen. The researcher would gain an in-depth knowledge about
the experiences of professional nurses and be able to make recommendations for
assisting professional nurses in taking care of patients with open abdomen.

The qualitative research method is a systematic, interactive and subjective approach
used to describe life experiences and give them meaning (Burns, Grove & Gray, 2013:705). The qualitative design is appropriate when the purpose of the study is to
understand the meaning of the phenomenon. The qualitative researcher has a goal to
describe social reactions and interactions with such vividness that the reader can
understand the meaning of the event, even if she has not experienced it (Houser,
2012:155). The word “qualitative” means that a person examine the quality of
something, rather than the quantity, amount, intensity or frequency and it implies a level
of subjectivity (Boswell & Cannon, 2014:228).

According to (Houser,2012:38) qualitative methods focuses on an understanding of the
meaning of an experience from an individual perspective, extended observation of
participants, in-depth interviews or focus groups, case studies and studies of social
interaction. The inquiry process focuses on verbal descriptions and observable
behaviour as a basis for analysis and conclusion. Qualitative methods are appropriate
for questions in which the meaning of the participant’s’ experience is central to
understanding the best therapeutic approach. The analysis of themes that describe the
meaning of the experience is based on words and observations rather than measurable
phenomena (Houser, 2012:38).
2.3.1.2 Exploratory design
Exploratory research is designed to increase the knowledge of the field of study and not intended for generalisation to large populations. An exploratory study provides the basis of confirmatory studies (Burns et al. 2013:694).

Exploratory research is conducted to address an issue or problem in need of a solution and understanding. The researcher explores an issue or problem using various qualitative techniques with the intent to describe the topic of interest and promote understanding (Burns et al. 2013:27). Exploratory research collect detailed descriptions of existing variables and use the data to justify and assess current conditions and practices or to make plans for improving health care practices. In this study explorative design was used to obtain an in-depth understanding of the experiences of professional nurses caring for patients with open abdomen. The researcher used communication skills, open-ended questions, clarification and listening skills to explore the experiences of professional nurses during focus group interviews.

2.3.1.3 Descriptive design
Descriptive research provides an accurate portrayal or account of the characteristics of a particular individual, event or group in real-life situations for the purpose of discovering new meaning, describing what exists, determining the frequency with which something occurs and categorising information (Burns et al., 2013:692).

The researcher chose descriptive research design to describe the experiences of professional nurses when caring for patients with open abdomen and to describe the recommendations for assisting them in taking care of patients with open abdomen.

2.3.1.4 Contextual design
King and Horrocks (2011:19) explain the basic assumptions of contextualism in everyday life: set in a particular time, consisting of a myriad of factors, relations and activities, and in a state of incessant change. Context is integral to understanding how people experience their lives. It would therefore be significant to know more about the context of a particular encounter so that one can produce knowledge which acknowledges and have an understanding in situated perspectives.
The study was contextual in nature. The researcher respected and acknowledged the participants by asking them about their views. The study was conducted in an academic hospital in Gauteng where participants are working. The academic hospital is a level-one quaternary hospital which admits priority one trauma patients. The academic hospital is also a referral centre in Gauteng. Patients with open abdomen are mostly admitted in trauma intensive care due to gunshots in the abdomen, motor vehicle accidents, pedestrian vehicle accidents and fall from height. There are usually more than six patients with open abdomen in a nine-bed intensive care unit at any given time.

2.4 RESEARCH METHODOLOGY

Research methods are described under the following: population, sampling, data collection, data analysis and data interpretation and trustworthiness. Research methods involve the way in which the researcher propose to collect data, analyse data, and interpret data for their studies (Creswell, 2014:247).

2.4.1 Population

Population is the complete group of individuals possessing various characteristics to which a researcher wants to generalise the sample results, sometimes referred to as the universe population or target population (Boswell & Cannon, 2014:450). Population comprises all elements that meet the sample criteria for inclusion in a study and is sometimes referred to as target population (Burns, Grove & Gray, 2013:703).

The hospital under study is situated in Gauteng and has five intensive care units. The target population were professional nurses currently working in trauma intensive care unit. The reason for choosing professional nurses as the target population was because professional nurses in that unit were more experienced and knowledgeable in caring for patients with open abdomen.

2.4.2 Sampling

Sampling refers to the process used to select a portion of the population for the study. The researcher used purposive sampling in this study. Purposive sampling means that participants are chosen due to their defining characteristics (Maree, Creswell, Ebersohn, Eloff, Ferreira, Ivankova, Jansen, Nieuwenhuis, Pietersen, Clark & Van der Westhuizen, 2012:79). The sample in this study comprises professional nurses working in a trauma intensive care unit in an academic hospital. The inclusion criteria, also
known as eligibility criteria, are professional nurses who were working in an intensive care unit in an academic hospital and who have cared for patients with open abdomen and these nurses have more than a year having experience caring for patients with open abdomen.

2.4.3 Sampling criteria
The criteria for selecting professional nurses as participants are as follows:

- Professional nurses who have been working in an intensive care unit in an academic hospital for more than a year managing patients with open abdomen.
- Professional nurses from all racial groups, namely blacks, Indians, coloured and white populations.
- Both males and females were included.
- Professional nurses who were willing to participate in this study.

2.4.4 Data collection
Data collection is the compilation and assembling of information related to concepts and variables in a reputable manner that facilitates answers to research questions (Boswell & Cannon, 2014:443). Data collection will be described under the following headings: pilot study, focus group interviews, the role of the researcher, interviewer and communication skills.

2.4.4.1 Pilot study
A pilot study is an intentionally smaller version of a study with a limited sample size or group of measure. Its primary purpose is to test the methods and procedures of a study prior to full implementation (Houser, 2012:306). In this study a pilot study was done with one professional nurse working in a trauma intensive care unit who has more than one year experience caring for patients with open abdomen. The pilot study was used to test the research questions. The results of the pilot study were given to the study leaders who have more experience with qualitative interviews. The recorded interviews showed that the researcher was able to conduct the interviews. The findings from the pilot study interview were included in the study.

2.4.4.2 Focus group interviews
A focus group interview is an in-depth qualitative interview with a small group of people who have been specifically selected to represent a target audience. The aim of a focus
group is to understand the social dynamic and interaction between the participants through the collection of both verbal and observational data (Houser, 2012:240; Burns et al., 2013:695). Focus group interviews were chosen for this study as the researcher wanted participants to discuss about their experiences so that she can obtain rich data.

In this study, the researcher conducted focus group interviews after the participants had signed consent forms. The participants were also told that the interviews will be audio-recorded. Consent to record the interviews were obtained from participants before interviews were conducted. Each focus group consisted of at least six participants and the researcher conducted four focus groups until saturation of data.

Interviews were guided by two central questions which were “Tell me about your experiences in providing nursing care to patients with open abdomen” and “What recommendations can assist professional nurses in caring for patients with open abdomen?” Interviews were conducted by the researcher while nurses were on duty and the intensive care unit was quiet to avoid disturbances and to avoid nurses being called during interviews to care for patients. Nurses who were off duty were also invited for the interviews. Interviews were performed during day and night duty. Three focus group interviews were done during day shift and one focus group interview was done during night shift.

Interviews took between 45 and 90 minutes and were held in a boardroom in the academic hospital where the study was conducted. The room was quiet and free from noise and distraction, comfortable, safe, accessible and convenient, with good lighting. The participants were placed in a circle to encourage interaction amongst one another and encourage eye contact. The participants were given numbers to pin on to maintain anonymity and confidentiality. The participants, together with the interviewer, started by setting ground rules for the group to facilitate respect and communication.

Interviewing skills such as probing, clarifying and summarising were used. Focus group sessions were held until saturation of data was reached. The advantage of using focus groups interviews was that professional nurses were encouraged to express their experiences on how to manage patients with open abdomen. The researcher wrote field notes during the interviews. Refreshments were served before the interviews started and after they had finished.
2.4.4.3 The role of the researcher
The researcher arrived early to welcome the participants, check that the refreshments were ready and prepare the boardroom. The researcher introduced the research topic and research purpose, and ensured everyone was comfortable and relaxed. The researcher handed over the consent forms to participants before interviews were conducted. The researcher encouraged participants to talk freely about all the topics such as psychological problems, wound care, ventilation, pain control, difficulty in absorbing feeds, lack of knowledge and skills, infection rate, fistula, lack of protocols, lack of equipment and poor financial management and probed for greater detail (Polit & Beck; Loiselle & Profetto-McGrath, 2011:234). The researcher observed and noted nonverbal behaviour, reactions and interactions of group members (Houser, 2012:240). The researcher operated the audio-recorder and also wrote field notes. The researcher ensured that the environment was relaxed throughout and thanked the participants for attending.

2.4.4.5 Communication techniques

- **Probing**
Probing is a technique interviewers use to obtain more information in a specific area of the interview (Burns et al. 2013:705). In this study the interviewer used statements like “tell me about your experience in managing patients with open abdomen”.

- **Minimal verbal response**
A verbal response that correlates with occasional nodding such as “mm-mm, yes I see” will show participants that the interviewer is listening (De Vos et al., 2010:289).

- **Active listening**
The interviewer should have superb listening skills such as “nodding the head when agreeing with participants” (De Vos et al., 2010:289).

- **Reflection**
Reflection is to reflect back on something important that the person has just said in order to get him or her to expand on that idea (De Vos et al., 2010:289). An example of reflection is “you are feeling stressed by not having equipment to nurse patients with open abdomen”.

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- **Clarification**
  Clarification embraces a technique that will be used to get clarity on unclear statements, such as “could you tell me more about…” (De Vos et al., 2010:290).

- **Encouragement**
  Encourage the participant to pursue a line of thoughts: “I find that fascinating! Tell me more” (De Vos et al., 2010:290).

- **Comments**
  The interviewer injects his or her own idea or feeling to stimulate the participants into saying more: “I always thought that….” (De Vos et al., 2010:290).

- **Summarising**
  Summarising the participants’ ideas, thoughts and feelings verbalised so far to see whether you really understood what he or she was saying “So what you are saying is….” (De Vos et al. 2010:290).

### 2.4.5 Data analysis

Burns et al., (2013:278) define data analysis as a process of examining and interpreting data in order to elicit meaning, gain understanding and develop empirical knowledge. Data analysis is conducted to reduce, organise and give meaning to data. In this study the researcher performed data analysis concurrently with data collection. The first step in data analysis was immersion in the data, followed by coding of data.

#### 2.4.5.1 Immersion in the data

The researcher familiarised herself with the data by reading and rereading notes and transcripts, recalling observations and experiences, and listening to audio recordings (Burns et al. 2013:280). In this study the researcher spent more time reading and thinking about data. The researcher listened to recordings until she was familiar with the different phrases that professional nurses used to express their experiences in managing patients with open abdomen. The data was transcribed by an independent coder who is an expert in qualitative interviews and has PhD prepared nursing specialising in psychiatric nursing science.
2.4.5.2 Coding of data

Tesch’s eight steps of coding (in Creswell, 2014:198) were used by both the researcher and independent coder to conduct the analysis. The independent coder has PhD prepared nursing specialising in psychiatric nursing science and has experience in analysing qualitative interviews.

1. Read through transcripts to get a sense of the whole.
2. Pick one transcript, read through it while asking: What is this about? Write thoughts in margin.
3. Repeat with all transcripts and make a list of topics.
4. Cluster similar topics together and abbreviate them as codes.
5. Find most descriptive wording for topics and turn them into categories.
6. Group topics that relate to each other.
7. Abbreviate and alphabetise codes.
8. Assemble data.

The researcher, together with the independent coder, analysed data independently and thereafter had a consensus meeting to discuss their results.

2.4.6 Measures of trustworthiness

Health researchers should not only consider the truth value of their studies, but also demonstrate that it is credible and valid for professional practice and that it has quality. Trustworthiness in qualitative research means methodological soundness and adequacy (Holloway & Wheeler, 2010:297). Trustworthiness is the degree of confidence qualitative researchers have in their data, which were assessed using the criteria of credibility, transferability, dependability, confirmability and authenticity (Polit et al., 2011:426; Holloway & Wheeler, 2010: 303).

2.4.6.1 Credibility

Credibility is the truth value of data and data analysis. Credibility can be achieved by ensuring data is taken back to participants to ensure accuracy, and coded data checked with participants and reviewed by experts (Boswell & Cannon, 2014:237). Credibility refers to the confidence in the truth of the data and interpretation. Strategies to ensure
credibility include the following: prolonged engagement, triangulation, member checks and peer debriefing.

- **Prolonged engagement**
  Prolonged engagement means investment of sufficient time in data collection activities to have an in-depth understanding of the culture, language or views of the group under study (Polit *et al.*, 2011:267). In this study the researcher took 45 to 90 minutes to do focus group interviews in order to build trust and rapport with participants. The researcher started by defining the topic, purpose and objectives of the study and also clarifying and answering questions.

- **Member checking**
  Member checking is the checking and verification of data or interpretations of the researcher by participants (Holloway & Wheeler, 2010:340). In this study the researcher was continuously checking the participants during interviews. The researcher summarised, repeated and paraphrased the participant's words.

- **Peer examination**
  Peer examination or peer review means that colleagues who are competent in qualitative research procedures re-analyse the raw data, listen to the researcher's concerns and independent coder and consensus discussions were held with the researcher.

2.4.6.2 **Transferability**
Transferability refers to the applicability of findings to other populations in different contexts. Transferability is accomplished by providing a thorough description of the transferability of research findings ((Boswell & Cannon, 2014:237). Transferability means that the findings in one context can be transferred to similar situations or participants (Holloway & Wheeler, 2010:303). Transferability refers to the extent to which the findings from the data can be transferred to other settings and is thus similar to the concept of generalisability (Polit *et al.*, 2011:270). Strategies to ensure transferability include the following: in-depth description and nominated sample.

- **In-depth description**
In-depth description refers to a rich and thorough description of the research setting and of the transactions and processes observed during the inquiry (Polit et al., 2011:270). In this study the researcher described the results of the research with supporting quotations from the participants.

- **Nominated sample**
The researcher used purposive sampling to choose the participants of the study. In this study a complete description of the inclusion criteria of the population and sample was used.

2.4.6.3 **Dependability**
Dependability means that the research findings should be consistent and accurate (Holloway & Wheeler, 2010:303). Dependability in qualitative research can be described as auditability. Strategies to ensure dependability include the following: audit trial and stepwise replication.

- **Audit trail**
Audit trail is also known as decision trail and is a detailed explanation of the decision-making processes of the researcher to demonstrate the logic and development of the research path (Holloway & Wheeler, 2010:337). In this study the researcher kept audiotapes, interviews, field notes and transcribed focus group interviews as an audit trail under lock and key and only the independent coder, researcher, supervisor and co-supervisor had access to them.

2.4.6.4 **Confirmability**
Confirmability means objectivity or neutrality of the data (Holloway & Wheeler, 2010:303). Strategies to ensure confirmability include the following: audit trail, triangulation.

- **Audit trail**
Audit trail refers to a methodological review of existing documentation (Moule & Goodman, 2014:455). In this research transcripts of focus group interviews, field notes and audiotapes were kept in audit trail.
2.4.6.5 Authenticity

Authenticity in research demonstrates that the findings of a research project are representative of the participants’ perspectives and that the study is fair. It helps participants to understand their social world and improve it (Holloway & Wheeler, 2010:337). Authenticity was ensured by honouring all voices of participants. Authenticity consists of the following:

1. Fairness: The researcher should be fair to all participants in order to gain their acceptance.
2. Ontological authenticity: Research help participants and readers to understand their social world and their human condition better.
3. Educative authenticity: The participants will then be able to improve the way in which they understand other people.
4. Catalytic authenticity: Research enable participants to make decisions.
5. Tactical authenticity: Participants are empowered by research. In this study the researcher reflected the research findings with participant’s quotes.

2.4.7 Ethical consideration

Ethical considerations were described in detail in chapter one.

2.5 CONCLUSION

The research methodology were described in detail in this chapter. Qualitative, descriptive, explorative and contextual strategies were discussed. The research method described the population, sampling, data collection and data analysis. Measures of trustworthiness discussed were credibility, transferability, dependability, confirmability and authenticity. Ethical measures were covered. Chapter 3 will focus on formulation of themes and subthemes which contributed to research findings.
CHAPTER 3
RESEARCH FINDINGS

3.1 INTRODUCTION
Chapter 1 focused on describing research design, method and trustworthiness in detail. This chapter described the results obtained from four focus group interviews, observations and field notes. Themes that emerged were supported by the participants' quotations and literature.

3.2 RESULTS
Data were collected using focus group interviews. Interviews commenced after the researcher had received approval from the Department of Health and the CEO of the hospital to continue with the research. The researcher and the participants agreed on a convenient time to conduct the research. The participants were reminded about the date and time for interviews with phone calls, whatsapp and e-mails. At times the interviews were interrupted when some of the participants were busy with their patients and interviews were rescheduled for later until all participants were able to attend. Participants consented to be included in the interviews and to be audio-taped. Field notes were also collected during the interviews to enrich the data obtained.

The sample consisted of 24 professional nurses who have been working in an intensive care unit for more than a year caring for patients with open abdomen. The participants' age ranged from 28 to 60 years. Both male and female nurses were included and 98% participants were females. Each focus group session consisted of six participants that were purposively chosen from the intensive care unit of an academic hospital. The researcher performed a total of four interviews. One interview was conducted at night because the participants were working night duty and three interviews were conducted during the day.

Participants were asked two central questions:
- Tell me about your experiences in taking care of patients with open abdomen.
- What recommendations can assist professional nurses in caring for patients with open abdomen?
Data were analysed using Tesch’s eight steps of coding (in Creswell, 2014:198). Data of focus group transcriptions were analysed by an independent coder and consensus was reached regarding themes and sub-themes. Themes and sub-themes were later confirmed by the researcher’s supervisors. Themes and sub-themes emerged as stated in table 3.1 below.

### Table 3.1: Themes and sub-themes that emerged

<table>
<thead>
<tr>
<th>THEMES</th>
<th>SUB-THEMES</th>
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<tbody>
<tr>
<td>3.1.1 Difficulties in nursing care</td>
<td>3.1.1.1 Psychological problems</td>
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<td>3.1.1.6 Lack of knowledge and skills</td>
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<td>3.1.2 Complications suffered by</td>
<td>3.1.2.1 Infection rate</td>
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<td>3.1.3 Poor hospital administration</td>
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<td>3.1.3.3 Poor financial management</td>
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Themes and field notes were entered in capital letters and highlighted in bold. Sub-themes were reflected in sentence case and direct quotes from participants in italics and highlighted in blue. Quotes from African languages were entered in sentence case, in bold format and bracketed, then translated to English. Recommendations were supported with evidence from literature and will be discussed simultaneously with the themes that emerged. A discussion of themes and sub-themes follows.

### 3.1.1 Theme 1: Difficulties in Nursing Care

The participants verbalised that they experienced difficulties in caring for patients with open abdomen. The challenges that professional nurses face regarding difficulties in nursing care will be discussed under the following subthemes: psychological problems, wound care, pain control, ventilation, difficulty in absorbing feeds and lack of knowledge and skills.
3.1.1.1 Subtheme: Psychological problems

The participants stated that nursing staff experienced psychological problems as they were frustrated and also acquired infections when nursing patients with open abdomen. Nurses are prone to develop infections such as sore throat. This resulted in increased absenteeism in the unit leading to shortage of staff.

This is evidenced by the following quotations:

“Nursing patients with open abdomen is very tricky and challenging. Me basically is more on the personal side. I was shocked at first. It was for the first time to see the real gut outside and the tubes lying around outside. It is really scary.”

“Nurses become psychologically affected, like now we must start circulating the patient. If we are seven then it must be one, two so that everybody nurses the patient.”

“We end up frustrated on how to help patients with all the sedation that has been stopped.”

In a study done in five hospitals in Sao Paulo Petro and Pedrao (2009:1-2) concluded that stress has been observed among various professional nurses, including intensive care unit nurses. The stress is caused by being in close contact with patients in distress and at risk of dying. The study was conducted with a total of 21 nurses and the results showed that 51, 1% of nurses consider the ICU a stressful place and 23% achieved the highest score indicating the presence of stress.

Petro and Pedrao (2009:1-2) further state that nursing is a stressful occupation because nurses work with people who are suffering and who need abundant attention, compassion and sympathy. Nurses become irritable, depressed and disappointed when they deal with this type of situation. Other factors that trigger stresses amongst nurses in the ICU are the difficulty of accepting death, and scarcity of material (beds and equipment) and human resources. Nurses are also faced with tense decision-making processes when they must decide which patients to treat first.

Another study by Moola, Ehlers and Hattingh (2008:74, 75, 78 & 81) in the Tshwane Metropolitan area indicated that critical care nurses (CCN) experience stressful situations in their daily working environments. CCNs work in the highly technical critical
care environment with various machines such as ventilators. The critical incidents which nurses encounter entail that the majority of critical care nurses are in danger of post-traumatic stress disorder. In this study participants highlighted negative physical and emotional symptoms, such as frustration, irritability, anger, emotional fearfulness, being over-sensitive and temperamental. Some participants decided to absent themselves from work because they could not cope, have a low morale and low self-esteem. Nurses thought this was the only way of coping (Moola et al., 2008:74, 75, 78 & 81).

A participant commented:
“Absenteeism kicks in. We don’t have enough staff to nurse patients who are septic and critical.”

The researcher’s findings through field notes collected during focus group interviews reflected that professional nurses are stressed by nursing critically ill patients with open abdomen, lack of protocols to guide them on how to manage these patients, lack of equipment to monitor abdominal pressures, suction dressings that are not regulated and not functioning properly and abdominal wound dehiscence. During interviews participants appeared frustrated, showed signs of irritability and, at times, the researcher could notice this in the tone of voice going up, or even the shaking of their heads to reinforce their anger and frustration. When patients with open abdomen came from theatre critically ill, unstable and acidotic, on inotropic support and with multiple transfusions, for example blood, fresh frozen plasma and platelets, participants became more stressed.

The participants suggested support as a means to estimate frustration in saying:
“The social worker needs to play a role.”

According to Hanna (2007:38-47) employees may benefit from brief interventions, called debriefing or critical incident stress debriefing when exposed to a traumatic event. Debriefing is an event-processing session conducted as a conversation between peers whereby information is shared amongst them. The group is helped by the therapist, counsellor or professional peer to process the information being shared within a group. The therapist or councillor conducting the session should acquire professional knowledge and have professional skills. The therapist will be able to give guidance
throughout the process that has been established that will assist staff members to recover from their distress.

One participant said:

“Professional nurses don’t want to go for debriefing……. (PAUSE)”

According to Rosenstein (2013:1-3) there is an increase in compassion fatigue and burnout amongst the nursing staff. Their lower levels of compassion satisfaction increases. The first step is to increase the nurses’ awareness. Educate them about the signs and symptoms and problems related to stress, burnout and compassion fatigue. Inform them about the negative effect regarding the nurses’ wellbeing and patient care. Addressing the reluctance of the physician should also be considered as the second step. This step ensures that the nurses admits the situation and accept help from outside advice or assistance.

Organisations need to show sensitivity when addressing these issues affecting nursing staff. Organisations must ensure confidentiality and acknowledging the intentions of providing services that will assist the nurses’ practise effectively and to their satisfaction. The different types of services can be accessed and be available and affordable through Human Resources and Wellness Committees or outside resources. Individual coaching and counselling will benefit the professionals with deeper issues. Trained individuals should conduct these interventions and should familiarise themselves with the nurses’ life. The significance of maintaining a positive lifestyle and work-life balance should be emphasised and be reinforced. The organisational priority should be provision of services and logistical support to nurses. The organisation should focus mainly on addressing the nurses’ access and convenience and encouraging them (Rosenstein, 2013:1-3).

A participant suggested that:

“Teamwork is very important. You see someone struggling in ICU and you assist them. ICU is one to one management. Sometimes it is me and my patient and one for the whole night. Teamwork is very important”.

According to Reader and Cuthbertson (2011:1) teamwork in ICU refers to the leadership, decision-making, communication and coordination behaviours used by multidisciplinary team members to provide patient care. Patient safety research has
revealed the importance of effective teamwork to ensure positive patient outcomes in the ICU. Poor communication during rounds and handovers (or handoffs) is frequently quoted as a cause of medical error and units with high levels of nurse-doctor collaboration have improved patient mortality rates and reduced average patient length of stay. Team skills are essential to maintain safety. Multidisciplinary teams should perform well when they are facing complex, stressful and conditions that are uncertain (Reader & Cuthbertson, 2011:1).

Reader, Flin, Mearns and Cuthbertson (2009:1787-1793) refer to teamwork as a way in which the team members function and coordinate to produce a “synchronised” output. Patient safety research has revealed that poor teamwork is the cause of underlying critical incidents in intensive care units. Effective teamwork is shown as important for providing optimal patient care in the intensive care unit. Team communication is the transfer of information, ideas and opinions among the members of a team. Observations of ICU teams have revealed errors in the ICU - especially after communication events (shift changes and handoffs) - and 37% of errors are associated with communication between nurses and the physician.

Mutual cooperation, teamwork and problem solving should be encouraged. Members of other departments should be invited to attend nurse meetings on a regular basis. They should be encouraged to introduce and greet each other when shifts starts and discuss the issues within their departments. To improve the nurse’s morale and motivation then it is important to introduce a supportive and mutually cooperative relationship which will inspire them (Cardenas, 2015:2).

A participant said:

“Address the communication issues. There is lack of information between the multidisciplinary team (MDT). If we can have during the rounds nutritionist, physio, physician, nurses, doctors and consultant. Nurses must be there but they will say let them do it. Communication has been broken somewhere around the line. You don’t know what the discussion about twenty mls was. We are rigid to our protocol. We need to be there during the rounds.”

According to Restrepo (2012:9-31) the opinions of other members of the multidisciplinary health team is very important and that the team should discuss their
actions. Each member of the team is accountable and responsible to all other members of the disciplinary team and members should advocate for the patient and team.

Cardenas (2015:2) suggests the utilisation of positive communication with nurses in order to develop a friendly, caring and supportive atmosphere. Provision of training on positive, caring communication for all categories of nurses. Scheduling regular one-to-one meetings with each nurse. These meetings can be held daily or on a weekly basis. The purpose is to listen, to get feedback, to communicate their expectations, offering them advice about nurses’ career and to guide them on the work goals, is a further suggestion, as is providing nurses with support for specific problems they are experiencing. Nurses who are experiencing frustration with a difficult situation should be assigned a mentor who is experienced in nursing and who is caring and empathetic. The mentor will partner with the nurse teaching, supervising and showing him patient care.

3.1.1.2 Subtheme: Wound care

The dressings of patients with open abdomen leak and due to abdomens that are left open, pressure care is not always possible, leading to patient developing bedsores. Participants experience challenges with suction dressing/Vac dressing. The suction dressing is not regulated or not working properly. Suction dressing is either sucking too much or sucking too little. Suction dressing can end up sucking a lot of blood from the abdomen, causing the patient’s haemoglobin to drop. If sucking too little the dressing can cause an accumulation of fluid in the abdomen, which results in fluid leaking and patients being wet. The colostomies are leaking and difficult to secure and they erode the patient’s skin.

This is evidenced by the following direct quotations:

“If dressings are not done properly they leak. The fluid causes the skin to be eroded. They can have pressure sores. Wound doesn’t heal properly.”

“You find that dressings are leaking and therefore patients are forever wet. Suction is a problem. Power should be regulated but working in a government institution then we have to use what we have. Suction is not regulated and sometimes it is sucking a lot (FRUSTRATED AND ANGRY, PARTICIPANT IS FROWNING)”.
According to Schecter, Ivatury, Rotondo and Hirshberg (2006:391) the major problem in wound care is leakage of large volumes of peritoneal fluid from the abdomen onto the patient’s bed.

“The dressing over the area. If patient has a colostomy and open abdomen. You don’t know how to put opsite dressing. Dressing e ba nyane (meaning it becomes smaller to cover that area). You are faced with whether to put it over the bag or below the bag and faeces goes into the abdomen (FEELING HELPLESS, PARTICIPANTS SHOWING WITH HER HANDS THAT THERE IS NOTHING SHE CAN DO)”.

Rull (2015:1) stated that an ostomy is an operation whereby an opening is made from the inside of an organ to the outside. The Greek word for stoma is mouth or opening. The part of the ostomy which is attached from the skin is called a stoma. In case of colostomies, ileostomies and urostomies, a stoma bag is connected to the opening, so that either faeces or urine empties into this bag. Patients with a stoma become very anxious and depressed. The skin at the site of the stoma can become erythemous and fissured, or can develop an allergic reaction to the materials used in stoma equipment. There is a high possibility of developing dehydration in patients who have high output ileostomies. These patients have a tendency to bleed from the stoma site when the bag is changed.

This is further supported by Oakley (2015:1-2) who states that, worldwide, millions of individuals have stomas. Oakley agrees with Rull in that skin problems related to stoma are extremely common. If the stoma is leaking and also if there is an underlying skin disease or infection then the skin around a stoma may become inflamed (red, swollen and painful). The appliance may leak for the following reasons: it may be the wrong size, it may be incorrectly sited and/or there may be skin folds due to obesity or scarring from surgery. Excessive perspiration could prevent it from sticking to the skin properly and patients might develop a skin rash. The effluent from the stoma may be huge and it may corrode the hydrocolloid.

According to Dorman (2009:4), the size of the opening in the barrier seems to cause many challenges for the majority of nurses. The opening of the barrier should be large enough so that it matches the stoma size, without compressing the stoma. The size of the stoma reduces in size postoperatively and it takes eight weeks for the stoma to
reach its stable size. The size of the opening in the barrier needs to be adjusted as time passes. Often, the staff cuts the barrier too large allowing for the effluent to rest on the skin and this results in skin irritation.

A participant said:

“Concerning colostomy bags. The way we apply them is a wrong way. In other hospitals whenever we have patients having colostomies, the colostomy sisters come to show everyone how to change the colostomy and how many days it is supposed to be changed.”

According to Bogebjerg (2006:22), there is always a high probability that the leakage occur due to failure of an adhesive. The type of adhesive used, how physically active the wearer is determines the risk of leakage. Leakage develop on the skin which surround the stoma. If the stoma is situated on a skin crease, at skin level or below skin level, or if the patient has gained a great deal of weight after the operation, a fissure is created around the stoma. The adhesive can be very difficult to stick. As a result, the skin is exposed to faeces leaking beneath the baseplate. The skin will be affected to a greater or lesser extent depending on the composition of the stool and the length of exposure. The adhesive will have to be changed to maintain healthy skin in cases where there is leakage. When the adhesive is peeled off frequently then skin is prone to increase surface stripping. A special stoma paste can be utilised to prevent leakage and to smooth out any uneven skin surfaces before the baseplate is applied (Bogebjerg, 2006:22).

A participant added:

“If patients didn’t get enough education or information. If the bag is full of faeces. He is not aware of what is going on. He is used to faeces coming from the rectum and all faeces are now coming from the abdomen. Nobody explained to him or to family about change of lifestyle”.

Dorman (2009:1) states that nurses are affected by patients with an ostomy. Nurses can be affected either positively or negatively and this depends upon the nurse’s comfort level. Many nurses don’t have the chance to care for ostomates, or they shy away from doing so because of inexperience, lack of formal training or insecurities. The nurse’s personal feelings toward ostomies, time constraints and inadequate supplies all play an
important role in the outcomes of the patients. Nurses must assess the physical and emotional disabilities of patients with stomas that may have an impact on the ability to perform ostomy care.

According to Stoma care (n.d.), medication will sometimes be necessary to relieve problems. Loperamide, opiates and codeine sulphate can be used for relieve of diarrhoea, whereas for relieve of constipation, magnesium hydroxide or ispagula husk will be used as per prescription.

A participant commented:
“If the dressing is not properly secured it sips. The dressing will be changed after 48 hours. After 48 hours then it is who is supposed to do the dressing? Is it the nurse who is supposed to change the dressing or is it the doctor who is supposed to change the dressing? If it is the doctors then you end up running around the whole day waiting for them to change the dressing”.

Friese (2012:492) state that patients with open abdomen have peritoneal contents exposed to atmosphere. Patients with open abdomen need a complex dressing to maintain fascial domain and provide protection to exposed organs. Open abdomen patients are critically ill and are managed in the ICU early in their disease process. The goal is formal abdominal fascial closure within 48-72 hours of the initial laparotomy. Frequent daily trips to the operating room are needed for incremental closure of the abdominal fascia. In some cases where there is ongoing visceral oedema and the peritoneal domain is lost, fascial closure is difficult and impossible.

Furthermore, according to Friese (2012: 493), several devices are available to help in achieving either early or delayed fascial closure during primary hospitalisation after damage control laparotomy. Negative-pressure dressings using suction devices with sponges embedded into non-adherent plastic material placed into the peritoneal space is one of the most common devices to be used. The negative pressure provided by these suction devices assists in lowering tissue oedema and providing constant force, drawing the fascia toward midline.

The most extensively used methods for temporary abdominal wall closure is negative pressure therapy techniques. Negative pressure therapy is an easy method and utilises
a fenestrated polyethylene sheet between the abdominal viscera and parietal peritoneum, followed by a moist towel, kerlix gauze bandage rolls with closed suction drains or sponge covered with an occlusive adhesive drape and is known as the “vacuum pack technique” or the oposite sandwich technique. This method is inexpensive and can be applied and changed easily to protect the viscera, prevent adhesions, remove exudate and prevent some loss of domain. Negative pressure therapy helps in actively draining the toxin or bacteria-rich intra-peritoneal fluid. Negative pressure therapy facilitate increased fascial and abdominal wall closure (Sartelli, Abu-Zidan, Ansaloni, Bala, Beltran, Biffl, Catena, Chiara, Coccolini, Coimbra, Demetrashvili, Demetriades, Diaz, Di Saverio, Fraga, Ghnnam, Griffiths, Gupta, Hecker, Karamarkovic, Kong, Kafka-Ritsch, Kluger, Latifi, Leppaniemi, Lee, McFarlane, Marwah, Moore, Ordonez, Pereira, Plaudis, Shelat, Ulrych, Zachariah, Zielinski, Garcia & Moore, 2015:75-76).

Singh, Singh, Singh, Pandey and Singh, D. (2008:1) state that vacuum-assisted closure (VAC) has changed the plastic surgery practice and wound management in the last decade. This method has become the preferable method of wound management. The equipment is not expensive and has become an important part of all major surgery in the western world. In an ideal world VAC dressing equipment should be available at all times and to all patients who need it. The shortage of equipment in developing countries or even unavailability in the developing world is a common problem. The VAC dressing and equipment standardised by Kinetic Concepts, Inc., (KCI) has provided a great tool in the field of wound management. Surgeries are postponed or delayed by surgeons at some point in their career because of delay in procurement of VAC equipment.

Caro, Olona, Jimenez, Vadillo, Feliu and Vicente (2011:277) agree that VAC with abdominal dressing therapy help to stabilise the abdominal wall and improve respiratory function in patients, quantify and drain exudate from the wound and reduce contamination by creating an interface between the abdominal cavity and the exterior. VAC therapy has an advantage in speeding up the healing process and enabling early movement of the patient by reducing the frequency of treatment to every 48 hours, which has a positive effect on the patient’s psychological state. The abdominal cavity has to be checked and washed during each treatment if necessary.

A participant added:
“When patients are coming from theatre it is important to measure suction/VAC dressing. It guides you if patient is bleeding too much. You must observe the haemoglobin when doing arterial blood gases. Watch haemoglobin. If it is dropping it means there is a problem somewhere, so patients must go back to theatre”.

However, Demetriades (2012:22) states that pressure settings in patients with Vac dressing should be individualised per patient. In cases of incomplete haemostasis bleeding may be aggravated by using high negative pressures. In these cases it is advisable to use negative pressure which are low. If there is no active intra-abdominal bleeding then start with negative pressure at -125 mmHg. If there is suspicion of active bleeding due to bleeding disorders and not suitable to be repair surgically then consider starting pressures of -25 to -50 mmHg and monitor output frequently and closely. The amount of postoperatively bleeding measured in canister and bladder pressures for intra-abdominal pressures should be frequently monitored. Furthermore, Caro et al., (2011: 278) agree with Demetriades (2012:22) that the habitual negative pressure used between -100 and -125 mmHg may contribute to development of fistula. For this reason, in patients with enteric fistulae, we utilise an intermittent negative pressure that is lower than normal (-50 mmHg).

A participant said:
“The pressure gauge is not okay. We might happen that we put a patient on a certain gauge, however we are delivering different amount of pressure gauge and this lead to complications”.

The participants suggested the following regarding wound care:
“I feel patients with open abdomen should have (PAUSE) don’t know whether to say a procedure or protocol. This start when you nurse a patient with open abdomen. You have to think of the sitting position, the changing of dressing and the pressure of suction. Be put in a protocol. This is how to nurse patients with open abdomen and this is how to do intra-abdominal pressure. As a guideline on how to manage patients with open abdomen.”
“If we could have, if the hospital can organise the regulated suction. There is a certain degree of suction we need to regulate. It is a big challenge. It goes back to the budget of the hospital. Doctors should take it up with the management or sort it out (IRITTABLE AND ANGRY, PARTICIPANT S TONE OF VOICE GOING UP).”
Spencer, Kinsman and Fuzzard (2008:26) state that after decompression, the nurses are challenged by the complex dressings and which involves negative pressure dressings or VAC systems that prevent re-accumulation of the fluid inside the abdomen. Assessment of dressing integrity is important in ensuring that the negative pressure is intact. Spencer et al., (2008:26) further state that if there is breakage in the abdominal wound dressing then these may cause negative pressure to be lost and will impact on the effectiveness of the VAC dressing to remove the fluid. Accumulation of the fluid creates leakage of dressings. The recommendations from the manufacturers include maintaining the suction settings within -50 to -200 mmHg, regulated either continuously or intermittently.

“The doctors or nurses should call the wound specialist. They are the ones who are supposed to be assigned to do the dressing. They should come and do the dressing. They are wound specialists and have specialised materials to use for the dressing.”

Dorman (2009:2) states the importance of appropriate referrals being made to various departments such as social work, psychiatry, occupational therapy and wound ostomy continence nurse (WOCN). Visitor programmes exist in some cases whereby a new ostomy patient can be visited by an experienced ostomates for additional support. Nurses should refer ostomy patients to support groups within local hospitals and to online United Ostomy Association of America. The site has active discussion boards for various types of incontinent and continent diversions. The site supports youth, adult and parent networks. The Wound Ostomy and Continence Nurses Society has a website where patients and families can find information and also locate a local WOCN as a resource (Dorman, 2009:2).

According to Schecter et al., (2006:394) access to the wound should be limited to only experienced care providers who know the wound intimately. Free access to the wound for all members of the surgical and nursing team guarantees fistula formation.

This is evidenced by a participant noting:

“Based on the dressing. Protocol says it must be changed by the doctor, MO or the registrar. What usually happens is in-service training is poor between nurses and
doctors. Some nurses and doctors are not guided on how to do the dressing. Lead to contamination of the abdomen and may lead to patients staying longer in ICU.”

Schecter et al., (2006:394) state that a poorly placed stoma can frustrate the best efforts to achieve progressive delayed primary abdominal closure and can result in a large ventral hernia which needs a complex delayed reconstruction.

3.1.1.3 Subtheme: Pain control

Participants are of the opinion that pain is not well controlled in patients with open abdomen. Patients become restless and hypertensive. Patients also experience pain when dressings are removed. The dressings adhere to the skin, causing pain. Doctors stop the analgesia quickly while the patients still need them. Mostly patients with open abdomen are mechanically ventilated so it is difficult for them to verbalise that they are having pain.

Participants stated the following:

“It is a big challenge with pain control because our doctors prescribe morphine but some don’t settle with morphine. Some other institutions prefer suppositories which used to work much better. The pain is around the abdomen and pelvis. Some doctors don’t believe in pain control. They put them on tramal and we find pain control is not up to scratch. Patients become restless, anxious, hypertensive. We get real problems which affect ventilation.”

“Control of pain. It is the most important thing (EMPHASIS, NODDING HER HEAD). If you don’t control pain then you delay wound healing. We have seen in some instances where they have stopped all analgesia and sedation. Patients take long time to heal. The more you sedate, you minimise patients to cough and minimise complications. Pain must be well controlled - more especially in the first few days.”

“They stop too sudden to give something for pain. This tramal thing that has been introduced is not effective. Patients should be fully sedated for three days. There you find that there is no morphine and dormicum on the second day. Patients with open abdomen have severe pain. Pain, Pain delays everything (IRRITATED, VOICE UP AND SHAKING).”
Sakata (2010:n.p) states that the majority of patients at ICU suffer from pain, fear and anxiety. It is important to give analgesics and sedatives to ensure patient comfort, reducing stress and to improve patients’ recovery and facilitate ventilator weaning. Research has revealed in one study that fewer than 50% of the patients are getting good pain control medication at the ICU (Sakata, 2010:n.p).

There are several factors which are regarded as barriers of pain control: the physician’s conduct, utilization of protocols without evidence, the professional’s resistance in changing the conduct, inadequate method of assessment and insufficient training of the professionals regarding pain assessment and treatment.

Sakata (2010:n.p) is of the opinion that pain relief is important for the recovery of the patients. Assessing pain and sedation is complicated in an ICU setting because the patients are unable to tell the physicians and nursing staff verbally that they are experiencing pain because they are being intubated and ventilated. The American Association of Critical Care Nurses (2013:1) states that during their hospital and ICU stay the critically ill adult patients suffer from pain. More than 30% have severe pain even when they are resting and more than 50% have excruciating pain when routine procedures, such as turning, endotracheal suctioning and wound care are being done. Negative consequences result from pain that is not attended to and lead to multisystem complications and the development of chronic disabling pain.

According to the American Association of Critical Care Nurses (2013:1), the patient’s normal functioning, quality of life and wellbeing are being affected by these results. The patient’s self-report is the gold standard for assessment, since pain is multidimensional and subjective. Alteration in the patients’ level of consciousness, the administration of sedative drugs and mechanical ventilation result in failure of patient to self-report about pain. Failure to self-report is a challenge for nurses in the critically ill patient when assessing pain. Nurses should consider utilising other options like the observational pain assessment tools.

A participant added:

“Inadequate pain control delays wound healing. They will be in pain, be restless, coughing and these lead to wound disembowelment. The abdomen get damaged
(REINFORCEMENT, REPEATING WORDS). I don’t know whether to say damaged or delay wound healing.”

Layzell (2005:34-36) states that many patients still experience unnecessary pain despite the developments in knowledge of pain control. A significant number of patients suffer from moderate to severe pain after surgery irrespective of the pain teams which have been introduced and the new techniques used for controlling pain. The occurrence of chronic pain post operatively is due to pain that is not well managed after surgery. Anaesthetists are inadequately prescribing pain medication and this result in patients experiencing excruciating pain resulting in severe complications. Nurses spend time chasing anaesthetists, who in some circumstances had left the department, for further analgesia because inadequately prescribed pain medication results in patients experiencing longer periods of severe pain.

A scenario extracted from Wallace, Mecklenburg and Hanling (2009:1228-1229) states that pain control after abdominal penetrating trauma in combat veterans presents a difficult problem for physicians. Most of the patients are very young and are healthy patients who have never experienced significant injury. A 20-year old, previously healthy male in the armed forces suffered a gunshot wound to the abdomen while patrolling. He underwent 25 abdominal surgeries over a 10-month period as a result of the original injury, formation of multiple abscesses and multiple enterocutaneous fistulas. The patient presented to the hospital four months before the date of surgery due to dehydration and pain. Wallace et al., (2009:1228-1229) state that the chronic management specialists had difficulty in achieving satisfactory pain control even though high dose opioid therapy and multiple pharmacological adjuncts were given. The patient required 50 mg of morphine intravenously daily and reported pain scores of 6-8/10 on the visual analogue pain scale. The patient remained awake even after being given significant doses and was agitated and restless. He constantly moved, changed positions and pulled at his endotracheal tube. The surgeons started a dexmedetomidine infusion to provide better sedation and analgesia.

According to Wallace et al., (2009:1228-1229), the patient responded very well to dexmedetomidine. There was a dramatic improvement noted in the patient’s willingness to cooperate with his multidisciplinary team. He was fully awake, comfortable and
reported 0/10 pain. The patient was no longer in pain and cooperated with nurses during nursing assessments (Wallace et al., 2009:1228-1229).

Spencer et al., (2008:26) state that abdominal pain may be acute or insidious. In the beginning the pain will be dull and poorly localised and will often progress to steady, severe and more localised pain (Sartelli, 2010:5-9). The entire dressing should be done every 48 hours because granulation tissue becomes embedded in the foam thereafter and can delay healing and result in pain when vacuum-assisted closure is removed.

The participants recommended the following suggestions regarding pain control:
“Regarding pain control. We need to consider the position on how to elevate the head of the bed. If we elevate too much beyond forty five degree, we compress the abdomen and cause more pain on the patient. They really need pain control. If not properly controlled then we compromise respiratory function. Patient will be hyperventilating. Struggling to get proper oxygenation.”

“We need to adhere to giving prescribed drugs. If they say give morphine and dormicum two hourly then it must strictly be given two hourly. You must not for the next hour.”
“I agree with sister D with sedation of the patients. If you don’t give sedation the patients will cough and burst the abdomen.”

Rijkenberg, Stilma, Endeman, Bosman and Oudemans-van Straaten (2015:167) state that the Society of Intensive Care Medicine recommends that pain be assessed frequently and routinely in all ICU patients. A patient’s self-report of pain is regarded as the gold standard in the assessment of pain. The Behavioural Pain Scale (BPS) and Critical Care Pain Observation Tool (CPOT) are behavioural pain assessment tools for patients who are sedated and not communicating in ICU.

Georgiou, Hadjibalassi, Lambrinou, Andreou and Papanassoglou (2015: 6) state that pain assessment tools should be included into daily practice such as in the nursing practice because it is recommended in most recent guidelines and quality improvement initiatives. This will assist health care professionals in the early identification and efficient management of pain and also optimum utilisation of sedatives and analgesia in the intensive care unit. Further, clinical and theoretical training on pain assessment
should be included in nursing and medical school curricula, as well as in continuous education. This training will assist clinicians to better understand the importance of prompt identification and management of pain.

Hajiesmaeili and Safari (2012:237-238) state that pain management should be included in the ICU checklist, as a part of routine because it can serve as an important and valuable tool in minimising the patient’s discomfort. Management of mechanically ventilated patients in ICU involves the utilizing and incorporating pain and sedation assessment tools in order to optimise the dosage of analgesia and sedatives.

According to Corke (2013:1), the goal of pain management after theatre is to facilitate patient comfort, encourage early mobilisation and improve early recovery and prevent acute pain that can result in chronic pain. The amount of excruciating pain after theatre is caused by the site where the operation was done and the extent of tissue damage. Surgery done on the lower abdomen is better that thoracic and upper abdominal operations regarding pain, which are also more painful than the limb operations. Corke (2013:1) states that unrelieved pain post-surgery interferes with sleep and physical functioning and could negatively affect a patient’s wellbeing on multiple levels. Good pain control is crucial in preventing negative outcomes like hypertension, myocardial ischemia, arrhythmias, respiratory impairment, ileus and poor wound healing. Corke (2013:202-205) further notes that opioids, delivered by patient-controlled analgesia (PCA), are the main analgesia for the treatment of moderate to severe postoperative pain. Unfortunately, PCA has several opioid-related adverse effects limiting their use in many patients. A combining analgesia that acts through different receptor sites could produce additive or synergistic pain relief and could lower opioid use.

Furthermore, Corke (2013:202-205) state that there is increasing evidence that less invasive regional analgesia can be as effective even though epidural techniques can provide excellent analgesia following major surgery. Local anaesthetic wound infusions can have important benefits in procedures such as open nephrectomy, mastectomy and inguinal hernia repair. For postoperative pain, ultrasound-guided peripheral nerve blocks are increasingly being used. A patient-specific approach to pain is needed, taking into account the surgical procedure, preoperative medical and psychological status, age, concurrent opioid use and patient preference.
Sakata (2010:n.p) states that the patient undergoing mechanical ventilation should be assessed regarding pain and sedation to have the drug optimised. Other methods should be used if patient is unable to communicate. The Behavioural Pain Scale (BPS) can be utilised, with scores from 3 to 12. The observation of the facial expression, body movements and muscle tension should be in synchrony with the ventilator. The BPS is easy to interpret and is used to assess the pain in sedated patients or those submitted to a mechanical ventilation. A score of >6, is considered not acceptable.

Awissi, Begin, Moisan, Lachaine and Skrobik (2012:21-28) recommended the following strategies whereby giving the right drugs in the right dose to the right patient at the right time for the right reasons should be practiced and used in order to develop practice protocol. The recommendation from the researcher is that if these strategies are employed then patients with open abdomen will be free from pain as medication will be administered at the right time as prescribed. The South African Nursing Council, in terms of section 45 of the Nursing Act, 1978 (Act 50 of 1978) states that an authorised nurse who is supplying, administering or prescribing a prescribed medicine to a patient in terms of regulations shall directly after supply, administering or prescribing, enter the name, quantity, strength and dosage of the medication supplied and prescribed. The Nursing Act, 2005 (Act No 33 Of 2005) states that a person registered in terms of section (1) may acquire, use, possess or supply medicine subject to the provisions of the Medicines and Related Substances Act, 1965 (Act No.101 Of 1965) and dispense medicines subject to the provisions of the Medicines and Related Substances Act,1965.

3.1.1.4 Subtheme: Ventilation

The participants stated that ventilating patients with open abdomen is problematic as there are no protocols guiding them on how to ventilate these patients. These patients have distended abdomen which increases the abdominal pressure and intra-thoracic pressure and affect ventilation and respiration of the patients.

Cineli (2008:7) states that, in the results of the 14th Annual General Surgery Refresher Course at Dalhousie University, a requirement for breathing and coughing effectively depends on patient having an intact abdominal wall. Patients with an open abdomen will definitely need a period of mechanical ventilation. After a couple of weeks the intrinsic strength of the abdominal wound is sufficient to allow for ventilator weaning.
This is evidenced by the following quotations from the participants:

“Ventilation becomes a big problem because the open abdomen patients are predisposed to have abdominal pressure. They end up having problems with ventilation due to increased pressure in the abdomen. Hence the cardiothoracic cavity becomes decreased to the lungs and heart to pump due to circulatory (MUMBLING, SAYING MMM) their normal work, their ordinary circulatory…..”

“Patients become restless, anxious, hypertensive. We get real problems which affect ventilation.”

Lee (2012:5) states that the diaphragm is pushed upwards and impinges on the thoracic cavity when there is intestinal gas, fluid and oedematous organs distending the abdomen. The intra-abdominal pressure interferes with the patients’ respiration and ventilation because more than 50% is dispersed across the diaphragm. Pulmonary dysfunction is the only earliest sign of abdominal compartment syndrome. The lungs cannot fully expand and respiratory excursion is limited causing reduction in inhaled tidal volume, resulting in hypoxia. Hypercarbia and respiratory acidosis are caused by retention of carbon dioxide.

A participant said:

“The abdominal distention leads to increased intra-thoracic pressure and compromised patient’s ventilation.”

According to Spencer et al., (2008:24), increased thoracic pressures represent impending abdominal compartment pressure. The oxygen exchange of the lungs is impaired and the lung which is compressed is unable to expand. Atelectasis occur due to the pressure that is increasing and this results in reduction of oxygen uptake within the blood. Hypoxemia is observed in these patients and augmentation of oxygen delivery will be beneficial. Positive end expiratory pressure (PEEP) is another support measure which is significant if the lungs become more compressed and inefficient in exchanging oxygen. PEEP prevent cyclic opening and collapsing alveoli in acute respiratory distress syndrome (ARDS) patients (Vargas, Sutherasan, Gregoretti & Pelosi, 2014:1-2).
Wittmann (2010:10) states that both hemi diaphragms are pushed upwards as a result of high intra-abdominal pressure, reduced thoracic volume and decreased compliance. Reduced volume within the pleural cavities causes atelectasis and reduces alveolar clearance. Infections in the lungs may occur. Pneumonia is a complication which occur due to abdominal hypertension resulting from diffuse peritonitis.

According to Pelosi and Vargas (2012:1) intra-abdominal hypertension has negative effects on the respiratory system and also on peripheral organs. Acute respiratory distress syndrome (ARDS) develop when there is injury to the alveolar capillaries. Damage to the alveolar capillaries result in intra-abdominal hypertension promoting lung injury and oedema. This makes it difficult for the pulmonary lymphatic drainage and increases intra-thoracic pressures. Atelectasis develop and respiratory mechanisms and gas exchange deteriorate.

Coppola, Froio and Chiumello (2014:2-6) noted that pulmonary complications remain to be significant challenges after theatre. Pulmonary complications develop in 5-10% of all surgically ill patients and 9-40% of the patients doing abdominal operation. Patients experience pulmonary complications after operation and lung atelectasis as the principle mechanisms for the development of ventilator-induced lung injury (VILI), pneumonia and postoperative respiratory failure. Coppola et al., (2014: 2-6) state although mechanical ventilation is a procedure which appears to be safe, it can also generate pulmonary stress and strain promoting lung injury.

Furthermore, Lee (2012:5) states that atelectasis causes ventilation-perfusion mismatch and reduces the ratio of partial pressure of arterial oxygen (\(\text{PaO}_2\)) to a fraction of inspired oxygen. Hospital or ventilator-acquired pneumonia develop and is linked to atelectasis. Intra-abdominal hypertension increases peak airway and plateau pressures in patients with mechanical ventilation. The increases suggest acute lung injury and result in utilizing lung protective strategies such as peep and reduced tidal volume.

The participants were aware that pain control will lead to pulmonary complications. If pain is not well controlled then patients may develop pulmonary complications which lead to ARDS.

Participants noted the following:
“Control of pain. It is very important. The more you sedate, you minimise patients to cough and minimise complications. Pain must be well controlled especially in the first few days.”

“Regarding pain control. We need to consider the position on how to elevate the head of the bed. If we elevate too much beyond forty five degree, we compress the abdomen and cause more pain on the patient. They really need pain control. If not properly controlled we compromise respiratory function. Patient will be hyperventilating. Struggling to get proper oxygenation.”

Pelosi and Vargas (2012:2) state that a ventilation strategy with reduced tidal volume (6 ml/kg ideal body weight) and an airway plateau pressure of below 30 cm H\textsubscript{2}O assist in increasing the survival rate in ARDS. Ventilating patients with low tidal volume results in de-recruiting the alveoli in case of patients having ARDS which is linked to intra-abdominal hypertension (IAH). The tidal volume affect IAH and it depends on the degree of inspiratory trans-pulmonary pressure that has been decreased by the cephalic shift of the diaphragm. ARDS recruitment manoeuvres have important effect on the patient’s respiratory function. In patients with ARDS and IAH, prone position is beneficial in reducing the cranial diaphragmatic load in ARDS and IAH patients. Prone position may result in causing increased intra-abdominal pressure (IAP) or accelerate IAH. Prone position is difficult in patients managed with open abdomen because their bowel are exposed.

To keep mechanically ventilated injured patients calm and comfortable analgesia and sedatives are required. Continuous sedative infusions have been researched and findings have shown that they shorten mechanical ventilation and hospital length of stay (Robinson, Mueller, Henson, Branson, Barsoum & Tsuei, 2008:517-526).

Richter and Ragaller (2010:19) are of the opinion that reducing pain is important in optimising the patients. The administration of painkillers such as regional anaesthesia with intercostal blockades, pleural catheters and thoracic epidurals, together with paravertebral blockades can be very important.

According to Kress (2007:n.p.), analgesia and sedation are crucial and essential in the management of patients who need mechanical ventilation. Approximately 45% to 82% of ICU patients have some degree of pain. Common interventions, such as
endotracheal tube suctioning, vascular cannulation and even repositioning in bed may contribute to extreme pain and anxiety. Sedations and analgesia can be given intermittently or by continuous infusions.

The participants stated that ventilator problems are caused by pain which is not well controlled and that abdominal distention pushes the diaphragm upwards causing increased intra-thoracic pressure. Patients will experience difficulty in breathing and ventilator weaning is delayed. Patients end up having ventilator-associated pneumonia and ARDS.

Richter and Ragaller (2010:6) state that trauma patients require a ventilator strategy that reduces airway pressure and allows permissive hypercapnia. Positive mechanical ventilation can be used to reduce peak lung distention and preventing end-expiratory collapse with low tidal volume, reducing plateau pressure. Tidal volumes of 6 ml/kg of predicted body weight, plateau pressure of <30 cm H₂O and PEEP will optimise oxygenation and carbon dioxide (CO₂) elimination if added and will reach a range of 14-16 cm H₂O in patients with severe lung injury. The multi-disciplinary team-based approach by doctors and nurses should ensure these ventilator settings.

Wittmann (2010:14) mentions that in order for a fix tidal volume to be delivered, ventilated patients with abdominal hypertension need increase pressure. An increase in intra-thoracic pressure is due to the diaphragms being protruded into the lung cavity which lead to cardiac output being reduced and augmenting the pulmonary vascular resistance. Arterial blood gas measurements indicates hypoxemia, hypercarbia and acidosis which indicate ventilation/perfusion abnormalities. PEEP ventilation increases intra-thoracic pressure. Professional nurses should monitor arterial blood gases in ventilated patients 4-hourly to ensure good oxygenation.

3.1.1.5 Subtheme: Difficulty in absorbing feeds

The participants verbalised that feeding patients with open abdomen is a problem. Patients have huge aspirates, tend to vomit and don’t tolerate enteral feeds. They end up being given total parental nutrition or not being fed and put on free drainage.

This is evidenced by the following quotations from the participants:
“The feeding part of this patient is a problem. They end up with lots of aspirates and vomiting due to increased abdomen. The stomach becomes smaller and can’t contain all the stuff that you are giving. Patients not absorbing end up being given TPN or are put on continuous drain.”

“Feeds are insufficient. We should be giving high fibre diet and find that we don’t have high fibre diet. We end up giving Supportan (FRUSTRATED, SAYING EISH).”

“After they have done laparotomy. They are not given enough feeds. They cannot tolerate feeds because of the management they did on the open abdomen. We end up giving TPN. When the patients are on TPN we need to monitor sugar levels because when sugar levels goes high it lead to delayed healing.”

Tempest (2011:30) states that it has been reported that more than 60% of patients in ICU do not tolerate their gastric feeds. Signs and symptoms that indicate intolerance to enteral feeding include vomiting, nausea, abdominal pain and distention, constipation and diarrhoea. Research has shown that prolonged hospital and ICU stay and not providing enough nutrition are caused by gastrointestinal complications and inability to tolerate feeds. The contributing factors of intolerance include inability of the enteric nerve and smooth muscles of the gastrointestinal tract to function properly, inflammation, operations, opioids, electrolyte imbalances, increased sugar levels, sepsis, high intra-cranial pressure and the patient’s condition.

According to Ferrie, Daniells, Gagnon, Hamlyn, Jukkola, Riley, Storer, Whiteman and Zarshenas (2011:5-8), enteral nutrition support is introducing liquid diet directly into the stomach or the small intestine using a nasogastric or orogastric tube. Enteral nutrition is commenced when a patient is still critical and not ready to tolerate oral intake, or when oral intake is not enough to meet nutritional needs of the patient. Enteral feeding may be administered using different sites such as nasogastric, orogastric or via jejenostomy. The choice of an enteral feed to be given to the patients depend on the intended duration of nutrition support and the patient’s condition such as open abdomen.

Hegazi and Wishmeyer (2011:234-239) opine that practice nutritional guidelines in Europe, Canada and United States favour enteral nutrition in patients with open abdomen, critically ill patients and patients who are hemodynamically stable. For most ICU patients enteral nutrition is favoured over parenteral nutrition. The study was done
to compare the effect of enteral feeding and parenteral nutrition. Conclusion showed that enteral nutrition is associated with less septic complications than parenteral nutrition which is more invasive (Vieira, Fernandes de Araujo, Araujo de Azevedo, Goldenberg & Linhares, 2010:n.p). ICU patients who are hemodynamically stable and have a functioning gastrointestinal (GI) tract are recommended to be given enteral feeding within 24 to 48 hours of admission (Hegazi & Wishmeyer, 2011:234-239).

Hegazi and Wishmeyer (2011:234-239) further state that patient who do not have a functioning GI tract require parenteral nutrition even though the guidelines do not agree on when to commence parenteral nutrition. Patients who are critically ill develop enteral feeding intolerance. Enteral nutrition intolerance is aggravated by conditions related to intestinal dysfunction, such as decreased motility, inadequate digestion and reduced absorption, together with side-effects of treatment drugs. Increased residual volume, bowel dilation, vomiting or diarrhoea are signs and symptoms of intolerance which occur in 50% of ICU.

According to Du Toit (2014:1), improvement in wound healing, reduction in ICU and hospital stay and reduction in mortality rates are caused by commencing enteral feeding early. Since 1980 the advantages of enteral feeding in patients who are critically ill have been noted. Establishment enough enteral nutrition support can be very challenging because of the nature of the condition of the patient. In the early postoperative phase the patients will require parenteral nutrition support until there is normalization of the physiological status has normalised. Enteral nutrition results in better blood glucose control, improved gut barrier and less cost when comparing it with parenteral nutrition. Enteral nutrition is safe in patients with open abdomen and shows better results in terms of earlier fascial closure and less fistula formation.

Suggestions from participants were evidenced by the following quotations:

“I think dietician should be involved when it comes to nutrition of patient with open abdomen and calculation of calories which help in wound healing.”

“What I noticed about our ward is that we have a way of giving feeds. Sometimes the dietician will come and write on the chart saying these are the mls that is supposed to be given.”
According to Ferrie et al. (2011:5-8) a formal nutritional assessment should be done by the dietician depending on anthropometry, biochemistry, clinical and diet history of the patient. The dietician chooses an appropriate formula based on the nutritional assessment of the patient and electrolyte levels of the patient. If potassium and sodium are high then the dietician will order electrolyte free diet.

Tempest (2011:30) is of the opinion that a dietician’s role and responsibilities in the critical unit is uniquely challenging, frequently rewarding, at times frustrating and unquestionable valuable. Many critical care dieticians have undoubtedly experienced frustration over unwanted interruptions by physicians in enteral nutrition. The interruptions are caused by gastric residuals and fears of aspiration. The researcher recommends that institutions should delegate dieticians to the ICU and dieticians should be invited to attend multi-disciplinary ward rounds.

According to Williams and Leslie (2005:5-15), it is important to assess the position of the tube after insertion and before commencement of feeding. According to expert the enteral tube should be re-assessed regularly to ensure that it is not being dislodged and appears to be well supported by expert opinion. Radiography is a widely method which is accepted and regarded as reliable in confirming tube position either be a nasogastric or orogastric tube.

Williams and Leslie (2005:5-15) also mention that the other bedside methods to confirm tube position are to measure and document the limiting marks, air auscultation using stethoscope, altered phonation and aspiration. Auscultation is another reliable method used by nurses to verify enteral tube position. Other methods which are not used often, but can verify enteral tube placement include capnometry (carbon dioxide monitoring), phonation and visual inspection. The researcher recommends that professional nurses should diligently observe that the feeding tube is at the right place by auscultating the abdomen using a stethoscope.

Williams and Leslie (2005:5) suggest that if the gastric residual volumes are less then enteral feeds should continue and feeding should not be withheld unnecessarily. Frequency of checking gastric residual volumes depends on different institutions and it varies and is also based on the physicians’ opinion. Prokienetics such as maxalon
assist in gastric emptying and can be used if patients don’t absorb feeds. Professional nurses should aspirate feeds 4-hourly to assess absorption.

Participants verbalised that patients with open abdomen do not absorb their feeds, have large aspirates and keep on vomiting. According to the guidelines of the American Society for Parenteral and Enteral Nutrition (2009), erythromycin or metoclopramide can be added to improve gastric emptying and enteral nutrition tolerance. This has resulted in minimal changes in the clinical outcome of ICU patients (Tempest, 2011:30). Professional nurses should advocate for the use of prokinetics in patients with open abdomen who vomits and don’t absorb their feeds.

Friese (2012:496) feels that all patients managed with open abdomen should be assessed for their nutritional needs. Patients with open abdomen have large open wounds and need high protein and caloric support. Patients with an open abdomen need 25-35 kcal/kg/d of non-protein calories and 1.5-2.5 g of protein/kg/d. It may not be easy to administer enteral nutritional support on patients with open abdomen due to the physiological compromise related to pathophysiology. The first crucial step is to assess the patient’s nutritional status. Parenteral nutrition is needed when the physiological status are not yet being normalised (Du Toit, 2014:1). Patients require parenteral nutrition after abdominal operations until their physiology is normalised.

Madsen and Frankel (2006:47) state that, prior to initiating parenteral nutrition, a nutritional assessment is necessary to determine nutrient needs and to anticipate any metabolic changes that may occur due to the patient’s underlying condition, medications or concurrent therapies. It might be difficult to determine energy and protein needs in the severely malnourished patient under physical stress who is often ventilator-dependent with little mobility.

The participants again emphasised the importance of protocols regarding feeding:

“We need to adhere to the policies of TPN. Most of the time we give it the wrong way and it stays more days more than it is recommended. Giving high doses and not supposed to be giving high doses. More important to adhere to guidelines of TPN.”

Stubblefield (2014:1) explains that parenteral nutrition is a method which administers nutrition intravenously so it is also called intravenous feeding. Patients with Crohn’s
disease, cancer, short bowel syndrome and ischemic bowel disease are usually given parenteral feeding. Sugar, carbohydrates, proteins, lipids and electrolytes are the nutrients which are delivered through parenteral nutrition. Parenteral nutrition is administered via the central line which is a cannula inserted via the sub-clavian or jugular vein. Parenteral nutrition can also be administered via the femoral line into the large vein that goes to the heart.

According to Willacy (2014:1), complications of parenteral nutrition are re-feeding syndrome, infection, hyperglycaemia, catheter-related complications and liver and gall bladder dysfunction. *Staphylococcal* and *enterococcal* species are infections which are predominant. *Candida species, Klebsiela pneumonia* and *pseudomonas aeruginosa* are also common. 30% of patients on nutritional support have hyperglycaemia. Mild cholestasis develops and the transaminases and alkaline phosphatase are then elevated. Complications of parenteral nutrition caused by inserting the central or femoral line are bleeding from the insertion site of the line, pneumothorax or haemothorax, arrhythmias or cardiac tamponade.

Madsen and Frankel (2006:61) add that overfeeding is another complication of parenteral nutrition and agree that hyperglycaemia is the most common complication of parenteral nutrition. The patient is at risk of infection due to hyperglycaemia and this thwarts the utilisation of nutrients that the parenteral formulation provides.

According to Willacy (2014:n.p.), the following are recommendations for all patients receiving parenteral nutrition: Blood glucose should be monitored 4-6 hourly. The blood specimens of Full blood count (FBC), B12 and folate, urea and creatinine including magnesium, phosphate and calcium, glucose, liver function tests, albumin, prealbumin, C-reactive protein (CRP), zinc and copper should also be done to monitor baseline levels. If there is a risk of re-feeding then it is significant to monitor daily full blood count (FBC), urea and creatinine plus magnesium and phosphate routinely. The other tests which can be done once or twice per week include liver function tests (LFT), lipid profile, calcium, albumin, prealbumin, transferrin and CRP. Monitoring zinc, iron, selenium and copper levels can be done every 2-4 weeks.
3.1.1.6 Subtheme: Lack of knowledge and skills

The participants verbalised that nurses and doctors lack knowledge and skills on how to take care of patients with open abdomen and to how to perform intra-abdominal pressure monitoring. Nurses and doctors lack skills on how to recognise the complications of open abdomen which include intra-abdominal hypertension and intra-abdominal compartment syndrome.

This is evidenced by the following quotations:

“It is said to be done by doctors but funny enough the doctors don’t know how to do it. We don’t have equipment to do it and we end up using the CVP. We don’t have proper abdominal pressure monitoring skill and they take patients unnecessarily to theatre due to lack of equipment.”

“In our unit intra-abdominal pressure is supposed to be done by doctors, but in most cases our doctors have never seen or were never shown how to do it. Most of the patients it is not done. They expect that it must be done by nurses.”

“Teamwork is very important. You see someone struggling in ICU and you assist them. ICU is one is to one management. Sometimes it is me and my patient and one for the whole night. Teamwork is very important.”

“They must supply us with shift leaders so that they can oversee these problems. They have told us we don’t need shift leaders.”

Wise, Roberts, Vandervelden, Debergh, Waele, De Laet, Kirkpatrick, Keulenaer and Malbrain (2014:1) state that the results of the World Society of the Abdominal Compartment Syndrome (WSACS) held in 2009 revealed that a survey showed a lack of physician awareness of IAH and ACS and wide variations in the management of these conditions, with many ICUs reporting that they do not monitor intra-abdominal pressure.

Wise et al., (2014:1) report that a total of 2,244 of the approximately 10,000 clinicians who were sent the survey responded. Most of the 2,244 (79%) who completed the survey were physicians in training and the majority were living in North America (53%). The majority of responders (85%) knew IAP, IAH and ACS, but only 28% were aware of the WSACS consensus terms of IAH/ACS. This survey revealed that the clinician’s
knowledge of published consensus definitions, measuring techniques of intra-abdominal pressure and the clinical management is not enough although most responding clinicians claim to know IAH and ACS.

Spencer et al., (2008:19) reiterate that patients with open abdomen develop ACS, and critical care nurses should be vigilant and knowledgeable in monitoring intra-abdominal pressure in order to avoid this complication. A survey was performed in 2005 with the Australian critical care nurses and it showed that most of the nurses realised that they have little knowledge of ACS and at times they don’t have the knowledge of ACS. This survey also showed that there is a significant knowledge deficiency regarding clinical signs and symptoms of ACS and at-risk patients. Critical care nurses doing bedside nursing are required to know more about the management of patients who are at high-risk in developing ACS and to be more vigilant. Assessments of IAP should be monitored regularly and also assessing their organ function which will assist critical care nurses to be ready in anticipating the correct intervention. Above all, the critical care nurse should be knowledgeable about clinical manifestations of ACS and its effects on the patients’ physiology. They must also be knowledgeable on the management options. This experience may help nurses to improve patient outcomes.

Hunt, Frost, Hillman, Newton and Davidson (2014:3-4) explain that intra-abdominal pressure is the pressure that occur within the abdominal cavity. The pressure is measured with mmHg and the normal ranges of intra-abdominal pressure for critically ill adults is between 5-7 mmHg. Intra-abdominal hypertension (IAH) is a sustained IAP > than 12 mmHg. There are different stages of IAH: Grade 1 is IAP 12-15 mmHg, Grade 2 IAP 16-20 mmHg, Grade 3 IAP 21-25 mmHg and Grade 4 an IAP >25 mmHg. A sustained IAP more than 20 mmHg together with a new organ dysfunction or failure is described as ACS even though there is still abdominal perfusion pressure (APP). Renal failure, respiratory failure or an unexplained metabolic acidosis occur when there is development of ACS is an example of that.

Hunt et al., (2014:3-4) state that ACS is divided further into three groups: primary, secondary and recurrent ACS. Injury or disease to the abdominal or pelvic region that frequently needs early radiological or surgical intervention, or conditions that occur after abdominal operation requiring theatre defines primary ACS. Secondary ACS is an often inevitable progression of the ICU patient’s disease and exclude conditions occurring
from the abdominal or pelvic region. ACS developing after operation or due to either primary or secondary IAH or ACS is known as recurrent ACS.

A participant commented:
“We don’t have experienced nurses to nurse patients with open abdomen.”

The participants suggested the following recommendations regarding lack of knowledge and skills:
“In-services should be provided on how to go about doing intra-abdominal pressure and how to go about taking care of patients with open abdomen.”

According to Bluestone, Johnson, Fullerton, Carr, Alderman and BonTempo, 2013:29), in-service training has been important and will also remain important in ensuring competencies that are needed for optimal public health in all global service settings. All in-service training must be evidence-based wherever delivered.

Berry and Fletcher (2012:2) indicate that intra-abdominal pressure can be monitored using different methods known as direct or indirect measurement. Direct measurement is whereby a needle or a line is connected to a pressure transducer and inserted directly into the peritoneum. The direct method is rarely done whereas the indirect measurement give acceptable outcomes with a much reduced risk of iatrogenic injury. Indirect method can be done via the intragastric, intrauterine, rectal or intravesical routes.

Lundgren-Laine, Kontio, Perttila, Korvenranta, Forsstrom and Salentera (2011:1-2) agree that the managing day to day activities in ICU is challenging. Several instant ad hoc decisions to allow the smooth running of ICU activities in a fluent manner is made by ICU shift leaders, nurses and the ICU intensivists. A great number of complex ad hoc decisions that runs throughout the day are formulated by ICU shift leaders. The accountability of ICU shift leaders include the following: coordinating, planning and assessing the daily activities of the units. ICU shift leaders are responsible for making managerial ad hoc decisions. The duties and tasks of ICU shift leader involves direct patient care, supervision of care and administration work. By ad hoc decision making means critical judgements that are required for a specific motive at a precise moment with the goal of enabling immediate and a fluent flow of activities in the ICU.
Goldblatt, Granot, Admi and Drach-Zahavy (2008:46) note that there are major changes occurring in the job descriptions of Israel nurses’ which are becoming more empowering and authoritative. The National Health Insurance Law which was approved in Israel in 1995 is influenced by the British and Dutch in order to control the competition among the nation’s four non-profit health funds and also within the hospitals. Redesigning the shift-leader’s role was part of this. The shift leader is a Registered Nurse who has been delegated by the ward nurse manager to exercise partial power and also managerial tasks. The shift leader will manage patient care during a given shift in accordance to the vision and hospital policies.

According to the South African Nursing Council (2014:1), critical care is a complex care offered either with or without technology by highly skilled clinical practitioners who may be nursing, medical and or paramedical personnel. Nursing personnel is expected to be delegated on a 1:1 basis with a nurse who is often a team leader or shift leader.

Galley and O’Riordan (2003:7) explain the shift leader role as a task which entitles nurses to supervise, train other nurses and advice and guide them when performing task and procedures at the bedside. The shift leader support other nurses in decision-making and assist them to prioritise the task according to patient’s conditions and needs. The shift leader should have the necessary experience, be a senior nurse with specialist training in critical care, and should acquire leadership and organisational skills. The skills will assist her to collaborate and manage the activity of the critical care unit. The shift leader should supervise staff on duty rather than performing direct patient care.

Colyn (2008:14-15) opines that the shift leader in an ICU setting plays a cardinal role in the supervision of staff and the effectiveness and efficiency of patient care. Shift leaders ensure that nursing is being performed properly and to the highest standards possible in order to direct nursing practice towards safe and efficient care. The shift leader in the ICU setting is responsible for all the patients in the unit, even though she allocates patient care to her staff. The shift leader is ultimately responsible and accountable for any decisions regarding the nursing treatment the patient receives, as well as seeing to it that prescribed medical treatments are done. With severe nurse shortages in South Africa, newly qualified professional (registered) nurses are forced into positions of power and greater responsibility at an early stage. The shift leader will once again be
the person making the relevant decisions in the case where non-ICU trained nurses are

Letlape (2014:2-3) argues that in-service training should be provided to all medical and
nursing staff on a regular basis to teach theory and skills on how to manage patients
with open abdomen and monitor intra-abdominal pressure. In-service training inform
nurses about new development regarding patient care and equip nurses with the skills
that enables them to perform at their best and improve quality nursing care. In-service
training is defined by Muller (2009:351) as the informal training which is offered to
nurses and other members of the multidisciplinary team in a hospital and aims at
improving their professional knowledge, skills and attitudes. The training is done in
accordance to the demands of the nursing unit regarding the patients’ needs and
conditions.

The purpose of in-service training, according to Muller (2009:351), is to equip nurses to
enable them to perform implementations in the nursing service, to correct the nurses’
shortcomings, to increase nurses’ knowledge, skills and their attitudes and to encourage
them to function as a team within the unit and to enable them in managing risks and
preventing complications.

The need to increase the effectiveness and efficiency of both the pre-service education
and continuing professional education (CPE) (in-service training) for the health work-
force is escalating. Shortage of skilled health workers such as ICU trained, trauma
trained and lack of resources are due to an increase in the availability and accessibly to
information (Bluestone et al., 2013:2).

Spencer et al., (2008:19) state that critical ICU nurses in intensive care unit should have
enough knowledge and skills in managing patients who are prone to develop ACS. The
recommendations by the researcher is that in-service training should be administered to
professional nurses to improve their knowledge and skills on how to manage patients
with open abdomen.

Monitoring IAP and assessment of organ functioning should be done regularly in order
to allow critical care nurses to anticipate ACS and allow nurses to be ready for
appropriate intervention (Spencer et al., 2008:19). It is significant to monitor the intra-
abdominal pressure in patients who are at risk in order to diagnosis early and start therapeutic intervention on time. Demetriades (2012:17) states that the most likely method used to monitor IAP is usually done by bladder pressure measurements as part of standardised ICU protocols. The professional nurse should monitor intra-abdominal pressure 4-6 hourly to prevent ACS.

3.1.2 Theme 2: Complications Suffered by Patients
Complications suffered by patients because of open abdomen are of great concern to participants. Demetriades (2012:17-24) states that the open abdominal technique is associated with serious complications even though it has saved many lives and has addressed many problems related to primary pathology.

3.1.2.1 Subtheme: Infection
Intra-abdominal infection and intra-abdominal wound infection are the most deadly complications linked to open abdomen (Worhunsky et al., 2013:36). Intra-abdominal abscess formation rates are reported to have increased between 10% to 70%. The infections are related to the amount of time the abdominal packs are retained in the abdomen. Complications such as intra-abdominal infection are significant causes of morbidity and are frequently related to poor prognosis, particularly in higher risk patients (Sartelli, 2010:5-9).

This is evidenced by the following quotations:
"Even if we adhere to the aseptic technique the environment where we are nursing a patient plays a major role. In our case windows are not opening. We don't disinfect adequately, so that’s why we end up having infections even if we adhere to aseptic technique. One out of hundred do not get infection. Ninety nine percent of them get infection (FRUSTRATED AND STRESSED, RAISING ARMS AND DROPPING HER SHOULDERS)."

"The most challenging in the unit is infection. 90% of patients get infected, like Mr S has said cleanliness of the unit. I feel cleaning is not done properly and when we are supposed to admit patients. It is few cases which heal quickly. Once there is an open abdomen there is prolong stay."
“They are continuously prone to infection if having open abdomen. Most of the time they get infection like pseudomonas and have pus. Sometimes they take pus to check the type of infection in the abdomen.”

Armstrong (2010:694) states that the second serious complication that increases mortality rates in ICU is intra-abdominal infections. The recommendations for diagnosis and treatment of intra-abdominal infections were recently updated by the new evidence which was revealed by the Surgical Infection Society and the Infectious Diseases Society of America. Mostly the patients who require assessment will be identified by routine history taking, physical examination and laboratory studies. Computed tomography should be performed in adults’ patients having intra-abdominal infection and are not due for immediate laparotomy.

Baiwa and Kulshrestha (2013:238-244) report that, despite many advancements in diagnostic and therapeutic interventions, infections have become an almost inseparable part of ICUs throughout the world. Morbidity and mortality rates are influenced by the presence of infection in critically ill patients. These lead to unique challenges in managing these patients. Candida albicans and Aspergillus fumigatis species are the major fungi found worldwide and are followed by Cryptococcus neoformans and Histoplasma capsulatum in endemic areas. The diverse climatic conditions in India are also suited to various fungal infections in developing countries. The diagnosis of fungal infections is a difficult task in patients who are critically ill because the signs and symptoms are masked by the presence of dominant primary pathology.

According to Koenig and Truwit (2006:639) mortality rate in patients in ICU are caused by nosocomial infection rather than their critical condition. Nosocomial infection become the second cause leading to patients dying in ICU. Pneumonia is the second most common nosocomial infection that occurs and it affects 27% of patients who are critically ill. Ventilator-associated pneumonia (VAP) is the type of nosocomial pneumonia which affects 86% of patients managed on a mechanical ventilator. The cases of VAP which occur annually in the United States alone are between 250,000 and 300,000 which is an incidence rate of 5 to 10 cases per 1,000 hospital admissions.
According to Demetriades (2012:17), the second stage in damage control is to stabilise the physiological parameters in ICU patients and then this is followed by operating the patient in theatre usually within 24-48 hours of the initial operation.

The participants suggested the following recommendations regarding infection:

“We need to involve the management of the hospital....”

The first stage of open abdomen procedure in controlling abdominal sepsis is an adequate and prompt source control. The primary objectives of surgical intervention is to determine what causes peritonitis, draining of fluid collections and managing the origin of abdominal infection (Sartelli, Abu-Zidan, Ansaloni, Bala, Beltran, Biffl, Catena, Chiara, Coccolini, Coimbra, Demetrashvili, Demetriades, Diaz, Di Saverio, Fraga, Ghnnam, Griffiths, Gupta, Hecker, Karamarkovic, Kong, Kafka-Ritsch, Kluger, Latifi, Leppaniemi, Lee, McFarlane, Marwah, Moore, Ordonez, Pereira, Plaudis, Shelat, Ulrych, Zachariah, Zielinski, Garcia & Moore,2015:75-76).

Sartelli et al., (2015:1-11) state that, after the open abdomen strategy has been performed, the optimal method chosen for laparotomy should allow an easy re-entry to the abdominal cavity and allow for expansion in order to prevent abdominal compartment syndrome. After 24-48 hours of the initial surgery then the patients should be re-operated in theatre. Re-operation should be performed because exploration of peritoneal cavity with lavage, drainage and source control is feasible.

Armstrong (2010:694-709) articulate that as soon as the intra-abdominal infection is detected then antimicrobial treatment should be commenced immediately. Antimicrobial therapy should be commenced immediately in patients diagnosed as septic shock. Monitoring the drug levels should be done during the source control procedure as these can detect if additional administration of antibiotics is required.

This is evidenced by the following quotes from participants:

“Adherence to giving treatment. You must make sure you give treatment especially antibiotics at specified time. Patients may end up having infection so adherence at giving treatment at given time. The abdominal flora is sensitive to infection.”

“Involve the infection control people to provide us with proper masks, gloves. Sometimes we don’t have sterile gloves. Infection control sisters should be involved with
open wound. They develop pneumocomial infection. They must come and do pus swab.”

“Involvement of microbiologist. Reduce infection and prescription of correct antibiotics.”

According to the Standard Infection Control Precautions (2010:10-12), it is significant for the personnel to utilise Personal Protective Equipment (PPE) for the sake of their health and safety. An assessment of the risk of transmission of micro-organisms to the patient or the carer, and the risk of contamination of the healthcare worker’s clothing and skin/mucous membranes by patients’ blood, body fluids, secretions and excretions determine the type of PPE to be used by personnel. The PPE which might be used includes gloves, aprons, face masks and visors. The staff should wear gloves for invasive procedures such as insertion of central lines, when handling needles or contaminated instruments, when they are exposed to blood, secretions and excretions and when they touch sterile sites and non-intact skin or mucous membranes. Personnel should wear aprons and gowns when they touch and do procedures on the patients, when they touch equipment’s and materials which has been used on the patients. Face masks and eye protection should be worn where there is risk of blood, body fluids, secretions or excretions splashing into the face and eyes.

According to Cherney (2013:1-6), a procedure utilised by the nursing staff and medical staff to reduce the spread of infection is known as aseptic technique. The aim of using aseptic technique is to ensure the environment is free from micro-organism which are harmful to the body. Clean technique is another antimicrobial process whereby the primary goal is to prevent infection and the spread of harmful organisms. A primary way of ensuring aseptic technique is by cleaning equipment thoroughly. Equipment such as needles and syringes should always be thrown away in between patients. Another important form of aseptic technique is a simple hand washing. Washing of hands by all medical staff will assist in prevention of the spread of infections which causes patients to develop infections.

According to Gebel, Exner, French, Chartier, Christiansen, Gemein, Goroncy-Bermes, Hartemann, Heudorf, Kramer, Maillard, Oltmanns, Rotter & Sonntag (2013:1-12) new evidence showed that the spread of nosocomial pathogens is due to dry surfaces which are contaminated. Disinfection of the environmental is necessary and significant in risky
areas and in situations where there is an outbreak in infection. Controlling pathogens in areas where there is an outbreak of infection serves as a bundle strategy and is enhanced by utilizing proper disinfectants.

Gebel et al., (2013:1-12) state that disinfection is a holistic process as it involves taking into consideration the product itself, applying the product, the application of target micro-organisms, disinfection efficacy and the methods whereby compliance will be monitored. The environment should be cleaned thoroughly through terminal disinfection. These involves the areas or rooms were patients with infections were nursed and were being treated and/or colonised with pathogens. After terminal disinfection of the rooms is done then the patients can be admitted in the rooms safely as they are now free from harmful micro-organisms.

Quinn, Henneberger, Braun, Delclos, Fagan, Huang, Knaack, Kusek, Lee, Moual, Maher, McCrone, Mitchell, Pechter, Rosenman, Sehulster, Stephens, Wilburn and Zock (2015:424-434) found that hospitals and other healthcare institutions are engaged in intensive efforts which are essential in preventing healthcare-associated infections. Cleaning is significant in most economic sectors. It is important in the healthcare industry for environmental surface management and infection prevention and control.

Quinn et al., (2015:424-434) believe that the Centres for Disease Control and Prevention (CDC) and Healthcare Infection Control Practices Advisory Committee should make infection prevention a priority regardless of the level of care at all health care settings. The standard precautions, including environmental cleaning, should be utilised to reduce infection transmission. Pathogens may be transmitted via the hands of patients or healthcare workers to environmental surfaces, where they persist or proliferate if cleaning and disinfection are not properly done. A number of factors, such as venous or urinary catheter use, ventilator use, antibiotic therapy, inadequate hand hygiene by healthcare workers and length of stay contribute to healthcare-associated infections among patients.

A participant commented:

“Proper hand washing. (REINFORCEMENT BY REPEATING WORDS) Proper hand washing techniques must be adhered to.”
Cherney (2013:1-6) states that another important method of maintaining aseptic technique is using simple hand washing. To prevent the spread of infection in patients, all medical and nursing staff should wash their hands thoroughly before and after any procedure. The Centre for Disease Control and Prevention (CDC) is offering other basic rules for preventing infection. These basic concepts include training all medical staff on aseptic techniques, utilization of chlorhexidine (an antiseptic) after insertion of catheters to ensure catheter care, utilization of antimicrobial ointment on intravenous line insertion sites, bandaging patients properly after theatre and wearing masks to prevent germs from spreading from mouth through the air. The researcher recommends that hand washing should be reinforced before and after performing procedures. A reduction in the rate of hospital-acquired infections and hospital-acquired pathogens is associated with improvements in environmental cleaning materials. Hospital cleaning efficiency can be achieved by introducing new cleaning methods. Hydrogen peroxide vapour, ultra violet (UV) light decontamination are two new methods which has been microbiologically effective and are easily and safely used promising for terminal cleaning. The technique of using hydrogen peroxide vapour and UV light decontamination are effective even in difficult-to-access areas.

Blazejewski, Guerry, Preau, Durocher and Nseir (2015:365-375) state that for daily cleaning the ultra-microfibers associated with a copper-based biocide can be utilised. The researcher recommends that terminal disinfection and cleaning of the rooms should be done with correct detergents such as biocide. Cleaners should be trained in the correct measurements of the cleaning solutions to put in water to disinfect the rooms. Armstrong (2010:694-709) suggests that antimicrobial therapy should be started immediately as soon there are suspicions that there is intra-abdominal infection and it has been confirmed through diagnosis. Administration of antimicrobials should be started immediately if it is possible in patients with septic shock. Monitoring and maintenance of adequate drug levels should be done during the source control procedure. This will indicate if additional administration of antibiotics is necessary.

3.1.2.2 Subtheme: Fistula

Thompson and Ocampo (2011:161) state that an enterocutaneous fistula is a communication between the gastrointestinal tract and the skin. An enteratmospheric fistula is a tear in the bowel that has been exposed in the middle of an open abdomen.
Schecter et al., (2006:394) declare that the enteroatmospheric fistula poses challenges because there is no well-vascularised soft tissue overlying the fistula tract. It is difficult to manage these open abdominal wounds which also has an enteric fistula. The enteric contents can overflow onto the abdominal viscera and surrounding skin, resulting in inflammation, infection and sepsis. The skin around the wounds becomes impaired, so that dressings are painful and may fail to adhere, resulting in a vicious cycle of leakage, further damaging the skin and fluid loss that cannot be measured.

Pratin and Siriluck (2011:122) define a fistula as an abnormal hole which occur between two or more organs and result in the organs communication between each other. The volume and nature of the amount of the output from the fistula determines the severity of enterocutaneous fistula. Output <200 ml/24 hours is regarded as a low-volume output, moderate output between 200 to 500 ml/24 hours and output >500 ml/24 hours is referred as high output. 30% of fistula closes automatically within six to seven weeks. An enterocutaneous fistula presents serious challenging problems to both medical and nursing staff. A patient with a high output fistula could present with a fluid challenges and electrolyte imbalance if not managed properly within a short period of time.

The participants verbalised that patients get complications such as fistulas and these take time to heal. Costa (2006:357) explains that it become disastrous if open abdomen is combined with a fistula and mortality rates increased to 30% and 50%. The causes of fistula are: a hole which tear off spontaneously at the adhesion side when the patient coughs or during dressing changes and the underlying disease or the open abdomen itself after ill-advised dissection.

Trevino, Verhaalen and Bruce (2014:1) state that open abdominal wounds with associated enterocutaneous fistulae provide some of the most complicated wound management challenges for patients, physicians and nurses. In contrast to an enterocutaneous fistula not associated with a large open wound, an enterocutaneous fistula with an open abdominal wound poses unique challenges due to the additional concerns of open fascia and exposed bowel. The adherent bowel surrounds these fistulae frequently in various stages of healing. There is no appropriate surface for placement of an appliance which controls the fistula drainage. The principle of early fistula management involves controlling fistula drainage and protection of surrounding tissue and skin.
This is evidenced by the following direct quotations:

“We have complications such as disembowelment, fistulas and sepsis. These patients always get into septic shock.”

“Other doctors don’t use good material to do dressing. (PAUSE) The suction is too strong and Ng tube goes to Mala (a Sotho name for intestines) and cause fistulas. Patients are getting complications and it is these fistulas which take long time to heal.”

“The recent incident where the foam. What do we call it? (PARTICIPANT WAS HELPED BY ANOTHER ONE.) Rest on foam. Yes, wound granulated together with rest on foam causing fistula.”

According to Worhunsky et al., (2013:36) the formation of an enteroatmospheric fistula is regarded as the worst complication of the open abdomen. The occurrence of fistula development is reportedly between 5% and 20%, depending on the indication. The exposed bowel does not have sufficient well-vascularised soft tissue making the enteroatmospheric fistula to become a challenging issue whereby it becomes difficult to close spontaneously. A vacuum-assisted dressing applied directly over the fistula is one of the method that is used to control the fistula by preventing spillage and peritonitis.

According to Demetriades (2012:17-24) the open abdomen has solved serious challenges which relates to closing the abdominal cavity early. Open abdominal technique results in serious complications such as fluid and protein loss, a catabolic state, loss of abdominal wall domain and the occurrence of enteroatmospheric fistula. The development of fistulas is a commonly known complication which are difficult to control or repair. The ICU stay, the hospital stay and also the hospital costs are increased due to occurrence of fistula. The hospital charges are increased approximately four to five fold while the ICU stay is increased by threefold.

A participant suggested the following:

“I recommend that during changing of doctors, we need to have in-service training at the beginning of the month. We must make sure doctors rotate and know how to take care of patients with open abdomen.”
According to Vikram (2014:1) conservative treatment should be administered every few weeks to a few months period. The principles of non-surgical therapy for enterocutaneous fistula is by rehydrating patients, giving antimicrobials, preventing and managing anaemia, correcting electrolytes, draining abscesses which are obvious, administering nutrition, controlling fistula drainage and protecting the skin.

Friese (2012:494-495) postulates that managing an enteroatmospheric fistula remains an important challenge. To manage this complication the following key factors are involved: prevention, control of fistula effluent, minimising fistula output, monitoring for and correction of electrolyte disturbances, nutritional support and meticulous wound care. Surgical correction with fistula resection is done once the patient is ready for anterior abdominal wall reconstruction, usually 6-12 months after initial laparotomy. The most important principle is prevention. Minimisation of fistula output will assist in controlling wound contamination. Controlling fistula effluent is an essential part of minimising further wound contamination and reducing wound sepsis.

A pouch system is preferable for a high-output fistula as compared to conventional skin dressing. A skin barrier with dressing or pouch is needed for a low-output fistula. Powder, paste, wafers, sprays and creams are being utilised as skin barriers for the protection of skin from the enteric effluents (Vikram, 2014:1-4). The management includes prevention of spillage of enteric contents and prevention of excoriation on the surrounding skin as a temporary measure while planning for definite closure of the fistula (Demetriades, 2012:21).

According to Pretorius, Liebenberg and Smith (2011: 94-102) special care should be taken with electrolytes like potassium and phosphate. The low electrolyte levels occur because both are lost in huge amount in the intestinal fluid (the actual amount varies with the position of the fistula). Pretorius et al., (2011:94-102) suggest that the standard electrolyte profile and calcium, magnesium and phosphate levels should be monitored on a daily basis. The researcher recommends that professional nurses should monitor electrolytes when doing arterial blood gases and routine bloods and electrolytes should be corrected. Patients can lose litres of fluid through fistula and the intake and output should be monitored closely (two to four hourly) in order to maintain fluid balances. Output from the wound, ileostomy and fistulae is frequently excessive (three to six litres/day) requiring intravenous replacement and accurate fluid balance (Thompson & Ocampo, 2011:164). Professional nurses should monitor strict intake and output and
replace fluids as prescribed by the physician to maintain fluid balance. According to Schecter et al., (2006:394-395), there are six principles for the management of enteroatmospheric fistula.

**Principle 1: Prevention**
The wound should be limited to be seen by at least one or two experienced physicians or the nursing staff who are knowledgeable about wound care. The health care giver who firstly opened and assessed the wound should be the one responsible for dressing that wound. Fistulas develop if the wound is dressed by all members of the surgical and nursing staff.

**Principle 2: Attempt to seal the fistula**
It is difficult to try and close a fistula in the middle of an open abdomen, so these attempts usually fail but it is important to keep on trying or attempting to close it in some chosen patient. A small enteroatmospheric fistula can sometimes be sealed by fibrin glue and non-cellular dermal matrix.

**Principle 3: Control the fistula effluent**
The studies have recently shown that there is a great improvement and increased success rate in utilizing the vacuum-assisted wound management when managing fistula effluent. The vacuum-assisted wound management eventually assist in healing the fistula. Wound drainage bags can be another substitute for success in controlling fistula effluent if the nursing staff are creative and have enough experience and also are enthusiastic in changing the bags.

**Principle 4: Closing the fistula with well-vascularised soft tissue**
The fistula and open abdomen can be managed by covering them with a skin or using soft tissue with fascia. These can be combined with fistula intubation in order to create a drainage tract which will assist in healing the fistula because it is covered with well perfused-soft tissue.

**Principle 5: Chronic fistula be resected when patient is healthy and doesn’t have infection**
The resection of the bowel is usually delayed for months because the patients with enteroatmospheric fistulas are not fit for theatre. They are also critically ill and have
infections. It is advisable to resect their fistula when they are stable and free from infection.

**Principle 6: Daily support by senior surgeon**

Managing patients with an enteroatmospheric fistula requires more time. The senior surgeon should assess the psychological and emotional aspect of the patient and offer patient and their families support when necessary.

According to Vikram (2014:n.p), total parenteral nutrition (TPN) is required and significant in patients with suspected gastric, duodenal or small-bowel fistula. Discontinuation of oral intake is recommended when there is high output. Oral nutrition encourages further fluids, electrolytes and protein to be lost via the fistula. A reduction in fistula output frequently develops when TPN is initiated.

**3.1.3 Theme 3: Poor Hospital Administration**

The participants stated that there are problems regarding poor hospital administration. This will be discussed under the following: Lack of protocols, lack of equipment and poor financial management.

**3.1.3.1 Subtheme 1: Lack of protocols**

The participants stated that they have problems taking care of patients with open abdomen because there are no protocols in the ICU guiding nurses on how to take care of these patients.

“I feel patients with open abdomen should have *(PAUSE)* don’t know whether to say a procedure or protocol. This starts when you nurse a patient with open abdomen. You have to think of the sitting position, the changing of dressing and the pressure of suction. Be put in a protocol. This is how to nurse patients with open abdomen and this is how to do intra-abdominal pressure. As a guideline on how to manage patients with open abdomen.”

“I also feel that measuring intra-abdominal pressure must be standardised. We must not do it only when there is a problem. We all know that all patients with open abdomen must be done six hourly. We can eliminate a lot of problems *(WITH EMPHASIS, NODDING HIS HEAD)*.”
“Challenges regarding intra-abdominal pressure monitoring. We don’t have standardised way of measuring it, that poses problems. Readings are inaccurate and patients are taken to theatre unnecessarily if intra-abdominal pressure is very high (SOUNDS FRUSTATED, SHAKING HER HEAD). Inadequate training of doctors and nurses is a big challenge.”

A theme of lack of protocols emerged from all four focus group interviews. According to Nevada State Board of Nursing (2009:n.p) a protocol refers to sequential actions that can be utilised in managing the patient’s clinically. A protocol allows the application of specific interventions that should be decided by a nurse. The interventions rely on whether the patient meet the criteria mentioned in the protocol and the intervention should fall within the nurses’ scope of practice.

Perrie (2007:8) describes protocol-based care and nurse-led protocol as the intervention or treatment of a patient where orders from the doctors are not needed. The treatment to be implemented depends on the variables specified by the protocol. These protocols guide the actions and decision making of nurses when they are undertaking tasks which extend the practice from that which has been traditionally thought of as the role of the nurse. Protocols are beneficial in improving the high quality patient care. Protocols assist nurses in their decision-making processes to advise and show them how to perform procedures. Protocols reduce time delays by ensuring that nurses continue with the treatment in case the doctors are not around to approve treatment. Protocols are also beneficial in improving patient mortality and morbidity and reducing intensive care costs (Perrie, 2007:8).

Plost and Nelson (2007:153-156), however, describe a protocol as an evidence-based model whereby the best nursing care practices were initiated, tested and were used by the multidisciplinary management team of the adult ICUs at St John Medical Centre, Tulsa, Oklahoma. Increased survival rates for patients are due to the increased usage of protocols. The Project IMPACT confirmed the reduction of ICU costs in their critical care database. Matlakala, Bezuidenhout and Botha (2014:6) expound on a study which was done in a South African ICU, and the results were that lack of protocols is a challenge in the ICU. Lack of protocols impact negatively on nursing care. Unavailability of protocols results in the ICU experiencing problems because the nurses do not have guidance and direction on how to care for patients in ICU when doctors are not around.
This results in many medical errors. Protocols and policies should be available in all ICU’s. Protocols, standards and directives for nursing care are significant in ICU’s. High rates of medical errors and increased infection rates occur in ICU which are not using protocols.

A participant commented:

“Nursing these kind of patients poses challenges especially for nurses. You will find that there are no set protocols as to how often the dressing should be changed and who should do it. There is a lot of infection. Dressing poses a lot of problems to the patients. You are stuck with a patient whose dressing are soiled and smelling. It becomes a nurse’s problem. You are stuck with a patient who is smelling and offensive (SOUND FRUSTRATED, LIFTING ARMS AND RAISING VOICE).”

Plost and Nelson (2007:153-156) added that evidence-based protocols ensure good performance by healthcare practitioners and improve the outcome of patients. Availability and utilisation of protocols improve quality nursing care by standardizing the care and improve patients’ safety and lower hospital and ICU cost. The success of any protocol depends on the nurses complying with the protocol. Nurses not complying with the use of protocol affect its success. Manias, Aitken and Dunning (2005:935-944) state that newly qualified nurses uses available protocols to integrate their new knowledge into practice and assist them in decision-making which are effective in nursing care.

The participants suggested the following recommendations regarding lack of protocols:

“We need to have protocol in order (EMPHASIS, NODDING HIS HEAD). The ward should have protocol in order regarding nursing patients with open abdomen. We don’t have. It must be signed by senior professional, unit manager and HOD.”

According to Schetter (2013:1), a senior consultant at Joint Commission Resources stated that most of the hospitals nowadays allow nurses to decide independently without the consultation of a physician or licence independent practitioner regarding patient care, medication and other services rendered to patients. The nurse-driven protocol describes the circumstances in which the protocols may be utilised and offer details on how the procedures should be performed. The nurse-driven protocols empower nurses by giving them more decision powers to assist them in making their
own decisions even when doctors are not around. They serve as rubrics for nurses describing how protocols should be used and how procedure should be done.

Schetter (2013:1) added that any nurse-driven protocols must be written down as evidence. This will avoid doubts. The evidence-based guidelines should be noted and be considered and the requirements which are necessary to use nurse-driven protocols should be recognised nationally. The nurse-driven protocol should be reviewed and developed by the disciplines using them such as the nursing staff, medical staff, pharmacists and all other disciplines within the hospital. The nurse-driven protocol should be reviewed according to any state of federal law or any regulations such as state of boards of nursing.

According to Georgia Department of Public Health in Nurse Protocols for Registered Professional Nurses (2012:9), the requirements of nurse protocol is that they must be reviewed, revised or updated annually. The Department of Public Health also mentions that according to legal services, the term annually is interpreted to mean twelve months. However, nurse protocols can be dated and signed within twelve months of the previous date, but should not exceed twelve months. This means that if a nurse protocol was signed on the March 15, 2012, that same nurse protocol should be signed on or by March 15, 2013 in order to continue to practice under the respective nurse protocol. The nurse protocol must have review date and signatures of the delegating physician(s) and Registered Nurses (RN). A nurse protocol which has expired without annual review, revision and updates should not be used (Department of Public Health in Nurse Protocols for Registered Professional Nurses, 2012:9).

This is supported by Chang, Sevransky and Martin (2012:1-6) who state that many institutions have adapted using protocols to improve patient care even though there is no strong evidence. The ICU is a place in which to apply protocols because of the severity in illness of patients which are nursed there. One of the effects of protocols is knowledge translation. Protocols assist in adaptations of new information on patient care in bedside nursing. The best nursing care management is noted in patient who are being managed in an ICU where multidisciplinary team work and utilisation of protocols are reinforced.
3.1.3.2 Subtheme: Lack of equipment

The participants verbalised that there is no equipment, such as suction points, equipment to do intra-abdominal pressure and equipment to do VAC dressings. This is evidenced by the following quotations:

“The suction point is not working. We use one suction point. If the patient has open abdomen we need to have two suction points. One for the abdomen and one for the respiratory part. We are introducing infection.”

“We don’t have equipment to do abdominal pressure. (GIGGLING) We are using the manual. They are out of stock.”

“The equipment for measuring intra-abdominal pressure. We don’t have equipment. We need to run around looking for equipment to do intra-abdominal pressure.”

It is not only in this study that participants complained, but Matlakala et al., (2014:n.p) also stated that unit managers showed and agreed that equipment are not available and are of poor quality. Insufficient amount of money to buy equipment’s is a big challenge related to material resources. Available equipment found in ICU are old and not working properly. The pharmacy always delay when they are issuing medication. This result in poor quality of nursing care, because nurses had to leave their patients and wait for long hours in pharmacy before medication is issued. Nurses are delayed to give medication and performing important procedures. “They give you actual proof from the supplier guaranteeing that they don’t have whatever medical supply, or drug that you required. They don’t have the drugs even in the warehouse.”

The participants suggested the following recommendations regarding lack of equipment:

“It is a big challenge. Patients with open abdomen should have a tape to measure their abdominal girth from first day to check if abdomen is increasing in centimetres. So that it then that you query that is having intra-abdominal pressure.”

“If we could have, if the hospital can organise the regulated suction. There is a certain degree of suction we need to regulate it. It is a big challenge. It goes back to the budget of the hospital. Doctors should take it up with the management or sort it out.”
Hussain, Singh and Singh. (2012:1-5) state that negative topical pressure, the general category to which the trademarked VAC therapy belongs, is not a new concept in wound therapy. It is also known as sub-atmospheric pressure therapy, vacuum sealing, vacuum-assisted closure therapy and vacuum pack therapy. The VAC therapy system is trademarked by Kinetic Concepts, Inc. The VAC therapy was first reported in 1997. The point of the procedure is to utilise negative pressure to generate suction in order to drain the wound of exudate, and to affect the shape and growth of the surface tissues in a way that assists healing. Negative-pressure therapy for the closure of wounds facilitates secondary wound healing. The high cost still hinders the use of VAC in developing nations. Many modifications were tried and tested, but their efficacy is yet unproven. In reality this method is costly.

Matlakala et al., (2014:6-7) explain that, in order to deliver quality patient care, special equipment such as monitors and ventilators are needed in the ICU. According to reports equipment’s such as cardiac haemodynamic monitors and mechanical ventilators are not enough in the ICU and there is also lack of supplies and medication. The equipment which is broken and not working properly is taken to repairs but there is a delay in repairing them on time. According to Matlakala et al., (2014:6-7), although the ICU are large and some have more than 12 beds they should still have enough equipment in each bed because ratio of patient is one to one. Each patient should either be nursed by an experienced nurse who is ICU or trauma trained. Each bed in ICU should have the necessary equipment such as mechanical ventilator and cardiac monitor and pumps for administering medications.

3.1.3.3 Subtheme: Poor financial management
The participants stated that open abdomen patients have infections which lead to prolonged stay in ICU and hospital. This puts financial strain on the hospital budget. This is evidenced by the following quotations:

“With infection it leads to a lot of strain on the hospital budget. Once they start them on antibiotics that are very expensive others develop multidrug resistant. They have prolong of ICU stay. We have to start them on inotropic support because they show signs of infection. They drop their BP. It’s more money into the system.”
“They stay long in hospital. We are not cost effective.”

“They get resistant from antibiotics.”

Dhillon, Shah and Rimawi (2015:n.p) explain that ICUs carry a high risk for nosocomial infections, contributing to an increase in morbidity, mortality and healthcare costs. In order to reduce the occurrence of ICU nosocomial infections, healthcare providers should acquire aggressive infection control measures. In 2002, the Centre for Disease Control and Prevention mentioned 417,964 healthcare-associated infections and 99,000 facilities in the United States among critically ill adults and children in an ICU. The serious healthcare-associated infections includes catheter-associated urinary tract infections (40%), ventilator-associated and healthcare-associated pneumonia (25%), catheter-associated bloodstream infections (10%) and surgical site infections. Healthcare-associated infections, including those secondary to multidrug resistant gram-negative bacteria (Acinetobacter baumannii, Pseudomonas aeruginosa) and Clostridium difficile annually account for $29 billion dollars in the United States per year.

Spencer et al. (2008:27) indicate that the complications such as intra-abdominal abscess and fistula formation delay patients’ process of healing and prolong ICU and hospital stay. Patients with ACS experience the economic and social effects that affect them and their family and has effects on the hospital system. The quality of life is reduced has been documented during the rehabilitation process that occur after the patient has been discharged in ICU. Patients who survives open abdomen regain the same level of physical and mental health as that of the general population and their abdomen is closed successfully and they finish their rehabilitation process.

The participants suggested the following regarding poor financial management:

“If we could have, the hospital can organise the regulated suction. There is a certain degree of suction we need to regulate it. It is a big challenge. It goes back to the budget of the hospital. Doctors should take it up with the management or sort it out.”

“We need to involve the management of the hospital. The challenge we are facing is not that the doctors don’t want to take the patients to theatre. Cases in theatre need to be
dealt with urgently. Have two theatres for emergency. Have the third theatre for patients in the wards. There must not be piled up of patients going to theatre.”

“Management of hospital should increase staff, increase the healing of patients. We are not motivated as staff. They don’t give us in-service training, no remuneration, not paying us for Sundays. They don’t appreciate what we are doing.”

According to Jooste and Prinsloo (2013:n.p), quality patient care is to be rendered then it is important to have enough nursing staff within the healthcare setting. Staffing affect quality nursing care and affect cost on the nursing service. Staffing is important in ensuring job satisfaction and retaining nursing personnel. It is significant to choose the nursing staff in their right position in order to improve high quality nursing care. Clark (2009:327) mentions that a shortage of nurses is a problem which is being experienced by every clinic, hospital and community agency. The shortage of nurses in ICUs and theatres is a big problem and a burden in all healthcare facilities globally.

Cardenas (2015:n.p.) feels that motivating staff plays a big role in all health care centres because of the nursing staff working in that centre and their increased level of stress. Factors such as motivation, support and proactive work environment should be utilised.

Cardenas (2015:n.p.) adds that it is crucial and effective to ask regularly for the nurses’ feedback concerning the problems or challenges they are experiencing in their work environment. Encouraging discussion which are open regarding their day-to-day challenges they experience with patient care, the hospital environment, work schedules and their stressful issues. Open discussions are significant to encourage teamwork.

3.7 CONCLUSION
Chapter 3 focused on the research findings. Data were analysed and the three themes emerged. Themes were further divided into subthemes. Themes which emerged were: difficulty in nursing care, complications suffered by patients and poor hospital administration. The experiences of professional nurses in managing patients with open abdomen were explored and described in detail. These experiences were then supported by verbatim quotations from the participants as well as literature. Field notes were also used to enrich data.
Chapter four will focus on the recommendations for assisting professional nurses in managing patients with open abdomen.
CHAPTER 4
RECOMMENDATIONS, LIMITATIONS AND CONCLUSIONS OF THE STUDY

4.1 INTRODUCTION
Chapter 3 explored and described the experiences of professional nurses working in ICUs, caring for patients with open abdomen. Chapter four focuses on formulating the recommendations for assisting professional nurses in caring for patients with open abdomen. The study limitations, recommendations for further research and conclusion of the study are also described in this chapter.

The purpose of the study was to explore and describe the experiences of professional nurses caring for patients with open abdomen and to describe the recommendations for assisting professional nurses in caring for patients with open abdomen in an intensive care unit in an academic hospital in Gauteng.

The objectives of this study were:
To explore and describe the experiences of professional nurses who are taking care of patients with open abdomen in an intensive care unit.
To describe the recommendations for assisting nurses in managing patients with open abdomen in an intensive care unit in an academic hospital in Gauteng.

Four focus group interviews were performed and participants were asked two central questions:

- Tell me about your experiences in managing patients with open abdomen.
- What recommendations can assist professional nurses in taking care of patients with open abdomen?

Three themes emerged from data analysis. The themes that emerged were: difficulties in nursing care, complications suffered by patients and poor hospital administration. The three themes were further divided into subthemes.
4.2 DEFINITION OF RECOMMENDATIONS

Recommendations are ideas that emerged from the present study and previous studies in the same area that provide directions from the study (Burns et al., 2013:707). The descriptions of recommendations were summarised in table 4.2 according to the themes that emerged in chapter 3.
Table 4.2 Summary of recommendations of professional nurses taking care of patients with open abdomen according to central theme, themes and subthemes

<table>
<thead>
<tr>
<th>THEMES</th>
<th>SUBTHEMES</th>
<th>RECOMMENDATIONS</th>
</tr>
</thead>
<tbody>
<tr>
<td>4.2.1 THEME 1:</td>
<td>4.2.1.1 SUBTHEME:</td>
<td>Employees should provide debriefing sessions for staff members (Hanna, 2007:38-47). Professional nurses should be encouraged to attend debriefing sessions (Hanna, 2007:38-47). Professional nurses should be encouraged to use effective teamwork (Reader, Flin, Mearns &amp; Cuthbertson, 2009:1-3). Encourage communication between members of multidisciplinary team (Cardenas, 2015:2). Encourage members of the multi-disciplinary team to attend ward rounds (Restrepo, 2012:9-13). The social worker should be involved in counselling nurses who experience psychological problems (Moola, Ehlers &amp; Hattingh, 2008:80-82).</td>
</tr>
<tr>
<td>Difficulties in nursing care</td>
<td>Psychological problems</td>
<td>The doctors should change dressing after 48 hours (Spencer et al., 2008:26). Professional nurses should measure the amount from suction 4 hourly (Demetriades, 2012:22). Professional nurses should monitor the haemoglobin levels of the patient (Demetriades, 2012:22).</td>
</tr>
<tr>
<td>4.2.1.2 SUBTHEME:</td>
<td>Wound care</td>
<td></td>
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</table>
The unit manager should organise regulated suction (Caro, Olona, Vadillo, Feliu & Vicente, 2011: 277).
The wound specialist should assist in dressing leaking colostomies (Dorman, 2009:2).
The wound specialist should give in-service training on how to change colostomy bags (Dorman, 2009:2).
The wound specialist should provide enough colostomy bags (Dorman, 2009:2).

| 4.2.1.3 SUBTHEME: Pain control | Professional nurses should nurse patients in a comfortable position (Hajiesmaeili & Safari, 2012:238).
The head of the bed should not be elevated more than forty five degree (Hajiesmaeili & Safari, 2012:238).
Doctors should not stop analgesia and sedation too suddenly when patients are still experiencing pain (Corke, 2015:1).
Professional nurses should adhere to giving treatment as prescribed to minimise pain (Sakata, 2010:n.p.). |

| 4.2.1.4 SUBTHEME: Ventilation | Professional nurses should monitor arterial blood gases (Wittmann, 2010:14).
A protective ventilation strategy with low tidal volumes (6ml/kg ideal body weight) and an airway pressure of below 30cm H₂O should be used (Pelosi & Vargas, 2012:2). |

| 4.2.1.5 SUBTHEME: | Dieticians should be allocated to the ICU to assess the |
| Difficulty in absorbing feeds | nutritional status of the patients (Ferrie, Daniels, Gagnon, Hamlyn, Jukkola, Riley, Storer, Whiteman & Zarshenas, 2011:5-8). Dieticians should order feeds for patients according to their nutritional needs (Ferrie, Daniels, Gagnon, Hamlyn, Jukkola, Riley, Storer, Whiteman & Zarshenas, 2011:5-8). Assessment of position of the tube after insertion and before commencement of feeds (Williams & Leslie, 2005:5-15). Encourage nursing staff to frequently check gastric residual volumes (Williams & Leslie, 2005:5). Total parenteral nutrition should be commenced if patients are not absorbing feeds (Hegazi & Wishmeyer, 2011:2-6). |
| 4.2.1.6 **SUBTHEME:** Lack of knowledge and skills | In-service training should be provided to nurses and doctors on a regular basis (Bluestone, Johnson, Fullerton, Carr, Alderman & BonTempo, 2013: 29). Shift leaders should be provided in ICU to supervise nursing staff (Lundren-Laine, Kontio, Perttila, Korvenranta, Forstrom & Salentera, 2011:1-2). Ensure critical care nurses are knowledgeable about monitoring intra-abdominal pressure (Spencer et al., 2007:19). |
| **4.2.2 THEME 2:** | Nurses and doctors should adhere to aseptic technique |
| Complications suffered by patients | Infection | (Cherney, 2013:1).  
Ensure all staff members wash their hands before and after any procedure performed on patients (Cherney, 2013: 1).  
The infection control sisters should be involved (Dorman, 2009:2).  
Personal protective clothing such as gloves, proper masks and goggles should be provided to staff (Standards Infection Control Precautions, 2012: 10-12).  
The professional nurses should adhere to giving antibiotics on specified times (Armstrong, 2010:n.p.). |
| --- | --- | --- |
| 4.2.2.2 SUBTHEME: Fistula | In-service training should be provided to doctors on a regular basis (Bluestone, Johnson, Fullerton, Carr, Alderman & BonTempo, 2013: 29).  
The unit manager should provide regulated suction (Schecter et al., 2006:394). |
| 4.2.3 THEME 3: Poor hospital administration | 4.2.3.1 SUBTHEME: Lack of protocols | The clinician should provide ICU protocols (Chang, Sevransky & Martin, 2012:1-6).  
Protocols should be signed by the head of department and unit managers and be updated annually (Chang, Sevransky & Martin, 2012:1-6). |
|  | 4.2.3.2 SUBTHEME: Lack of equipment | The hospital management should motivate for equipment to monitor intra-abdominal pressure (Schecter et al., 2006:394). |
The hospital should motivate for regulated suction (Caro, Olona, Vadillo, Feliu & Vicente, 2011: 277).

| 4.2.3.3 SUBTHEME: Poor financial management | Ensure that VAC treatment is used to reduce the overall costs associated with wound closure (Kopacz, Jewell, Berdy & Sando, 2006:4-5). |

The following recommendations summarised in Table 4.2 are described in detail and could result in better outcome of the patients.
4.2.1 Theme 1: Difficulties in nursing care

4.2.1.1 Psychological problems
The study results showed that participants are affected psychologically when caring for patients with open abdomen. They recommended that the professional nurses should go for debriefing. Professional nurses should use effective teamwork. Communication between multi-disciplinary team members should be encouraged. Encourage all members of the multi-disciplinary team, such as dietician, physiotherapist and microbiologist to attend ward rounds to minimise medical errors.

4.2.1.2 Wound care
Participants were concerned that there is no regulated suction to connect to open abdomen. Suction from the wall is not powerful enough to suck blood from open abdomen. Participants recommended that wound dressings in patients with open abdomen should be changed within 48 hours. The participants suggested that the hospital should motivate for enough suctions in the intensive care unit and these suctions should be regulated and functioning properly. Professional nurses should measure the suction or VAC dressing 4 hourly, watch haemoglobin and monitor blood gases when patients with open abdomen come back from theatre. These would be beneficial to patients who are bleeding and would be taken back to theatre without delay. Participants also addressed the problem of leaking colostomies. They suggested that the colostomy wound specialist should be called to assist them, provide in-service training on how to change colostomy bags and also to supply them with necessary equipment such as different sizes of colostomy bags.

4.2.1.3 Pain control
The results of the study showed that the analgesia and sedations are stopped too soon in patients with open abdomen. The participants suggested that professional nurses should consider a comfortable position in patients with open abdomen to alleviate pain. The doctors should not stop analgesia and sedation too early when patients are still experiencing pain. Professional nurses should adhere to giving treatment according to prescription to maintain continuity.
4.2.1.4 Ventilation
The study revealed that participants struggle to ventilate patients with open abdomen. The participants suggested that professional nurses should control pain and these will minimise ventilation complications.

4.2.1.5 Absorption of feeds
The results of the study showed that patients with open abdomen do not tolerate feeds and there are not enough feeds for the patients in hospital. They struggle to give correct feeds due to shortage of feeds. The participants recommended using total parenteral nutrition in patients not absorbing feeds. The dietician should be involved in ordering and regulating patients feeds. The dietician should attend multi-disciplinary ward rounds. The dietician should communicate with professional nurses after ordering patients feeds to avoid errors.

4.2.1.6 Lack of knowledge and skills
Participants addressed the issue of doctors lacking skills and knowledge on how to monitor intra-abdominal pressure and that they don’t have equipment to monitor intra-abdominal pressure. The participants recommended that in-service education should be provided to both doctors and nurses on how to monitor intra-abdominal pressure. The hospital should allocate more experienced personnel in ICU, such as ICU trained and trauma trained. There should be shift leaders allocated in ICU to supervise staff.

4.2.2 Theme 2: Complications suffered by patients

4.2.2.1 Infection rate
The study revealed that cleaning is not done properly in intensive care units and that the majority of patients with open abdomen develop infections such as pseudomonas. The participants recommended that hospital management should be involved in cleanliness of the hospital and intensive care unit. Professional nurses should adhere to giving antibiotics on time. The infection control sisters should be involved and provide staff with personnel protective equipment such as gloves, proper masks and sterile gloves.
4.2.2.2 Fistula

The study revealed that doctors were not doing suction dressings properly and this resulted in the development of fistula. The wall suction is too powerful and causes fistulas because it is over-sucking. The participants recommended that in-service education should be provided during doctor’s change-over. The hospital should provide regulated suction.

4.2.3 Theme 3: Poor hospital administration

4.2.3.1 Lack of protocols

The study revealed that there are no protocols to assist professional nurses in caring for patients with open abdomen and no protocols on how to monitor intra-abdominal pressure. The participants recommended that there should be a protocol guiding them on how to take care of patients with open abdomen and how to monitor intra-abdominal pressure. The protocol should be signed by the unit manager and head of department.

4.2.3.2 Lack of equipment

The study revealed that the suction points used in ICU are not working properly and that there is also a shortage of suction points. There is no equipment to monitor intra-abdominal pressure. The participants suggested that the hospital should motivate for enough equipment in ICU and they should buy regulated suction.

4.2.3.3 Poor financial management

The results of the study revealed that failure of the hospital to provide enough and experienced staff and enough equipment delays patients’ outcome. Patients are delayed in going to theatre and end up having infections. Lack of well-regulated suctions lead to patients having fistulas. The participants recommended that the hospital management should hire more staff, provide in-service training and motivate staff to work by giving them remuneration.

4.3 STUDY LIMITATIONS

This study was done in one large academic hospital in Gauteng in one ICU, so the results of the study cannot be generalised. The results will differ from one provincial hospital to another and also from government to private hospital due to the availability of equipment.
4.4  RECOMMENDATIONS FOR NURSING EDUCATION, NURSING RESEARCH AND NURSING PRACTICE

The recommendations can be applied in the areas of nursing education, nursing research and nursing practice. From the data collection and data analysis that was described in Chapter 3 the following recommendations can be made:

4.4.1  Nursing education

The following are recommendations regarding nursing education:

- The findings of the study can add value to nursing education if they can be included in the nursing curriculum offered at nursing colleges and universities.
- Publications in journals, presentations in symposiums, workshops, refresher courses in critical care.

4.4.2  Nursing research

- Further extensive research should be done on the experiences of patients to assess how they cope when having open abdomen procedures done to enhance quality nursing care, reduce their hospital and ICU stay and reduce hospital costs.

4.4.3  Nursing practice

- Protocols to support professional nurses should be developed and implemented in intensive care units.
- The compiled recommendations can be implemented in hospitals and training schools in South Africa.
- In-service training programmes and communication programmes should be organised to ensure that the recommendations are implemented.
- The researcher can be part of the team that implement the recommendations.

4.5  CONCLUSIONS

The study explored the experiences of professional nurses in taking care of patients with open abdomen in an intensive care unit in an academic hospital in Gauteng. The research problem, purpose of the study, objectives and research questions were stated
in order to direct the study. The objectives stated were attained. This study used a qualitative, descriptive, explorative and contextual research method.

A non-probability purposive sampling was utilised. The researcher used 24 professional nurses who participated in four focus groups interviews. Three themes emerged, namely difficulty in nursing care, complications suffered by patients and poor hospital administration. Data were analysed using Tesch’s eight steps of coding (in Creswell, 2014:198).

Measures of trustworthiness were applied throughout the study. Criteria and strategies of trustworthiness used were credibility, transferability, dependability, confirmability and authenticity. Ethical considerations were upheld. Recommendations to assist professional nurses to take care of patients with open abdomen were supported with literature. Findings may be incorporated into the body of nursing knowledge.


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THE FACULTY HIGHER DEGREES COMMITTEE has considered your research proposal and concluded that it complies with the approved research standards of theFaculty of Health Sciences, University of Johannesburg.

The HDC would like to extend their best wishes to you with your postgraduate studies.

Yours sincerely,

Prof Y Coopoo
Chair, Faculty of Health Sciences, HDC
ANNEXURE B

TO WHOM IT MAY CONCERN:

STUDENT:               CHIRU, M
STUDENT NUMBER:        900779975

TITLE OF RESEARCH PROJECT:   Experiences of Professional Nurses in Managing Patients with Open Abdomen in Intensive Care Units in Gauteng

DEPARTMENT OR PROGRAMME:    SGUR Medical and Surgical ICU

SUPERVISOR:               [Name]
CO-SUPERVISOR:            Prof WE Nel

The Faculty Academic Ethics Committee has scrutinised your research proposal and confirm that it complies with the approved ethical standards of the Faculty of Health Sciences; University of Johannesburg.

The AEC would like to extend their best wishes to you with your postgraduate studies.

Yours sincerely,

Prof M Peggenpoel
Chair : Faculty of Health Sciences AEC
OUTCOME OF PROVINCIAL PROTOCOL REVIEW COMMITTEE (PPRC)

<table>
<thead>
<tr>
<th>Researcher’s Name (Principal investigator)</th>
<th>Mpho Grace Chipu</th>
</tr>
</thead>
<tbody>
<tr>
<td>Organization / Institution</td>
<td>University of Johannesburg</td>
</tr>
<tr>
<td>Research Title</td>
<td>Experiences of Professional Nurses in Managing Patients with Open Abdomen in Intensive Care Unit in Gauteng</td>
</tr>
<tr>
<td>Contact number</td>
<td>Address: N/A Contact no: 011 498 3376/3378 Cell: 072 296 0413 Email: <a href="mailto:chipu.mpho@gmail.com">chipu.mpho@gmail.com</a></td>
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<tr>
<td>Protocol number</td>
<td>GP 2015RP27 148</td>
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<tr>
<td>Date submitted</td>
<td>04/02/2015</td>
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<td>Date reviewed</td>
<td>March 2015</td>
</tr>
<tr>
<td>Outcome</td>
<td>APPROVED</td>
</tr>
<tr>
<td>Date resubmitted</td>
<td>N/A</td>
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<td>Date of second review</td>
<td>N/A</td>
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<tr>
<td>Final outcome</td>
<td>APPROVED</td>
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</tbody>
</table>

It is a pleasure to inform you that the Gauteng Health Department has approved your research on "Protocol Title: Experiences of Professional Nurses in Managing Patients with Open Abdomen in Intensive Care Unit in Gauteng. The Provincial Protocol Review Committee kindly requests that you submit a report after completion of your study and present your findings to the Gauteng Health Department.

[Signature]

Dr R Le Roux-
Acting DDG: Hospital Services

Date: 11.03.2015
Mpho Chipu  
Department of Nursing Education  
Faculty of Health Sciences  
University of Johannesburg  

Dear Mpho Chipu  

RE:  “Experiences of professional nurses in managing patients with open abdomen in Intensive care unit in Gauteng”  

Permission is granted for you to conduct the above recruitment activities as described in your request provided:  
1. Charlotte Maxeke Johannesburg Academic hospital will not in anyway incur or inherit costs as a result of the said study.  
2. Your study shall not disrupt services at the study sites.  
3. Strict confidentiality shall be observed at all times.  
4. Informed consent shall be solicited from patients participating in your study.  
5. Please liaise with the Head of Department and Unit Manager or Sister in Charge to agree on the dates and time that would suit all parties.  

Kindly forward this office with the results of your study on completion of the research.  

Supported / not supported

Ms. M. M Pole  
Nursing Director  
Date:

Approved / not approved

Ms. C. Bokohil  
Chief Executive Officer  
28 Oct 2014
To whom it may concern

Permission to do a study in the Trauma ICU unit

RE: M CHIPU
Student number: 909775573

Study: experience of professional nurses in managing patients with Open Abdomen in Intensive Care unit in Gauteng

This is to confirm that Sister Chipu has been granted permission to do the above mentioned study in the CMJAH Trauma unit.

She will be required to follow all the ethics requirements and make sure that she conducts the study in a professional manner

Yours Sincerely

Dr MS Moeng
Disaster chairperson
CMJA Hospital
27 October 2014

TO WHOM IT MAY CONCERN

Permission to conduct research in Public Hospital

I have read Mpho Chipu research proposal. Her topic is experiences of professional nurses managing patients with open abdomen.

I gave her permission to continue with her research in Charlotte Maxeke Hospital. The researches will benefit nurses working in intensive care unit in improving nursing practice and also improving quality in patient care.

Yours sincerely

[Signature]

Prof T E Luvhengo
Professor and Head of Surgery
Department of Surgery
Charlotte Maxeke Johannesburg Academic Hospital
University of the Witwatersrand
TO THE PROSPECTIVE PARTICIPANT

REQUEST TO CONDUCT RESEARCH

Dear Colleagues

My name is Mpho Chipu. I am a professional nurse specialising in Intensive care. I would like to invite you to participate in a research project called “Experiences of professional nurses in managing patients with open abdomen in intensive care unit in Gauteng.” The research is part of my requirements for Master’s degree in Medical and Surgical Nursing: Critical Care with University of Johannesburg. I am expected to conduct a research study under the supervision of Prof W.E Nel and Mrs I. Kearns in the Faculty of Health Sciences at the University of Johannesburg.

The objectives of the study are: to explore and describe the experiences of professional nurses in caring for patients with open abdomen and to describe the recommendations for assisting professional nurses in taking care of patients with open abdomen in intensive care unit.

I am required to conduct semi-structured focus group interviews with professional nurses in intensive care units in Gauteng. Focus group interviews will be conducted by the researcher when participants are off duty or during quite moments in intensive care to avoid interfering with nursing duties and patients’ routine care. Focus group interviews will consists of six participants. Advantages of using focus group interviews is to increase interaction amongst participants so that they can express their feelings on how to manage patients with open abdomen. Focus group sessions will last for approximately 45-90 minutes.

The participants will be requested to sign a consent form for accepting to participate in the study. Interviews will be held in a quiet and private area in the academic hospital. Participants will sit in a U or circle shape to encourage eye contact. The researcher will facilitate the
interviews and also writes field notes. The main open ended question asked will be “Tell me about your experiences in providing nursing care to patients with open abdomen.”

The interviews will be audiotaped and transcribed verbatim. Interviews will only be accessed by the researcher and supervisors of this study. Interviews will be held until saturation of data. Audiotapes will be kept locked to ensure confidentiality and anonymity and will be destroyed two years after research publication. The researcher will not mention participant’s names during the interviews. Ethical principles will be adhered to throughout.

You will be informed about the places and time for focus group interviews immediately when permission is granted. The place where interviews will be held will be convenient and accessible. Time will be arranged and will be convenient for all participants. You will be contacted telephonically or via email. Participation is voluntary and you have the right to withdraw from the study at any point without any penalty.

The experiences from participants will help the researcher to be able to describe the recommendations to assist professional nurses in caring for patients with open abdomen. A summary of research findings will be available on request. If you need further clarity about the study you can contact me from Monday to Friday between 07h00 to 16h00. My name is Mpho Chipu and you can contact me on 0114883376 or 0722980413. My email address is chipu.mpho@gmail.com.

There are no risks in sharing information during focus group interviews as confidentiality and anonymity will be maintained throughout the study. You will be required to sign the consent form if you agree to participate. You will also sign if you agree that interviews will be audiotaped.

Thanks for your participation.

Yours faithfully

MPHO CHIPU, RN
RESEARCHER: MCUR (MEDICAL AND SURGICAL NURSING: CRITICAL CARE)
CORRESPONDENCE TO: CHIPU.MPHO@GMAIL.COM
CONTACT NUMBERS: 0722980413 OR 0114883376

MRS IJ KEARNS
SUPERVISOR
PROF WE NEL
CO-SUPERVISOR

ANNEXURE H

EXPERIENCES OF PROFESSIONAL NURSES CARING FOR PATIENTS WITH OPEN ABDOMEN IN AN INTENSIVE CARE UNIT IN GAUTENG

I give permission to be included in the study. I have read and understood the contents of the information sheet.

______________________________
PARTICIPANT SIGNATURE

______________________________
PARTICIPANT SIGNATURE

Give permission that my interview can be audio-taped.

______________________________
PARTICIPANT SIGNATURE

______________________________
RESEARCHER SIGNATURE
December 2015

To whom it may concern

This is to confirm that I, Margaretha Jordaan, a professional and experienced language practitioner, have edited the dissertation

Experiences of professional nurses caring for patients with open abdomen in an intensive care unit in Gauteng
by Mpho Grace Chipu (University of Johannesburg).

I have checked correctness of grammar, language and punctuation, and have recommended corrections and improvements to the best of my knowledge and ability.

Marga Jordaan
BA (Hons)

BA (UNISA) with Afrikaans III and English III
BA Hons (specialising in Translation) cum laude (RAU)
as well as 20 years of experience of language editing of both Afrikaans and English.