

**CAESAREAN SECTION WOUND INFECTION PREVENTION**



**SCHOOL OF NURSING AND MIDWIFERY**

**COLLEGE OF HEALTH SCIENCES**

**UNIVERSITY OF GHANA**

**CAESAREAN SECTION WOUND INFECTION PREVENTION PRACTICES**

**AMONG NURSES AND MIDWIVES IN THE UPPER EAST REGIONAL**

**HOSPITAL**

**BY**

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**CAESAREAN SECTION WOUND INFECTION PREVENTION**

**DECLARATION**

I, Monica Yinpok Guure, declare that except for other researchers' work which has been duly acknowledged, this thesis is the result of research undertaken for the award of Master of Philosophy degree in Nursing at the University of Ghana, Legon.

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## ABSTRACT

Caesarean section (CS) is deemed a life-saving procedure. However, Caesarean wound infection is a common complication and accounts for about 12% of mortality in women who deliver by CS. The purpose of this study was to explore and describe the practices used by nurses and midwives to prevent Caesarean wound infections in the Upper East Regional Hospital. The Donabedian Quality Care Model was used as a framework to guide the study. An exploratory descriptive qualitative research design was used for the study. Purposive sampling was used to invite nurses and midwives who met the inclusion criteria to participate in the study. Twelve (12) interviews were conducted, using a semi-structured interview guide. Thematic content analysis was used to analyze data. Four (4) themes were identified and described as follows: Structures influencing CS wound infection prevention, Processes used to prevent CS wound infections, Outcomes of nursing care, and Integration of evidence-based practices in wound care. The findings described the different nursing care provided to patients to prevent wound infections after CS. Prevention of CS wound infections was enabled by skin preparation, education, timely administration of medications, wound dressing, communication, and teamwork to prevent wound infection and facilitate wound healing. However, organizational structures may influence the outcomes of these processes. The participants felt gratified when their patients' wounds healed without being infected. In conclusion, strategies to enhance the integration of Evidence-based practices (EBP) into wound care must be initiated.

## **DEDICATION**

To my mother, the late Mrs Grace Manzoah Guure, who continues to be a source of inspiration in my life. I also dedicate this thesis to all nurses and midwives who work tirelessly to improve patients' outcomes.

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### **LIST OF ABBREVIATIONS**

CS:	Caesarean section
EBP:	Evidence-Based Practice
GHS:	Ghana Health Service
HAI:	Hospital Acquired Infections
HIC:	High Income Countries
LMIC:	Low-middle Income Countries
MOH:	Ministry of Health
SSIs:	Surgical site infections
WHO:	World Health Organization

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### CHAPTER ONE

### INTRODUCTION

#### 1.1 Background of the study

The success of surgeries has made it a central component in the provision of safe and quality health care to clients (WHO, 2008). Globally, an estimated 230 million surgeries are carried out on clients yearly (Weiser et al., 2008). Though it may appear that surgery has had a positive impact on the quality of health of clients, Shrime, Bickler, Alkire, and Mock (2015), reported that one-third of the global burden of disease emanates from surgical cases. The WHO report in 2016 revealed that the lives of millions of surgical clients are endangered due to surgical site infections (SSI) with 11% of these clients ending up with infections following a surgical procedure (WHO, 2016).

According to Horan, Andrus, and Dudeck (2008), surgical site infections are complications of surgery occurring within 30 days after a surgical procedure involving any part of the body or within a year after surgery for those who undergo procedures for implants. The occurrence of these SSI's may be due to the environment, the host or the procedure used for the surgery (Gur et al., 2015). Furthermore, SSI contributes to a variety of postoperative complications, including the death of body parts (Gregory, Jackson, Korst, & Fridman, 2012; WHO, 2016). Regardless of the cause of wounds, there has been a substantial yet unrecognized overall impact of CS wound infections on clients and the health care at large (Lindholm & Searle, 2016). The consequences of these complications have untoward hardships on clients, families, and the health care sector (Gillespie et al., 2018).

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Annually, about 80 million dollars is used to render care to 5-15% of patients who develop infections following surgery in the United States of America (USA) (Zimlichman et al., 2013). Surgical site infections are the leading cause of all Hospital Acquired Infections (HAIs) in Low-Middle Income Countries (LMICs), accounting for 29.1 % of nosocomial infections (WHO, 2011). However, most surgical wound infections are preventable with minor care (Allegranzi et al., 2011).

In response to SSIs, the WHO developed a surgical checklist and guidelines to ensure the safety of the clients who undergo surgery (WHO, 2016). These guidelines are intended to influence practices that lead to SSI prevention and subsequent improvement in the quality of surgical care. It appears that the guidelines developed by WHO has been adopted by various healthcare settings worldwide. Due to recommendations for the prevention of SSIs after CS, several interventions have been put together to form surgical bundles. These bundles include preoperative bath, post-operative antibiotics, shaving, skincare, sterilization of items, aseptic dressing and hand hygiene (Haas, Morgan, Contreras, & Kimball, 2020; Kawakita, Iqbal, Landy, Huang, & Fries, 2019; Martin et al., 2018; Smail & Grivell, 2014).

Caesarean section (CS) was a major surgical procedure performed to save the lives of both the mother and baby (Gregory et al., 2012). However, it appears that CS is not always beneficial to the mother and baby because it can lead to complications such as SSI (Gould, 2007). SSI is the most prevalent complication associated with Cs and ranges between 3%-15% across the globe (Olsen et al., 2008; Suarez-Easton, Zafran, Garmi, & Salim, 2017). Several factors may influence a patient's risks of acquiring wound infections after CS. Studies cited factors including obesity, hypertensive disorders, emergency CS and multiple

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vaginal examinations (Dhar et al., 2014; McKibben, Pitts, Suarez-Cuervo, Perl, & Bass, 2015; WHO, 2016; Wloch et al., 2012).

Gur et al. (2015) findings revealed that the occurrence of SSI may be due to the environment, the host or the procedure used for the surgery. This implies that there is a need for a collective effort in the quest to prevent or reduce the rates of SSI among women who undergo CS. The rates of CS site infections are of concern to both high-income, middle-income and low-income countries because although SSI is preventable (Allegranzi et al., 2011), they account for 12% of mortality in women who undergo CS deliveries (Krieger, Walfisch, & Sheiner, 2017; Witter, Lawson, & Ferrell, 2014). For instance, El-Achi, Wan, Brown, Marshall, and McGee (2018), in Australia, reported that 25.5% of the women were readmitted with CS SSI. Since developing an infection at the surgical site following a caesarean delivery compromises the physical, psychosocial, and emotional state of women, prevention of infection is key (Umscheid et al., 2011). Also, anecdotal evidence shows that the increasing rate of CS wound infections leads to a prolonged stay in the hospital with discharged patients re-admitted following SSI. Additionally, CS wound infections increase the risk of high hospital cost and further puts a burden on the limited resources of the healthcare facility (Allegranzi et al., 2011).

Evidence from a global survey involving 150 countries indicates that CS currently accounts for 18.6% of all deliveries worldwide. Of this, 6% are from Low middle-income (LMICs) and 27% from High-income countries. Latin America and the Caribbean had the highest rate of (40.5%), then North America (32.3%), Oceania (31.1%), Europe (25%), Asia [19.2%] (Betrán et al., 2016). Although high rates of CS have been recorded in high-income countries [HICs], the rates in Africa have gradually increased (Betrán et al., 2016).

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According to the WHO (2016), 20% of women who had CS, developed infections at the incision site leading to a reduction in the quality of their health, subsequently, affecting their ability to nurture their babies. High rates have also been reported in Tanzania, where 48.2% of women who underwent CS in hospitals developed infected wounds (De Nardo et al., 2016).

Furthermore, the findings of a study revealed increasing rates of CS wound infections in low- income countries ranging from 0.3% to 38.7% (Chu et al., 2012; Nibamureke, Kayonga Ntagungira, Adomako, Pawelzik, & Wong, 2016). Similarly, as the surge in CS continues to persist, researchers have raised concerns about the impact it has on maternal and neonatal outcomes (Betrán et al., 2016; Chen et al., 2018). Suarez-Easton et al. (2017), reported a possible further increase in CS rates which will cause post-CS wound infections also to rise. It might become a critical issue of global concern if the necessary steps are not taken now to prevent complicating the problem in future. In a retrospective cohort study involving 3334 women who had Caesarean section, the rate of SSIs in CS deliveries was between 3-15% in all live births (Hsu, Cohn, & Caban, 2016). A survey in Ghana suggests that 13% of all deliveries are through CS (GHS, 2016). Studies in three teaching hospitals (Korle-Bu, Komfo Anokye and Cape Coast) in Ghana on the rates of SSI following CS reported rates of 7.6% in 2013, 9.6% in 2017, and 14.8% in 2018 (Attah, 2018; Labi et al., 2019; Nsiah–Afriyie, 2017) indicating an increase in the rates in CS following SSI. Similarly, study finding in the Upper East Region showed that there were 24,171 deliveries in health care facilities across the Bolgatanga municipality of this, 14.5% were CS delivery (Osei, Agbemefle, Kye-Duodu, & Binka, 2016). Notwithstanding, the rates of CS differ across hospitals in Ghana (GHS, 2014). These differences may be due to the characteristics

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of the people and the perioperative practices used across the country (Zuarez-Easton et al., 2017).

Generally, most expectant mothers look forward to having successful childbirth and return to their normal lives while bonding with their infants. As mothers leave the hospital, there is a need for adjustments to the physiological and psychological changes after childbirth couple with the recovery (Gould, 2007; Laronche, Popescu, & Benhamou, 2017). Hence, the occurrence of infection at the surgical site not only impacts negatively on women, but also on the baby, family, and the healthcare facilities (Pierson, Scott, Briscoe, & Haas, 2018). These include preventing or delaying the bonding process between mother and child, thus, delay the onset of breastfeeding (Pierson et al., 2018).

The evolution of surgical wound care has seen changes in traditional practices in the event of evidence-based practice. Clinical practice guidelines have been developed over the years to guide healthcare professionals in providing standardized care and the subsequent improvement in health care resources allocation and utilization (Gillespie et al., 2018). Evidence has shown that the implementation of standard guidelines among healthcare workers has resulted in reducing the occurrence of post caesarean wound infections (Gillespie, Chaboyer, Allen, Morely, & Nieuwenhoven, 2014). Some recommended best practices for the prevention of wound infections in women undergoing caesarean delivery include hair removal, proper hand hygiene, skin preparation, aseptic dressing of surgical site, and timely administration of antibiotics (Berrios-Torres et al., 2017; Dahlke et al., 2013; Harrington, 2014; Temming et al., 2017).

Adhering to stipulated infection prevention practices and the proper management of surgical wounds from CS may provide mothers with the chance to recover early and allow

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them to care for their new-borns (Awad, 2012; Salim et al., 2012). It may also reduce the emotional, physical, psychological, and economic burden on the mother, family, and hospital (Salim et al., 2012). This seems to suggest that preventing CS wound infections in women undergoing CS deliveries may increase the quality of life and lessen the resource burden on patients as well as the healthcare facility.

Nursing care practices have been reported to significantly prevent wound complications such as infections in women who undergo CS (Timmins, Thomas Riché, Saint-Jean, Tuck, & Merry, 2018). Therefore, nurses and midwives must ensure that all practices regarding the prevention of surgical wound infections are implemented to achieve optimal care outcomes (Harrington, 2014). In this regard, it is necessary to explore and describe the preventive practices nurses and midwives adopt to prevent CS wound infections. The Quality Care Model by Donabedian (1988) will guide the study.

### **1.2 Problem statement**

Many caesarean deliveries are conducted without any medical indication (Betrán et al., 2016; Lavender, Hofmeyr, Neilson, Kingdon, & Gyte, 2012; Souza et al., 2013). In the 2016 annual report from the Ghana Health Service, there was an increase in the national rates of CS in 2015 from 14.6% to 16.0% with the Upper East Region recording a rate of 7.2% in 2016 (GHS, 2016a). Also, according to Osei, Agbemefle, Kyei-Duodu, & Binka, (2016), 24,171 births were recorded in the Bolgatanga municipality of which 14.5% were CS.

The inadequate monitoring system for surgical wound infections in Ghana has resulted in poor documentation of surgical wound infections and this has led to an

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underestimation of the incidence (Bediako-Bowan et al., 2020). Anecdotally, there seems to be inadequate evidence to show the impact of wound infections post-CS in the study area. However, records from the Regional Hospital's maternity ward reported 1,008 CS deliveries in 2017, 1,023 in 2018 and 1,046 in 2019 showing an increasing trend. Out of these, the ward recorded 43 cases, 39 cases and 40 cases of CS wound infections, respectively (*Annual Performance Review Report*, 2018).

Even though it appears there is a decline in the number of wound infections recorded at the ward, data on CS wound infections seem to be inadequate. Additionally, with the suggested increase in CS, rates of wound infections will increase. CS wound infections present several risks to both mother and baby and this may potentiate the cost of care (Menacker & Hamilton, 2010). The cost of readmissions and prolong hospital stay following CS wound infections are high and this places a burden on both patient and health care facility (Hickson, Harris, & Brett, 2015). Additionally, poor practices have been reported among nurses and midwives concerning surgical wound care which could also impact negatively the outcome of CS wounds (Ding, Lin, Marshall, & Gillespie, 2017; Gillespie et al., 2020; Lin et al., 2019). Besides the poor outcomes with wound infections, research has also shown a mortality rate of 12% in women who develop CS wound infections (Witter et al., 2014).

Furthermore, the majority of nursing care activities cover most of the activities that prevent surgical wound infections (Mengesha, Tewfik, Argaw, Beletew, & Wudu, 2020). This also implies that nurses and midwives' role in caesarean wound infection prevention is paramount in the quest to prevent SSI following a caesarean birth. Therefore, there is a need to focus on practices as nurses and midwives that contribute to the prevention of CS wound infections. Hence, nurses and midwives need to adopt the best perioperative practices to

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prevent wound infections post-CS. There have been several studies on the increasing rates, impact, as well as strategies to prevent the occurrence of SSI following caesarean delivery (Dhar et al., 2014; Di Gennaro et al., 2020; Moulton, Munoz, Lachiewicz, Liu, & Goje, 2018; Zejnullahu, Isjanovska, Sejfiija, & Zejnullahu, 2019). Health care in the Upper East region is faced with numerous human resource challenges. Nurses and midwives form the majority of health care professionals in the Regional Hospital, Bolgatanga and are mostly responsible for caring for mothers with CS wound. Nurses and midwives' practices in wound care would influence the healing of CS wound. However, most studies have focused on the practices of surgeons and other health professionals (Gillepsie et al., 2015; Harrington., 2014; Hickson, Harris, Breet., 2015). Therefore it is important to focus on the wound care practices of these nurses and midwives. Besides, very few studies exist on the practices of nurses and midwives about the prevention of SSI after CS in Ghana. Therefore, this study explored and described the various practices used by nurses and midwives to prevent Caesarean wound infections in the Upper East Regional Hospital of Ghana.

### **1.3 Purpose of the study**

The purpose of the study was to explore and describe the practices of Caesarean wound infection prevention among nurses and midwives in the Upper East Regional Hospital.

### **1.4 Objectives of the study**

The objectives are to:

1. Identify the structures that influence Caesarean wound infection prevention practices among nurses and midwives in the Upper East Regional Hospital.

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2. Explore and describe the processes used by nurses and midwives to prevent wound infections in women with Caesarean section wound at the Upper East Regional Hospital.
3. Describe the outcome of nurses' practice of wound infection prevention in women with Caesarean section at the Upper East Regional Hospital?

These objectives were generated in line with the guiding framework.

### **1.5 Research Questions**

1. What are the structures that influence Caesarean wound infection prevention in the Upper East Regional Hospital?
2. What are the processes used by nurses and midwives to prevent Caesarean wound infections in the Upper East Regional Hospital?
3. What are the outcomes of nurses' practice of wound infection prevention in women with a Caesarean wound in the Upper East Regional Hospital?

### **1.6 Significance of the Study**

Nurses and midwives play vital roles in the fight to prevent infection in women undergoing Caesarean deliveries. This study seeks to highlight the activities or procedures used by nurses and midwives to prevent post-CS wound infections. The study will help nurses and midwives to update their knowledge where necessary and to keep up to date with standard practices in the management of CS wounds. Also, findings from the study will help to improve nursing care and ensure patient safety. Additionally, findings from the study may be used as literature to guide the development of context-based CS wound infection prevention protocols that will enhance adherence to CS wound management in healthcare facilities.

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### 1.7 Operational Definitions

**Caesarean Section:** The process by which a baby is born through a surgical incision on the abdomen through to the uterus.

**Caesarean wounds infection:** A Caesarean wound infection refers to an infection that occurs after a Caesarean section.

**Infection prevention practice:** This is referred to as the various activities, policies, and procedures that are carried out to achieve a reduction in the occurrence of Caesarean wound infections or Caesarean surgical site infection.

**Practice:** Activities or procedures used to prevent Caesarean Section wound infections.

**Prevention:** The act or practice of keeping something bad from happening.

**Registered nurse:** An individual who has graduated from an accredited school of nursing, passed the licensure examination and is licensed by the Nursing and Midwifery Council of Ghana to provide care to patients.

**Registered Midwife:** Any female who has successfully graduated from an accredited midwifery school, passed all required exams by the Nursing and Midwifery Council of Ghana and has been licensed to render patient care to all women with reproductive health issues.

**Surgical Site Infections:** This describes any infection that occurs within 30 days after surgery.

## CHAPTER TWO

### LITERATURE REVIEW

This chapter reviews related literature on the prevention of Caesarean wound infection and presents a description of the theoretical framework for the study. The first section of this chapter began with the examination of three theories to underpin the study. Out of these, one theory was deemed fit to guide the study. The second part involved the discussion of relevant literature relating to the study.

#### 2.1 Theoretical framework for the study

A theoretical framework is a structure that serves as a foundation on which research is built. It also guides the researcher on how to approach the study (Osanloo & Grant, 2016). In the search for a theoretical framework to guide the study, the researcher identified and reviewed several frameworks to select the most appropriate framework to underpin this study. Some of the frameworks that were identified and reviewed are the Health Belief Model [HBM] (Rosenstock, 1974); The Levine Conversation Model [LCM] (Levine, 1967); and the Donabedian Quality of Care Model (Donabedian, 1988).

The HBM examines preventive behaviours and compliance with recommended health behaviours among the study population. The model postulates that individuals have control over their health outcomes. Further, the HBM suggests that a person's belief about a health risk will determine their course of action. Patient roles in their wound care are essential; however, this dimension alone may be inadequate hence it was not used. The LCM is underpinned by four principles: conservation of energy, conservation of structural integrity, conservation of personal integrity, and conservation of social integrity. According to the

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theory, change is a key element in life as individuals are constantly interacting with the environment. The theory further illustrates that more attention is placed on the individual's illness state despite the role of nursing in preventing harm and promoting health. However, the relationships between the concepts of the theory were not clearly defined; hence, it could not be used in this study.

The theoretical framework for this study is the Quality of Care Model by Avedis Donabedian which was developed in 1988. This framework has its foundation on three concepts: structure, process, and outcome, which are the constructs of the model. Structure represents the setting where health care is provided. This includes material resources (such as equipment, facilities), and human resources that are used in the process of care delivery (Donabedian, 1988). It also includes the attributes of organisational structures.

Process is described as a set of activities that occurs between health care providers and clients within an organization. Process refers to the activities that are carried out during the period of care (Donabedian, 1988). It also includes the activities of the healthcare provider such as diagnosis, health education, preventive practices, and counselling (Donabedian, 1988).

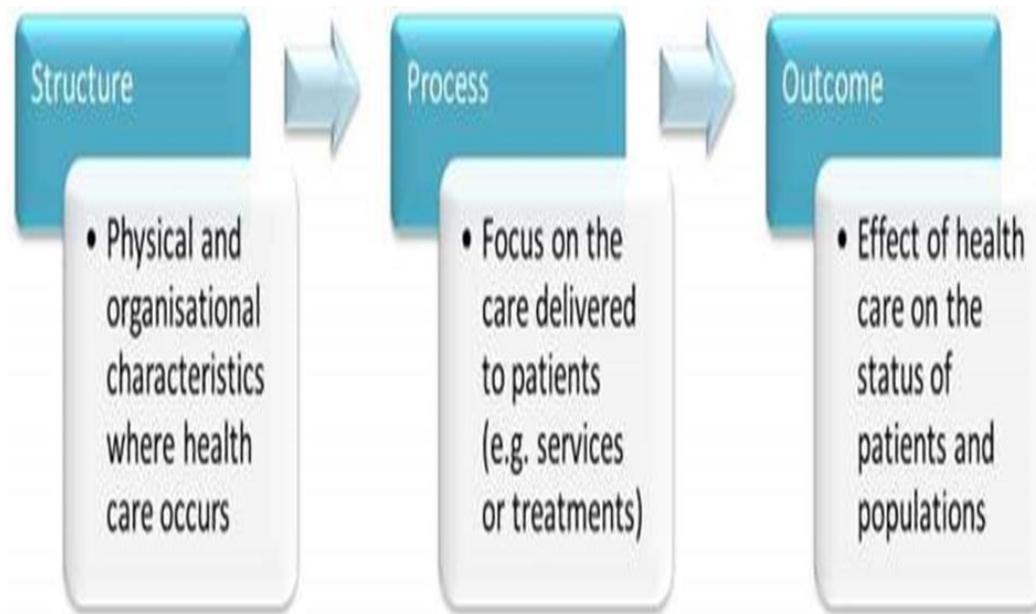
Outcome refers to the effects of the care rendered to patients and populations (Donabedian, 1988). Outcomes can be seen in the form of acute recovery, restoration of function, efficiency, and survival. It also serves as a measure for the quality of care rendered and may serve as a standard for future health care services. The model portrays a dynamic relationship between structure, process, and outcome in healthcare delivery. Thus, structures affect processes of care; processes of care affect outcomes associated with patients and healthcare providers.

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Some researchers have used the Donabedian Quality Care Model as a guide to conduct their studies (Gardner, Gardner, & O'Connell, 2014; Naranjo & Viswanatha Kaimal, 2011). Gardner et al. (2014), in their study based on the Quality care model. The study evaluated the safety and quality of nurse practitioner services. The study asserted that the success of services innovation was determined by adequate and detailed preparation of structure and process. The study found that specific structural elements impact the process of delivering healthcare services, hence, establishing the interdependence between structure, process, and outcome.

This model was found to be the most suitable for this study as it helps the researcher to address healthcare structures and processes that lead to optimal outcomes for the patient. The Donabedian Quality Model also assists health care providers to identify care processes that will lead to optimal care (Killaspy et al., 2013). Using the Donabedian Quality Care model may help in enhancing nursing autonomy through the processes of care. **Figure 2.1** below is the theoretical framework to guide the study.

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**Figure 2. 1 Donabedian Quality of Care model (1988)**

Source: Avedis Donabedian (1988)

## **2.2 Application of the theoretical framework**

The quality of healthcare delivery is an important issue. The Quality Care Model shows that the theory components interrelate to ensure a patient is given the best care. It is also an appropriate framework for healthcare assessment as it highlights components of healthcare that impact patient outcomes.

### **2.2.1 Structure**

The structures in this study include the environment of care. The physical structure and the setup of a healthcare environment are crucial to the work process since they relate to infection prevention. Another element of structure in this study is the availability of materials, equipment, and supplies for CS. Staffing and supervision were relevant structures in this study. Policies and protocols for CS wound management were considered as elements

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of structure for the prevention of infection in women after CS. Research indicates that some structural elements can compromise the extent to which care is delivered. Thus, the availability of adequate structures will enhance the delivery of quality care (Bonaccorsi et al., 2015).

### **2.2.2 Process**

The processes in this study include wound infection prevention procedures that are performed by nurses and midwives in the health care facility. These procedures may include wound dressing, patient education, sterilization and disinfection, and physical preparation of the patient before CS. It appears that communication and interdisciplinary approach among healthcare providers are vital components of the process of care. The structures influenced the processes within the health care organization. Research posits that processes used to deliver health care can greatly affect outcomes (Ebben et al., 2013). Therefore, the use of effective procedures in the prevention of Caesarean wound infection is crucial, hence, using the best available procedures for the prevention of CS wound infections ensures standards of care and patient safety.

### **2.2.3 Outcome**

Achieving quality outcome is the main goal of healthcare delivery. An outcome of patients' condition may serve as a key indicator of quality care. The health outcomes in patients are often influenced by nursing interventions and actions. Although nursing interventions are associated with outcomes, structures play an integral role in outcomes. The absence of infection in post-Caesarean wounds and wound healing by the primary intention is crucial in health care delivery. Expectations are that every woman who delivers by the Caesarean method does not develop an infection.

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### **2.3 Literature review**

This section was centred on reviewing related literature on structures, processes, and outcomes of infection prevention practices during the care of patients on admission with SSI. Information was gathered from grey literature, internet sources, books, and journals. A search was conducted through an electronic database search of the Cumulative Index to Nursing & Allied Health Literature (CINAHL), Medline, PubMed, Science Direct, and Google Scholar. Keywords such as “surgical site infection”, caesarean wound infection”, “wound care guidelines”, “wound care practices”, “infection prevention guidelines” and “nursing OR nurses OR midwife’ were used.

### **2.4 Structures influencing nurses and midwives’ practice regarding prevention of CS wound infection**

Preventing infection in the hospital setting is influenced by several factors. These factors include the care environment, resource availability and organizational structures. The care environment has been defined as the surroundings of a health worker or a patient, where healthcare delivery occurs (Farman et al., 2019). The role of the environment in preventing infections has over the years been proven as crucial to maintaining patient safety (Dancer, Stewart, Coulombe, Gregori, & Viridi, 2012). With the emergence of both communicable and non-communicable diseases efforts need to be put in place to address the physical layout of hospitals to protect patients from contracting infections while on admission.

Research findings suggest poor patient care environment accounts for high rates of mortality in patients undergoing surgery as compared to patients receiving care in a good environment (Aiken et al., 2014; Cho et al., 2015). Likewise, Kramer and Assadian (2014)

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report that when the healthcare environment is inadequate, it increases patients' risk of developing infections. Thus, an adequate hospital environment is necessary to facilitate patient care outcomes as the inadequacy may account for many infections (Leslie, Fink, Nsona, & Kruk, 2016; Moffa et al., 2017). Spatial arrangement is noted to be an important component in the hospital unit (VanSteelandt, Conly, Ghali, & Mather, 2015). Other study findings have pointed out that the arrangement of the wards can interfere with nursing care delivery and affect patient safety (Peter Van Bogaert, Clarke, Vermeyen, Meulemans, & Van de Heyning, 2009). VanSteelandt et al. (2015) study findings reveal that the restriction in space sharing during care prevents contamination. The study further argues that hand washing stations in hospital wards are essential to prevent infections among patients. Consequently, the design for hospital wards affects the practices of healthcare workers, implying that the actions of healthcare providers may be impeded in an environment that may seem to have limited space.

For example, the study by Barker et al. (2017) employed a qualitative approach to understand the facilitators and barriers to infection control practices among health workers in a hospital in India. The study revealed that the person, task, and organizational factors were the primary barriers and facilitators to infection control practices. Furthermore, the study identified a high turnover rate among nursing staff, time spent on new staff orientation, and workloads were the major barriers; while a well-developed infection control team and an institutional climate that prioritizes infection control were major facilitators. The study concludes that institutional support is critical to the effective implementation of infection control practices and that prioritizing resources to recruit, train and retrain the experienced nursing staff was also essential.

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Also, Rimi et al. (2014), conducted a study in Bangladesh that revealed that environmental contamination with secretions and excretions, medical waste, served as other sources of infection. The study also cited open doors and windows, the use of fans, and improper disposal of hospital waste in and around the wards as other ways of contamination. The study mentioned that the physical structure and the environment were conducive to the spread of infection in the wards. Also, the researchers reported that no disinfection was conducted before or after the use of medical instruments. The study recommended that interventions on hand hygiene, cleaning procedures for rooms and medical equipment must be improved, and the use of disposable sterile packs will be ideal for practicality and effectiveness (Rimi et al., 2014).

A narrative review was conducted to find the challenges about the control of environmental sources of contamination in healthcare settings in low-and middle-income countries (LMIC's). The findings of the review indicated that the sources of environmental contamination in healthcare are numerous and are commonly associated with poor governance and inadequate infrastructure (Ogunsola & Mehtar, 2020). As a result, healthcare facilities in LMIC's are often not purpose-built and may undergo extensive changes in layout and clinical activity over the years as well as lack human capacity and inadequate funding (Ogunsola & Mehtar, 2020).

Typically, bed occupancy and staff workload must be adapted to fit the recommended capacity to ensure the promotion of infection prevention practices. Hence, staffing and bed occupancy plays a crucial role in preventing infections. Similarly, Hugonnet, Villaveces, and Pittet (2007) and Kaier, Mutters, and Frank (2012), in their study, found that understaffing directly affects the incidence of nosocomial infections. The study further revealed that poor

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nurse staffing places both nurses and patients at risk of infection resulting in lost work hours and prolong stay in the hospital. Also, Mitchell, Gardner, Stone, Hall, and Pogorzelska-Maziarz (2018) revealed that increased staffing is related to a decrease in the risk of patients acquiring HAIs.

Timmins et al. (2018) reported the facilitators and barriers nurses encounter during the performance of wound care in the surgical wards of a hospital in Haiti. The study employed a qualitative descriptive design. The nursing staff on the general surgery, orthopaedics and maternity units were observed while they performed routine dressing changes (n = 15). An interview was conducted for 13 nurses and 3 medical residents to inquire about their perceptions of facilitators and barriers to performing quality wound care. Four themes related to barriers and facilitators to perform quality wound care were identified: (i) materials and resources; (ii) nurse-to-patient ratios, workload, and support; (iii) roles and responsibilities of nurses; and (iv) knowledge and training of nurses. The study revealed that some wound care practices such as the use of gloves to remove dressings, applying sterile dressings, properly disposing of soiled materials, inspecting wounds for signs of infection and employing comfort and privacy measures appeared to be well integrated into patient care. However, areas that needed to be improved were the use of aseptic technique, hand hygiene, pain assessments, patient education and documentation. The study concluded by suggesting that wound care practices may be optimized if nurses' professional status and working conditions were improved.

Marwa and Tarimo (2019) used a qualitative approach to study how nurses provided care to hospitalized paediatric burn patients in Tanzania. The study revealed that the nurses used a closed method of wound dressing approach as an essential skill to accelerate wound

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healing, decrease the risk of wound contamination and the incidence of contractures (Marwa & Tarimo, 2019). Also, the nurses felt satisfied when their patients recovered well and discharged home. They also appreciated the influence of teamwork in patients' recovery. However, the study cited inadequate staffing, increased workload, a lack of standard skills, lack of access to water, and lack of specimen collection equipment as barriers to the provision of quality care.

Clinical supervision in healthcare facilities enhances organizational performance (Enterkin, Robb, & McLaren, 2013). This means that supervision is core in a clinical practice environment. This position was held by de Abreu and Marrow (2012), whose study confirmed that the practice of clinical supervision in nursing increases work output. The study findings demonstrated that clinical supervision positively impacts the professional development of nurses and their clinical practice. Additionally, the researchers argued that supervision serves as a tool to stimulate consistent clinical practice and offer support for professional growth and development. Similarly, Bifarin and Stonehouse (2017), claimed clinical supervision is an important component of every nurse's practice. The study emphasised that quality care will exist when nurses receive support and guidance from their supervisors. Implying that inadequacy or poor supervision may lead to undesirable care outcomes, hence, nurses and nurse managers must make efforts to ensure supervision becomes a routine part of their work.

Policies and procedures have been proposed as an organizational strategy to propel the use of evidence-based practices among nursing staff. These policies and procedures appear to be guideline documents developed by an organization to direct nursing care activities. Guidelines for clinical practice are intended to ensure that clinicians consistently

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and efficiently apply research evidence in their routine care practices (Abrahamson, Fox, & Doebbeling, 2012; Emond et al., 2015). Abrahamson et al. (2012) suggested some facilitators and barriers to the use of clinical practice guidelines. The study mentioned communication, education, orientation and training as facilitators while time, staffing, and workload were identified as barriers to the use of clinical practice guidelines. Further, the results suggested that organizational factors seemed to be one of the main factors that influenced nurses' adoption and use of guidelines.

Furthermore, Squires et al. (2012), in a study to explore nurses' use of policies and procedures in promoting research evidence utilization, reveals that policies and procedures are mostly used by nurses as a guide for their practice. The study finding further suggests that the existence of policies and procedures alone were inadequate to enhance the uptake of evidence-based practices among nursing staff. This implies that in translating study findings into clinical practice, there needs to be a collaboration between the organization and staff practitioners to facilitate the integration of this evidence into practice.

Similarly, Alhassan, Karley, Ackah, and Adodoaji (2020) investigated the extent to which nursing staff adhered to policies and protocol for the management of surgical and non-surgical wounds in public hospitals in Ghana. The study reported that most nurses had inadequate knowledge about the existing policies and protocol regarding the use of methylated spirit and povidone-iodine for surgical wound management. The study concluded that the use of standard quality care protocols must be a pre-requisite for licencing healthcare institutions. Suggesting that hospitals must endeavour to ensure that policies and protocols are readily available and accessible for use by clinical nurses during wound care as this facilitates and ensures better wound outcome.

## **2.5 Processes involved in preventing wound infections**

The prevention of SSI's following CS is crucial as health care professionals seek to reduce the overall impact on mothers and their new-borns. Over the years, many health care institutions strive to provide quality care to improve the overall patient experience with minimal costs (Ryan, Brown, Glazier, & Hutchison, 2016). SSIs can be prevented using best practices (Allegranzi et al., 2016). Nurses are to ensure the maintenance of the highest standard and quality while caring for patients irrespective of the differences in wound care practices (Gillespie et al., 2014). Consequently, the nature of care rendered by nurses impacts the prevention of SSI in the post caesarean woman (Benson, 2011). Meaning, the efforts of health care professionals are the key to achieving a reduction in the occurrence of SSI's.

For instance, Shea and Soper (2019) reported various interventions and techniques for the prevention of Caesarean wound infections. The review recommended that techniques and interventions such as abdominal and vaginal preparation, glycaemic control, appropriate antibiotic regimen, preoperative cleansing, hair removal, manual extraction of placenta, skin closure technique, the timing of dressing removal, negative pressure wound therapy, intra-abdominal irrigation, anti-septic skin preparation, and routine screening for bacterial vaginosis were suggested practices to reduce Caesarean wound infections. Additionally, the study finding acknowledges that some of the recommendations made still need to be studied to further strengthen support for their use (Shea & Soper, 2019).

However, a study to evaluate the efficacy of different methods of preoperative hair removal in reducing surgical site infections (SSIs), observed no important differences between the various method and the frequency of SSIs. The study also found preoperative hair removal did not impact the reduction of SSIs. Shaving, clipping, no hair removal, and

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the use of depilatory cream were the interventions included. The evidence suggested that preoperative hair removal should be avoided unless necessary while the use of clippers for hair removal was recommended over the use of a razor and depilatory cream (Shea & Soper, 2019).

In another study, it was revealed that the use of chlorhexidine–alcohol for preoperative skin antisepsis was better than iodine–alcohol application for the prevention of SSI's after caesarean delivery resulting low infection rate (Tuuli et al., 2016). Similarly, Wang et al. (2017) found out that chlorhexidine was efficient towards the prevention of SSIs. The study revealed that the preoperative use of chlorhexidine could reduce the total incidence of infection. Additionally, the use of an antiseptic solution for skin cleansing before Caesarean delivery could decrease the risk of post-caesarean endometritis (Haas et al., 2020). On the other hand, another study has indicated a lack of difference between the use of chlorhexidine and povidone-iodine to prepare patients skin before surgery to prevent the risk of SSIs (Ngai et al., 2015).

Nursing and midwifery staff have been identified among other stakeholders to have the most impact on patients since they have the most direct contact with patients (Al-Hussami & Darawad, 2013). Hence, nursing practices directly influence the outcome of patient care. Ding et al. (2017) described surgical postoperative wound care practices and the extent to which observed surgical wound practices aligned with evidence-based guideline recommendations. The study employed a cross-sectional perspective approach. The researchers observed that most nurses who participated in the study did not use gloves correctly. Also, patient education pre- and post-surgery were poor as nurses failed to provide adequate information on wound management. The study concluded that despite surgical

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wound care guideline recommendations on aseptic technique compliance, patient education, wound assessment and documentation practices, there was a discrepancy between recommended practice and the actual wound care practice (Ding et al., 2017). Highlighting the fact that clinical practice did not reflect the recommendations made by empirical evidence. Implying that to lessen the occurrence of SSI, wound care practices should be evaluated, and strategies should be integrated to ensure that research evidence is incorporated into practice.

Similarly, Gillespie et al. (2014) revealed in their study that although nurses have sound knowledge of wound healing processes, many do not adhere to the recommended clinical guideline on wound care. Furthermore, Lin et al. (2019), in a study aimed at identifying the facilitators and barriers to nurses' adherence to evidence-based wound care, revealed aseptic technique and patient participation in wound care improved outcomes. The participant's knowledge and skills deficits regarding the application of aseptic technique principles in practice, the non-availability of wound care procedure document, poor documentation and the timing of patient education were barriers to care. This implies that efforts need to be directed at developing interventions to improve nurses' adherence to recommended care protocols as follows: aseptic technique principles, hand hygiene, documentation, and patient education.

However, a study in 2017, reported that nurses' practices in the prevention of postoperative wound infections revealed that proper wound care education was essential. On the contrary, the study findings indicated poor patients wound care education (Ding et al., 2017). Findings from the study by Timmins et al. (2018) on nurses wound care practices in

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Haiti suggested that facilitators and barriers are key to quality care, supported the previous study that patient education by nurses needs to be improved upon (Ding et al., 2017).

Similarly, a survey study by Sijimol, Sequira, D'Souza, and Eshwara (2020), to assess the surgical site dressing practices among healthcare professionals revealed that there were inadequate aseptic wound dressing practices among healthcare professionals. The study also pointed to heavy workload and lack of staff to assist during dressing procedures as factors that influenced wound care. Notwithstanding, healthcare professionals need to use measures that will prevent surgical wound infections.

A study was conducted to determine the level of knowledge and practice of postoperative wound infection prevention among nurses in the surgical unit in a University Teaching hospital. The findings in the study reported that out of 100 nurses who participated in the study, 68% had poor knowledge of postoperative wound infection prevention. However, the study indicated that nurses often applied sterile dressings to surgical wounds and maintained asepsis during wound care (Famakinwa et al., 2014). Similarly, other findings revealed that most nursing practices regarding the prevention of surgical wound infections were inappropriate, thus there was the need for training on evidence-based practices to enhance their care (Teshager, Engeda, & Worku, 2015). Though it may appear that most nurses do not have sufficient knowledge of wound infection prevention practices, they often use sterile dressings for wound care to control infections following surgery.

Peleg, Eberstark, Warsof, Cohen, and Ben Shachar (2016) suggested that early wound dressing removal post-CS delivery was key towards infection control and speedy recovery. The study further stressed that women who had their dressings removed earlier expressed satisfaction of meeting their personal hygiene needs without much assistance.

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Although early dressing removal post-CS appears to not affect wound healing, the situation may differ in the other settings where the conditions of wound care practices vary. Another study has shown that the removal of dressings from a CS surgical site at 48 hours impacts positively on the wound outcome. According to the researchers, dressing removal at 48 hours reduces the risk of infection (Kilic et al., 2020). However, patients must be assessed before dressing removal because of the different characteristic's patients may portray.

An overview of the current issues on sterilization and disinfection in healthcare facilities was performed (Rutala & Weber, 2016). The overview suggests that when disinfection and sterilization are done correctly, medical equipment do not pose risks to patients. For this reason, healthcare providers have to ensure that reprocessing of medical equipment before the next use is properly done (Rutala & Weber, 2016). By this, it is anticipated that when equipment is used for invasive procedures like wound dressing, they will not serve as a source of contamination to patients.

The hands of healthcare professionals can serve as a medium through which microorganisms are transmitted to patients during care (Mathai, Allegranzi, Kilpatrick, & Pittet, 2010). Findings from a study revealed that hand hygiene practices among nurses were poor (Awoke, Geda, Arba, Tekalign, & Paulos, 2018). These were attributed to the lack of training, the location of sinks and lack of time. Similar, findings were also reported in Ghana (Yawson & Hesse, 2013). Thus, it has been recommended that to promote hand hygiene, healthcare facilities must institute changes that will influence hand hygiene practices.

Ueno et al. (2019) found that health literacy is associated with the extent to which patient adheres to medication, understands their care, attains self-efficacy, and communicates with health professionals. They added that health literacy may lead to positive

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patient outcome. This infers that education should be focused on improving health outcomes and the overall well-being of a patient.

Studies have shown that health literacy allows people to know what is at stake and this may interfere in the patient outcome (Mantwill, Monestel-Umaña, & Schulz, 2015; Santos, Sá, Couto, & Hespanhol, 2017). Education is therefore considered important as it aids in creating awareness throughout the surgical phase and improves health outcomes. Holland, Foster, Ulrich, and Adkins (2017) cited the implementation of an evidence-based practice improvement project which included education to address the increasing rate of caesarean SSIs in a health facility in the United States. During this period women who delivered by CS were cared for using a standardized evidence-based protocol which included education and preoperative and postoperative care. The team also created educational videos for both women and their families during the postoperative phase and after discharge at home. This demonstrates that using different approaches to integrate best-practices may result in decreased infection rates and improve patient satisfaction.

On the other hand, Sürme, Kartın, and Çürük (2018) found low knowledge and practices of nurses in surgical clinics regarding incisional wound healing. However, the knowledge level increased as the educational level of the nurses increased (Sürme et al., 2018). The study suggested that nurses needed to be educated to improve their knowledge, attitude, and skills regarding wound healing and care. The findings of the study imply that education was essential for health workers, patients, and their relatives to help improve health outcomes.

Interdisciplinary collaboration among nurses, midwives and other health professionals have been linked to better health outcomes in maternity care. Macdonald et al.

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(2015), in a systematic review, identified, appraise, and synthesize evidence on the experiences of midwives and nurses collaborating to provide care. These findings suggested that nurses and midwives who experienced positive collaboration during care allowed them to discuss and share care information. The study also reported negative experiences perceived to be influenced by unclear roles, lack of trust and lack of professionalism. This presupposes that efforts must be made to avoid negative elements that will prevent teamwork while acknowledging positive experiences from teamwork.

Furthermore, Gillespie, Chaboyer, St John, Morley, and Nieuwenhoven (2015) cited strategies and processes used by multidisciplinary teams of health care professionals to reduce surgical site infections (SSIs). They used inductive content analysis to identify and describe the strategies and processes used by multidisciplinary health care teams to prevent SSI. The review revealed that multidisciplinary team-based approaches using a bundled approach, sharing responsibility, and adhering to best practice helped to reduce SSI.

The various healthcare professionals provide different aspects of patient care. Therefore, it is essential to coordinate the different interventions and treatments to prevent the occurrence of errors during care and ensure patient safety. Hence, communication among healthcare professionals is key. This was demonstrated in a phenomenological study that explored the possibility of hospital-based interdisciplinary care delivered by physicians, nurses, and unlicensed assistive personnel (UPA) (Lancaster, Kolakowsky-Hayner, Kovacich, & Greer-Williams, 2015). Findings from the study indicated that physicians, nurses, and UAPs often deliver individual care and barely interact with one another. The researchers, however, claimed that though physicians are perceived as the primary decision-makers during patient care, they recognize the important contributions and expertise nurses

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offer (Lancaster et al., 2015). Implying that nurses' contributions to patient care are paramount hence physicians and nurses must work together to achieve optimal patient outcomes.

A narrative review on the quality of written communication, the impact of communication inefficiencies and recommendations to improve written communication in healthcare revealed that when communication is inadequate, undesirable outcomes may occur. These undesirable outcomes may include discontinuity of care, patient dissatisfaction, and patient safety issues. Therefore, communication must be clear among healthcare professionals to promote collaborative work and to prevent mistakes during care delivery (Vermeir et al., 2015). Another form of communication in clinical practice is handing over. Randell, Wilson, and Woodward (2011) assert that handing over allows health professionals to know what is needed for a patient and to clarify misunderstanding regarding care. Additionally, handing over gives room for clinicians to reflect and discuss the patient care process.

Further, another research has indicated that nurses perceive that communication with physicians influences the relationship in the work environment, job satisfaction in surgical and in critical care units. Communication is considered among many other factors to positively influence the nursing work environment and impact on nurse job satisfaction (Al-Hamdan, Banerjee, & Manojlovich, 2018); implying that communication is necessary to improve efficiency in the delivery of care as well as job satisfaction among nurses.

## **2.6 Outcomes of nursing practice regarding Caesarean wound infection prevention**

Nursing care outcome is a significant indicator of the quality of care delivered (Stalpers, de Brouwer, Kaljouw, & Schuurmans, 2015). Nursing care outcome describes a response to a nursing intervention observed in patient health status (Oliveira, Oliveira, Santana, Silva Bde, & Candido Jde, 2016). Since nurses are responsible for providing direct care for the patient undergoing CS, it is therefore imperative that nurses ensure the care provided to patients leads to a positive outcome. The principal goal of nursing care in the management of wounds is wound healing (Frescos, 2018; Oliveira et al., 2016). Wound healing among patients who have undergone CS is expected to heal by primary intention. However, there may be occurrences such as wound contamination which may lead to infections thus, making the wound heal by secondary intention. Complications in CS wounds may lead to prolonged hospitalization further surgeries, readmissions and increased cost (Guest, Fuller, & Vowden, 2018). This implies that nurses and midwives caring for women who have had CS must be attentive to the CS wounds to achieve better outcomes.

A retrospective study based on cross-mapping of terms on nursing interventions and outcomes in patients with wounds stressed that nursing interventions such as aseptic procedures during wound dressing, documentation of wound size, and the use of saline solution resulted in improved wound outcomes. Given this, the findings indicated that the main outcome of the nursing interventions observed during the study was wound healing. Further, it was noted that most acute wounds healed by primary intention and wounds with delayed healing, infections or other complications may lead to healing by secondary intention (Oliveira et al., 2016).

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Also, Landsperger, Semler, Wang, Byrne, and Wheeler (2016), in a prospective cohort study, revealed good outcomes of nurse practitioner- delivered critical care. Other outcomes of care measured included the length of hospital stay and rates of mortality in critically ill patients in the intensive care unit. The study revealed that patients who were solely managed by nurse practitioners reported low signs of infections in their surgical wounds as well as a low mortality rate in patients. Furthermore, patients who were cared for by nurse practitioners experienced shorter hospital stay and were discharged home, compared to patients who received care from the resident team (Landsperger et al., 2016). This finding implies that efficient patient care by nurses leads to a positive patient outcome. Therefore, nurses must always ensure that standard procedures are carried out during patient care.

Patient satisfaction is impacted by nursing care practices (Palese et al., 2011). The findings from this study show that patient satisfaction with nursing care is influenced by the extent to which they can participate in their wound care. Likewise, the skilful performance of wound care by the nurse, access to information about their care and receiving care that is tailored to their needs influenced patient satisfaction (Palese et al., 2011). This implies that patient satisfaction is an important nursing care outcome. Also, it influences the extent to which the patient follows instructions relating to their treatment schedules and their wound care (Palese et al., 2011).

Evidence suggests that satisfaction among nursing staff is associated with the quality of care rendered to patients and the achievement of desired patient outcome (Kvist, Voutilainen, Mäntynen, & Vehviläinen-Julkunen, 2014). Furthermore, a few studies have reported that hospitals with supportive nurse practice environment and adequate staffing

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demonstrate high levels of job satisfaction resulting in improved nursing care (Aiken et al., 2011; Hinno, Partanen, & Vehviläinen-Julkunen, 2011; Peter Van Bogaert et al., 2009). The researchers explored the mechanisms through which the nursing practice environment is associated with outcomes of care. Their findings revealed that nurse work characteristics and the care interventions influence nurses' job outcome and quality of care. Therefore, healthcare institutions ought to enhance and sustained care environments that maximize the abilities of nurses to allow them to provide better patient care to prevent undesirable outcomes infection.

The study suggests that to attain the desired outcomes for women with CS wounds, health workers should be guided by policies based on research evidence for the management of surgical wounds. However, differences exist between actual practice and the recommended policies (Alhassan et al., 2019; BaMohammed, Mohidin, George, & Al-Aidarous, 2018); and this may contribute to the development of wound complications in the form of infections (WHO, 2016).

### **2.7 Integrating evidence-based practice into clinical practice**

The changing needs of patients in healthcare have necessitated the need for nurses to equip themselves with knowledge and skills that will allow them to deliver efficient, effective, timely and quality healthcare (Nsemo, John, Etifit, Mgbekem, & Oyira, 2013; Welsh, 2018). Findings from research in Finland suggests that nurses believe in using evidence-based practice (EBP) to improve the quality of care and patient outcomes. The study further added that though nurses acknowledged the vital role of EBP, they showed poor knowledge of EBP (Saunders & Vehviläinen-Julkunen, 2016). Thus, knowledge is required to integrate the best evidence into clinical practice.

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Another study has also indicated that nurses are generally receptive to EBP, but they demonstrate low levels of implementation of these practices during patient care. Additionally, they stated that nurses are often unaware of the processes involved in the implementation of evidence-based practices (Skela-Savič, Pesjak, & Lobe, 2016). This finding explains the fact that few nurses received education and training on research and EBP.

Furthermore, a survey involving 10 hospitals in Texas revealed that though resources were available to aid in the implementation of EBP, most nurses rely on experiential knowledge, conferences, hospital policies and procedures, physicians, and other nurse colleagues (Yoder et al., 2014). The study added that most nurses wait for others to provide them with current information on evidence-based practices rather than finding the evidence. Hence nurse managers must create avenues where nurses can learn how to integrate evidence into practice to achieve better patient outcomes and patient safety. The study concluded that bedside nurses are likely to integrate research evidence into clinical practice when they are presented with evidence from nurses who are well experienced in the area of research (Yoder et al., 2014).

### **2.8 Summary of literature review**

The review of pertinent literature on structures in the hospitals implies that overcrowding of the ward affects the practices of infection prevention among healthcare providers. Also, hospital beds in most resource-limited environments were woefully inadequate and may account for the nursing of patients on hospital ward floors. Moreover, patients, staff, and visitors often crowd the wards during the day shifts most of these people carry microbes from one place to another. Indicating that, prevention of overcrowding in the

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units, ensuring environmental cleanliness and regulating the point of entering and exit will reduce the rate of infections. Also, the spacing in a healthcare institution may contribute to wound infections and how nurses interact with patients and the quality of patient care. Hence, nurses and midwives should aim at maximizing the care environment to achieve better wound outcomes in the post-CS patient.

It appears that most of the literature reviewed on CS wound infection prevention was done outside Ghana with few studies in Ghana. Moreover, most of these studies focused on the incidence of SSI's and infection prevention practices among physicians and surgeons. The practices of these groups may not be reflective of the care rendered by nurses and midwives. Again, most of the studies reviewed used the quantitative approach which involved the use of questionnaires. Using a questionnaire to gather data may leave some participants prone to misunderstand and skip some questions. Furthermore, it appears that there is a scarcity of studies on SSI's and infection prevention practices among nurses and midwives in Ghana. Therefore, the study sought to explore and describe the CS wound infection prevention practices among nurses and midwives, and also to highlight the integral roles of nurses and midwives towards positive patient outcomes.

## **CHAPTER THREE**

### **METHODOLOGY**

This chapter describes the methods used in the thesis. It includes the research design, research setting, target population, sample size, sampling technique, data collection procedure, data analysis, and data management. The chapter also provides in-depth information on how the trustworthiness of the research was achieved.

#### **3.1 Research design**

Polit and Beck (2012), describe research design as the various approaches' researchers use to assist them to find answers to the questions of their study. It also serves as a guide for the researcher towards achieving desired goals. This study used the qualitative exploratory descriptive design to obtain information on CS wound infection prevention practices of nurses and midwives.

A qualitative research method is often used to gain a holistic understanding of a phenomenon (Polit & Beck, 2012). A qualitative research design is grounded on a view that inquiries are based on the realities and viewpoints of participants (Lincoln & Guba, 1985). This approach is suitable for this study because it provides an in-depth understanding of the nursing care practices required to prevent CS wound infections and also portrays a picture of what is happening in practice.

#### **3.2 Research setting**

This study was conducted in the Upper East Regional Hospital, Bolgatanga. The region has fifteen (15) administrative departments. The regional hospital, which was in

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Bolgatanga municipality, the capital of the region was situated in the North-Eastern part of the capital town and has a total land area covering seven hundred and twenty-nine (729) square kilometres. It shares boundaries with Bongo in the north, Kasena Nankana in the west, and Nabdam and Talensi in the East. The regional hospital was the largest in the region and was built on January 13th 1953. It serves as a referral centre for the other healthcare facilities in the region. The hospital has a total bed capacity of 381 with a nursing population of about 200. It is made up of clinical and non-clinical departments. The clinical departments include Medical, Surgical, Psychiatry, Maternity, Theatre, Outpatient Department (OPD), Children's ward, Physiotherapy, Reproductive and child health, Dental unit, Ear, Nose, Throat (ENT), Eye Unit, Pharmacy unit and the Diagnostic services department. The Upper East Regional Hospital has a total of about 612 staff. The nurse to patient ratio is 1:18 (*Annual Performance Review Report, 2018*).

The maternity ward has about 25 beds. There are about thirty (30) nurses and midwives currently working in the ward. The ward has one labour room and a designated room where women who undergo CS delivery are admitted and cared for until discharge. The room can accommodate up to eight (8) patients at a time. It has a centrally located sink where staff use for hand washing. The research setting was the Upper East Regional Hospital because it is the largest and only referral healthcare facility in the region and tend to perform most of the CS cases.

### **3.3 Target population**

The study populations were registered nurses and midwives involved in the care of women with CS who continued to receive postoperative care in the maternity ward of the Upper East Regional Hospital.

### **3.4 Inclusion Criteria**

The study included nurses and midwives who were working in the maternity ward and directly involved in the care of women who had undergone CS. Nurses and midwives who had worked for at least one year in the maternity ward and willing to participate in the study were also included.

### **3.5 Exclusion Criteria**

Nurses and midwives who were on rotation in the maternity ward and those currently working in the maternity ward for more than one year but were on leave during the study period were excluded.

### **3.6 Sample size and sampling technique**

Sampling refers to the process of selecting a part of a population to represent the population of interest (Polit & Beck, 2009). A purposive sampling technique was used in recruiting participants for the study. Purposive sampling is widely used in qualitative studies. This technique allowed the researcher to select participants with experience and knowledge concerning the research topic (Etikan, Musa, & Alkassim, 2016). The sample size was reached when the researcher observed that the responses of participants were repeated. The sample size comprised nine (9) midwives and three (3) Registered General Nurses.

After ethical clearance and permission for the study were obtained, the researcher paid five (5) visits to the maternity ward of the regional hospital, Bolgatanga to familiarize herself with the nursing staff. After that, the purpose of the study was explained to them and the researcher personally made contacts with all potential participants and recruited them to join the study. Those who were interested willingly gave their consent to participate in the

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study and a day for interviews was scheduled and accepted for both participants and researcher.

### **3.7 Data Collection Tool**

This study used a semi-structured interview guide to gather data. The interview guide contained open-ended questions and it was prepared in the English language. These questions were developed in connection with the research questions. The interview guide was categorized into two (2), sections A and B. Section A included the demographic data of the participants and section B consisting of questions whose responses revealed information on structures that influence caesarean wound infection prevention practices. Nurses and midwives' practices regarding prevention of CS wound infection, and the outcome of nursing practices regarding CS wound infection prevention.

Pre-testing of the interview guide was done in the War Memorial Hospital, using three nursing staff who met the characteristics of the inclusion criteria. The interviews were conducted in a quiet environment convenient for the participants. This helped in determining the participants' understanding of the questions in the interview guide. Following the pre-test, typographical errors were identified, and few questions were noted to be unclear. The researcher then restructured the interview guide before the main study commenced. The pre-test helped to improve the researchers' interviewing skills before the actual interviews.

### **3.8 Data collection procedure**

The collection of the data started after ethical approval was given by the Ethics Review Committee of the Ghana Health Service. Permission was also obtained from the Regional Health Directorate and the management of the Upper East Regional Hospital in

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writing. The researcher made five (5) visits to the maternity ward of the Upper East Regional Hospital, to recruit participants for the study. Potential participants were approached when the ward was less busy to avoid interrupting their work schedules. After the participants accepted to be part of the study, follow up visits were made to build rapport and to schedule a time for the interviews. The interviews were scheduled for the convenience of both participant and the researcher. The researcher conducted all the interviews face-to-face with the aid of a semi-structured interview guide. Before the commencement of each interview, the researcher reiterated that participants could drop out of the study at any time they desired to. Additionally, informed consent was obtained preceding the interviews and a copy kept by the researcher and the participant for future reference and to be used for audit trails.

The researcher also ensured that the interview questions were explained to the participants to ensure clarity. The English language was the medium of communication. In-depth interviews were conducted which allowed the researcher to gather rich information from the participants. Questions were asked to allow participants to include practical aspects of care. The recorder was tested before the actual interviews. Permission was sought from participants to allow the researcher to use an audio recorder to capture discussions during the interview session. This was to enable the researcher to obtain all the data during the interview correctly. The researcher then transcribed verbatim the conversations of the interview to reflect exactly what the participants said. During data collection, important observations such as non-verbal clues and gestures were noted and written down as field notes and later used to enrich the data. The researcher assured the participants that the information provided will be kept confidential and their identities will remain anonymous. This allowed the participants to relax and speak freely throughout the interview period.

### **3.9 Data analysis**

Qualitative data analysis allows the researcher to organize data in a meaningful manner (Polit & Beck, 2017). The analysis began by first transcribing the recorded interviews verbatim. The accuracy of the transcriptions was re-checked by comparing the transcripts to a replay of the information on the audio recorder. The researcher read the transcripts several times to become familiar with the data and to gain more understanding of the data gathered.

Analysis in a qualitative study is to identify patterns, concepts, themes, and meanings from the data obtained (Maguire & Delahunt, 2017). Thematic content analysis was used to analyze the data. Thematic content analysis is a method used to identify, analyze, and report patterns in a data set (Braun & Clarke, 2006). In thematic content analysis, data from interviews are organized into codes which are later categorized into themes based on similarity in their conceptual patterns (Polit & Beck, 2012). Analysis of data was done concurrently with the data collection.

In analyzing the data, the researcher ensured that the richness of the data remained intact as data was reduced. The analysis and coding of the study were guided by the principles of Braun & Clarke, (2006). The process of the thematic analysis is as follows;

The first step is to familiarize yourself with your data. Here, the researcher listened to recorded interviews and transcribed them verbatim. The transcripts were read several times while taking notes. The second step is to generate initial codes. After the researcher had read the data, initial codes were generated from the data. This helped to identify patterns and organize the data into meaningful groups. These codes were verified by the researcher's

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supervisors before the development of the themes. The third stage is searching for themes. In this stage, the researcher sorted different codes to form themes. Stage four involves reviewing the themes generated. During this stage, all the themes were reviewed by the researcher to validate their relationship with the codes. In stage five is the naming and defining of themes. This was done to identify what each theme talks about and to ensure that the theme represents the data that was captured. Stage six involves producing the report. The researcher analysed the findings in each theme and provided a report on the themes.

### **3.10 Data management**

All study materials were kept confidential and locked up in the researcher's custody. Also, electronic data was stored on the researchers' computer and a password used to prevent other people from accessing the data. The data were assessed by the researcher and her supervisors only. Each document was given a code for easy identification. The audio recordings and the transcripts will be stored for up to five (5) years upon the completion of the study. This will make it readily available to be retrieved when the need arises.

#### **3.10.1 Methodological Rigor (Trustworthiness)**

Trustworthiness is essential for the evaluation of a qualitative study. Trustworthiness describes the degree of quality and the extent to which the findings of the study is accurate (Cypress, 2017). This study adopted the criteria for trustworthiness defined by Lincoln and Guba (1985). Lincoln and Guba suggest the use of credibility, transferability, dependability, and confirmability to achieve trustworthiness in qualitative studies.

### **3.10.2 Credibility**

Credibility is a means by which the researcher ensures confidence in the interpretations given to the research findings (Macnee & McCabe, 2008). Credibility assesses whether the findings of the study reflect the original data gathered from participants of the research (Anney, 2014). During the interviews, participants could freely express themselves. To gain more data from participants, the researcher probed or reframed the questions to confirm previous answers. Transcribing verbatim responses enhanced credibility. Reflexivity was maintained throughout the interviews; hence the researchers' professional background, beliefs, and experiences did not influence participants' responses.

### **3.10.3 Transferability**

Transferability seeks to ensure that research findings can be transferred to other population or setting than the one being studied (Polit & Beck, 2012). Transferability was ensured by providing detailed documentation of participants' selection process. Additionally, a detailed description of the study setting, study design, sampling procedure and data collection procedure was done.

### **3.10.4 Dependability**

This refers to the consistency of obtaining the same findings/results under similar situations. It also ensures that findings from the research are repeated when the study is replicated in the same context or conditions (Gunawan, 2015). The researcher ensured that the findings from the study were reliable by maintaining a well-organized document that presents a step by step description of the procedure used to obtain the findings. Verbatim quotations were used to back the themes that emerged from the data and made an audit trail for use.

### **3.10.5 Confirmability**

Confirmability in the qualitative study looks at the degree to which two or more independent research findings can be agreed upon (Polit & Beck, 2012). The researcher ensured that meanings attached to the data reflect the information participants provide. The researcher presented a vivid description of the methods employed in this study. The researcher was cautious about her own biases throughout the study. Furthermore, audio recordings, reflexive notes, transcripts, semi-structured interview guide, and consent forms will all be kept for reference when the need be.

### **3.11 Ethical consideration**

Ethical clearance was obtained from the Ethics Review Committee of the Ghana Health Service (GHSERC). The researcher sought permission from the Regional Health Directorate after the ethical clearance had been given by the GHSERC. To gain access to the Regional Hospital, an approval letter from the Ethics Review Committee of the Ghana Health Service and an introductory letter from the School of Nursing and Midwifery, University of Ghana were presented to the management of the hospital. Once the research participants were identified and their consents were obtained, arrangements for the interviews were done at the convenience of both the researcher and participants.

The process of data collection was explained to participants preceding their participation in the study. Before the interviews, permission was also obtained from participants to audio-record the data so that all information is captured during the interview session. Participants were made aware of the possible time for the interview and this may interfere with their normal daily routine if they agreed to participate. Participants were also informed that there were no benefits from joining the study. All participants were informed

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of the aim of the study to help gain their consent. Participants were made to understand they had the right to refuse to participate in the study or withdraw completely from the study after agreeing to participate if they desired.

Participants were informed that there would be no compensation for accepting to be part of the study. Anonymity and confidentiality of participants were maintained by using a coding system. Records from the study were kept private and accessed only by the researcher and supervisors. Data collected from the study may be submitted for publications in an international and national peer-reviewed journal. Presentations of the findings will be done at clinical conferences both locally and internationally. Data from the study was kept in a locked file in an electronic database and hard copies kept in a safe by the researcher.

## **CHAPTER FOUR**

### **FINDINGS OF THE STUDY**

The findings of the study are presented in this chapter. The first section describes the demographic data of the study participants. Subsequent sections highlight three main themes that are consistent with the Donabedian Quality Care Model and one theme that emerged from analysing the data.

#### **4.1 Demographic Data of Participants**

A total of 12 nurses and midwives consented to participate in the study, four (4) participants were registered nurses and eight (8) were registered midwives. The participants' age ranged from 22 years to 37 years. Years of nursing experience was from two (2) to eight (8) years. Among the participants were nursing positions including staff nurse/midwife, midwifery officer and senior midwifery officer. The educational level of participants was from Diploma to a bachelor's degree.

#### **4.2 Organization of Themes**

The findings of the study were grouped according to the Donabedian model. The themes that were generated from analysing the data were consistent with the constructs of the model used for this study.

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**Table 4.1: Main themes and subthemes**

NO	THEMES	SUBTHEMES
1.	Structures influencing CS wound infection prevention	<ol style="list-style-type: none"> <li>1. Physical structure</li> <li>2. Equipment, materials, and resources</li> <li>3. Supervision</li> <li>4. Organisational policies/protocols</li> </ol>
2.	Processes used to prevent CS wound infections	<ol style="list-style-type: none"> <li>1. Physical preparation</li> <li>2. Timely administration of antibiotics</li> <li>3. Wound dressing infection prevention strategies</li> <li>4. Educating and involving patient/family in wound care</li> <li>5. Communication</li> <li>6. Team approach</li> </ol>
3.	Outcomes of nursing care	<ol style="list-style-type: none"> <li>1. Wound healing</li> <li>2. Job gratification</li> </ol>
4.	Integration of evidence-based practices in patient care	1. Interventions to facilitate the integration of evidence-based practices among nurses and midwives

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### 4.3 Structures influencing CS wound infection prevention

This theme describes how structures in healthcare organizations impact the quality of wound care. Information gathered from the analysed data pointed out that wound infection prevention practices were largely influenced by the physical structure, equipment, materials and resources, organizational policies/protocols, and supervision. Participants also added that the structures put in place assisted them to deliver effective wound care.

#### 4.3.1 Physical structure (Care environment)

This subtheme describes how the environment played a role in preventing CS wound infections. From the analysis of data, participants indicated that the physical environment was adjusted by improvising a space in the ward to facilitate wound care post-CS. They also indicated that the physical structure was small compared to the number of admissions hence the beds were crowded with some patients lying on mattresses placed on the floor.

*“We did not have a room for dressing. We performed dressing in the main ward but now we have managed to create a space at the corner solely for the dressing of the CS wounds. We have our hand washing station with a sink and soap to allow us to wash our hands before you attend to the next patient. And this has contributed to reducing wound infections since the risk of contamination is also less” P8.*

*“The number of patients we admit can be a lot and so it gets crowded and sometimes we have to nurse some of the patients on beds placed on the floor” P7*

Participants also mentioned that previous rates of infection informed the ward to put in measures that restrict overcrowding in the ward. For instance, participants mentioned that visitors were not allowed into the wards except for visiting time and the number of visitors

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was restricted to two per patient. Also, the number of nursing students on the ward at a shift was largely reduced to ensure that the ward does not get crowded to aid in infection control.

This is what one participant said:

*“We have a limit to the number of students assigned to this ward from the administration because our space is small and so you don’t see overcrowding like there used to be when during one wound dressing session we have up to six students around”. P9*

Environmental hygiene was also prioritized by management. Participants indicated that management brought in additional cleaning staff and their numbers per shift were increased. Also, participants added that the cleaners were trained on infection prevention practices periodically. A participant stated:

*“We have err mm orderlies for all the shifts now. Morning, afternoon, and night ahaaaa. So, it has become mandatory, to clean the ward on each shift at least twice in the morning and the afternoons. Then in the night too. So at least for the environmental cleaning, it is some way somehow better. I think they also get some form of training from time to time to ensure they do their work well” P6*

A participant added:

*“There are scheduled monthly general cleaning where we do high dusting, and we scrub all surfaces and I think it is been effective for us because it reduces risks for contamination during wound dressing” P7*

Despite the above structures implemented by the healthcare facility, participants expressed the need for a more improved place space where wound dressing can be done. The

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participants argued that being in an open space during wound dressing compromises patients' wound and consequently patient safety. One participant reported that:

*“Comparing the space, we do the dressings, it’s supposed to be an enclosed room like this, but it’s partially closed space. It is not an enclosed place and atmospheric air carrying microorganisms can settle on the wound and cause infection. P8*

Another participant added:

*“You see you put in all the measures to ensure the wound is not contaminated but the place where you are carrying out the procedure is a threat itself and compound patient at risk of contaminating the wound”.P4*

### **4.3.2 Equipment, materials, and resources for CS wound infection prevention**

This subtheme described the importance of resources in wound management. Resources such as dressing materials, hand hygiene equipment, disinfectants and gloves help to improve the quality of nursing care rendered to patients. Participants of the study consistently mentioned that generally the hospital was faced with shortages of resources. However, they added that management prioritized the ward in the distribution of supplies, and this has helped to improve the quality of wound care after a CS delivery. This is shown in the following quotes:

*“Management provides us with the dressing’s material and solutions for the wound dressings so even if patients cannot afford or run out of their materials-remove, we do not have a reason not to dress the wound”. P1*

*“I can say that as for maternity ward when it comes to supplies and other things to work with, we are always a priority to management” P7*

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Another participant stated that:

*“They [management] have also added more Veronica buckets and we have put them at where there are no sinks to help staff remember to wash their hands when they see them” P4*

Most participants mentioned that more staff were allocated to cater for patients who undergo CS delivery. One participant stated this:

*“Because a lot is required for those undergoing CS the staff assigned there is more and so we have time to do a proper assessment and do wound dressing without being in a hurry” P 8*

Despite most participants acknowledging support from the hospital, other responses indicated the need for more structures to support wound management. This is what one participant said:

*“I cannot say the things we get are enough, but I will admit that there has been an improvement with a lot of things even though we are not at where I think the facility should be considering; we are a referral centre but we will get there” P10*

Other participants were of the view that the supplies for wound care were suboptimal nonetheless, management has been up to the task of supporting the ward. Participants had this to say:

*“There has been an increase in the supplies that we get, however, some of the things are of low quality while some do not fit. For instance, most of the gloves are often bigger*

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*than some of us but we must use it like that to dress the wound and most of the time it interferes when you are applying dressings” P6*

Participants claimed that the provision of a mechanized borehole in the hospital was an important measure that improved the routine interruption of water supply which allowed them to implement infection prevention practices during wound care. These expressions were made by participants:

*“We have water flowing throughout and this makes it easier to practice hand hygiene and this is necessary to prevent contamination during wound dressing” P7*

Another participant emphasized:

*“Because there is water, we wash and scrub the instruments and equipment used for dressing thoroughly to ensure they are clean before rinsing them P1*

The findings revealed that the wards were under-resourced. Although dressing materials were prioritized, other important resources such as dressing equipment were inadequate. Nonetheless, participants emphasized that they were committed as professionals by ensuring that they maximized the use of available resources to prevent wound contamination during dressing.

### **4.3.3 Supervision**

Supervision is another subtheme that emerged from the data. Participants believed that the involvement of their ward in-charges inpatient care helped to improve the quality of wound care. The following comments illustrate statements by participants:

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*“I believe things are changing currently because our ward in charges have stepped up and shown more interest in what we do unlike first they just come and are on their administrative works alone neglecting the practical work. They are also more direct and stricter on how we do things now. They will just tell you cannot do this ... and this has kept all of us on our toes, and I think it’s a good thing” P1*

*“Having our in-charges starting to get involved and putting their eyes on us is helping unlike first some of them just come and ...” P6*

This is what another participant said:

*“We also have our in-charges coming to observe the dressing process and making inputs to the care. It helps a lot because sometimes you are stuck on deciding on what to use for a particular dressing and their opinions help much” P7*

Some participants said that the fact that ward in-charges were monitoring the dressing processes from time to time served as a source of motivation to provide better care to the patients.

*“I am motivated to do the dressing using the best ways that I know of course it should be standard practice and you know why because in my mind I know my in-charge can appear here at any time and I would not want to be caught doing the wrong thing that will compromise the wound” P1*

### **4.3.4 Organizational protocols/policies**

Another structure that reportedly influenced CS wound care in the health care facility was a local protocol for ward nurses. These protocols were accessible to all nursing staff as

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it was posted at the care points. Many participants reported that the hospitals' protocol for surgical wound care served as a guide during CS wound dressing.

*“In this hospital, the protocol is that all CS wounds are dressed using spirit and covered dry with a dry gauze; you don't add any solution. But in other situations, you may use savlon and normal saline if you notice an abnormal discharge from the wound to help with possible infection or use iodine to cover in infected cases” P7*

*“We do not use any other solution to do surgical wound dressing other than spirit and sometimes normal saline unless it's just an infected wound then we use hydrogen peroxide mixed with sterile water uh hmm or normal saline” P5*

A participant emphasized that despite the use of these hospital protocols, there is the need to update these protocols regularly with evidence-based practices since there was yet to be a national guideline for wound care. This is stated below:

*“Sometimes these things do not work for every patient. I think the hospital's way of doing things should often be revised to include more evidence-based practices” P4*

### **4.4 Processes used to prevent CS wound infection**

This theme describes the nursing activities, actions, and interactions that participants use in preventing CS wound infection and to facilitate wound healing. The participants argued that the outcome of the wounds largely depended on the care throughout the perioperative period. The following are subthemes under this theme: educating and involving patient in wound care, daily wound dressings, pre-operative skin preparation, and timely administration of antibiotics.

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### 4.4.1 Physical preparation (Pre-operative skin cleansing and hair removal)

Participants in this study mentioned that preventing a potential CS wound infection begins from when the patient is admitted. Most participants stated that every patient scheduled for CS delivery is asked to take antiseptic baths (water mixed with savlon or Dettol) and personal hygiene maintained. Also, all antibiotics are commenced as prescribed before the patient is sent to the operating room, and wound dressing done using sterile dressing techniques. The following are verbatim quotes from participants:

*“I instruct the patient to add antiseptics such as savlon or Dettol to their water for bathing the morning before the surgery, that if the case is an elective”. P1 “We ask the patient to take a bath with savlon in the water but if the patient cannot take a bath, we clean and dry the site to be operated with savlon before the patient is sent to the theatre so that we can reduce micro-organisms around the site that can potentially cause infection” P4*

Participants added that for emergency cases, patients’ skin was prepared by the nursing staff using antiseptics (savlon) to prevent micro-organisms around the site of the incision to potentially cause wound infection. A participant stated that:

*“Most of the time when the case is emergency, we (nursing staff) clean the patients’ skin with savlon as well as the vagina area since most of them would have already been in labour” P3*

Participants also mentioned that the practice of removing hair (shaving) around the area to be incised was largely used to prevent CS wound infections. Participants expressed this by saying:

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*“We clean the skin thoroughly and shave the hair around the area to be cut because it attracts dirt, and the dirt can lead to infection. We are extra careful not to cut the woman when prepping the skin because surgical wounds are supposed to be dry and so if there is a cut and its’ discharges get into the wound it can cause infection.” P5*

*“Shaving too helps. We do shaving you know some patients personal hygiene is another, not the best and if you don’t shave the organisms there can contaminate the site and develop into an infection so we shave almost every patient except in extreme cases” P10*

### **4.4.2 Timely administration of antibiotics**

The data analysis revealed serving antibiotics to patients before sending them to the theatre was a common practice among the participants of this study. Participants stressed that this was a routine practice that is well established on the ward as a preventive measure.

The following are quotations that illustrate what participants said:

*“We make sure that the antibiotics that were prescribed are given accordingly” P4*

*“Antibiotics helps a lot when it comes to infections. Before we send the patient to the theatre, we serve the prescribed antibiotics if it has been prescribed. It is a must because it boosts the resistance for infection even if there is contamination during the procedure, so we make sure to give to cater for possible infections” P2*

*“Serving antibiotics is necessary for the patients especially in a place like ours where some of our patients are brought in as referral cases. It is like a protocol here... the timing of the antibiotics does the magic. If you the nurse fails to give the medication on time per the prescription you do not help the patient. So, I make sure I serve the*

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*medication at the right time; for me, my patient must get the antibiotics on time because I know it will help the wound to heal by first intention” P6*

The above extracts show that participants believe that the timing of the administration of antibiotics is very crucial to prevent CS wound infections.

### **4.4.3 Wound dressing infection prevention strategies**

Most participants acknowledged that the use of sterile dressings and dressing techniques were major practices for CS wound infection prevention. This is demonstrated in the following statements:

*“The dressings are sent to the CSSD for sterilization and that is what we apply to the wound to prevent infections” P10*

Additionally, participants mentioned that dressing equipment was placed in prepared bleach solutions to kill microorganisms after dressing each patient wound. This is illustrated in the following statement:

*“Decontamination is one of the ways we have strictly adopted. As part of the preparation to dress the wounds, you will need to prepare bleach solution to be used to decontaminate the instruments and whiles you move on to the next patient you must wash your hands but often I prefer to use the hand sanitizer to save time” P6*

Participants stated that CS wound dressing is done within twenty-four (24) to forty-eight (48) hours. The majority of the participants agreed that timely changing of dressings is important because it allows the nursing staff to make assessments of the incisional wounds to detect early, signs of possible infections.

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*“We dress the wound so we can determine the condition of the incision site that is to check if the edges of the wound are intact and the sutures are in place. We also observe if there is no collection of fluids of blood at the wound. If the dressing is not wet that is a good sign, then we clean and cover with dry sterile gauze. When we observe dressing is wet, we monitor closely and ensure wound does not become infected” P2*

Good hand hygiene practice during wound dressing was emphasized as one of the ways to prevent SSI. For instance, participants said:

*“It is important that you wash your hands in between dressing if not you can contaminate the next person’s wound” P2*

*“Maintaining appropriate aseptic techniques throughout the dressing period with what is available [resources] to do the dressing is very important for instance you must wash your hands before and after you attend to one patient and use sterile dressings and face mask ...” P1*

Another participant added:

*“I make sure I wash my hands before I attend to a patient because you would have touched so many things which will contaminate your hands and that can be transferred to the wound if you don’t wash your hands. In between the dressings, I wash my hands too but I also use alcohol to rub my hand so I can attend to the next patient because it saves time” P3*

Although participants reported the use of personal protective equipment such as face mask, aprons and gloves were necessary to prevent contaminating the CS wound, they indicated that these equipment were inadequate. A participant had this to say:

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*“You wear your sterile gloves and aprons; you wear your face mask, and, in that way, you maintain the sterility of the procedures” P7*

### **4.4.4 Educating and involving patient/family in wound care**

To prevent CS wound infections, participants reported the need to get patients on board to understand the procedure and be informed about the expectations concerning the possible outcome of CS wounds. Participants described this as educating and involving patients in their wound care. Patient education begins from the time patient is admitted to the ward when the patient is discharged and continues to when the patient reports for change of dressings. The education and involvement of the patient in their care were considered significant action that contributes to good CS wound outcomes. These are verbatim quotes to illustrate their expressions.

*“Previously, we use to wait when patients have been discharged to talk to them about how they should take care of the wound but we have realized that most of the time very scanty information is given to them [patients] because sometimes the work is overwhelming here. So, we decided that for every patient that is admitted for CS, instructions on how to care for the wound and what we [midwives] expect from them is told to them. This makes it easy for them to cooperate with us [midwives] after the procedure and the wound does not get infected and recovery is good”. P4*

*“Some of the women come in with their mothers so we educate them that if they want to bath, they should make sure water does not get into the wound and they should also avoid touching areas around the wound. We demonstrate for them to see so they know what we are talking about. For the dressings, we instruct them to bring the patients back after they have been discharged because the patients will need someone to bring them*

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*back here for dressing so we have to educate them on the consequences of not bringing the patient back so when they go home, they bring the patient back for the scheduled dressings and we get to monitor the wound till it heals” P1*

Participants educated patients and their relatives on basic actions that will help to prevent CS wound infections. The patients and their relatives were told to maintain personal hygiene, always wash their hands with soap and water and not touch the wounds but if they must, they should perform basic aseptic techniques which they were taught. This was reported as:

*“You educate the woman on how to take care of the wound and also, how to take care of the wound even if she goes home, what she must do so that the wound does not get infected”. P2*

*“We advise clients that on daily basis they should change their underpants, panties, clothing, and other things that may touch the wound site. They should not repeat what they wore the previous day to also avoid touching the wound and if they have to touch it, they should make sure their hands are clean”. P3*

*“We teach them [patients] basic aseptic techniques like hand washing so that they make sure that anytime they are to touch their wounds their hands should be clean” P9*

*“I also tell the patients that as much as they would be anxious about their wounds, they should try not to be touching the wound to avoid transferring possible bacteria on to the wound to cause infection”. P4*

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Participants provided information on the importance of early mobilization to aid recovery and wound healing post-CS. Patients were encouraged to perform simple exercises such as walking around the bed. This is what was said by one participant:

*“We also tell clients to ambulate early after the procedure that is if only there are no problems, and they are stable and doing ok. We make them understand that when they walk early enough it helps the wound to also heal faster since it improves circulation to the site” P7*

This finding indicates that providing adequate information to patients facilitates the extent to which patients cooperate with instructions and their wound care. Also, education empowers patients throughout their hospital stay while it prepares them for discharge.

### **4.4.5 Communication**

The findings demonstrate that communication is essential among the nursing staff and across the various healthcare providers directly involved in patient care. Effective communication was used as a tool to achieve a better wound outcome. Participants stressed the significance of communication was not always about instructions to work but was also in the form of mentoring and teaching. Below are quoted to illustrate what participants said:

*“During the morning shift when we do most of the dressing, the in-charge here comes around to check all the CS patients’ wound not necessarily opening the wound but just to see if any wound dressing is soaked before we do the dressing so she will tell you this wound pay attention to it so you have some information from the in-charge in addition to what you see when you open the wound and this informs how you go about the dressing” P3*

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*“Communication helps in the continuity of care among the staff. For example on days the workload is high, the staff for morning might not do all the wound dressings so when the afternoon staff takeover they are informed and they do the dressing so that the risk for infection is minimized” P11*

*“I remember there was a day I had to use a bandage to hold the dressing in place for an obese patient and I was struggling so I asked a co-worker for a hand she helped and thought me the technique, if not for that I could have left the wound uncovered which will not help to heal as it can easily be contaminated” P1*

Sharing information among the nursing staff and other providers was reported to be essential to facilitate care, particularly when there is a need for inputs from colleagues of other health care professions. Information sharing decreases errors and critical incidents that may increase patients’ risk of infection. One participant added that open communication allowed them to trust one another’s inputs when they are providing care. This is shown below:

*“I must admit it hasn’t always been easy when it comes to working with the other health professionals you know what am talking about ... but I think we have found ways to bridge that gap to some extent, we can speak freely and carry across our questions and contributions without being looked down by colleagues or the other health team members, I mean we spend more time with the patient and often we get to know when things are not working for their wounds” P2*

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*“In the process of dressing when you forget something that needs to be done, you find another staff drawing your attention without publicly announcing so you don’t look like you don’t know” P5*

One participant also expressed how communication has helped her to provide better nursing care:

*“Handing over has been improved upon; it’s a must and we have to go to the patient together [both incoming and outgoing staff] and detailed information about the patient is communicated and you also have your nurses’ note intact to refer ... With this, you don’t miss critical information that might cause patient harm” P9*

Besides, platforms for sharing information and knowledge were available for the nursing staff to keep up to date with standards of care. This is illustrated below:

*“When we have our weekly ward meetings, discussions are based mostly on what is going on and what new things we can add to improve on the patient outcome” P1*

Some participants also mentioned that receiving positive criticisms and feedbacks from their colleagues and in-charges served as a motivation to provide quality wound care. One participant stated:

*“There’s feedback between us [midwives] and our in-charges on the care we provide so when something is not going well, we can go back and do better” P5*

### **4.4.6 Team Approach**

Most participants described how the team approach helps to prevent complications of the CS wounds. Other health care providers such as the nutritionist were perceived to be

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critical for the management of the wounds. Consequently, they were brought on board to support the nursing staff to provide care.

*“Some of our patients come with different health problems like diabetes, hypertension and sickling and obesity that can affect wound healing and so to prevent possible complications the nutrition officer is informed about the patient who also joins in to make inputs with what foods patient needs to help boost the immune system and also facilitate wound healing “. P12*

*“During ward rounds you see us [staff] discussing the patient situation to arrive at the best option for the patients. For example, when we realize that a patient is reacting to some of the wound care products that are being used, we bring our heads together to find the next best alternative to use which I think is helping because we [midwives] know the patients more than the doctors” P4*

*“Usually there are some of the patients you do everything from maintaining sterility to whatever but their wounds still do not look good the way it’s supposed to so we call on the hospitals’ nutritionist who comes to make his assessment and recommends something for the patient and then we also make sure that the patient is served; that is if the food is coming from the hospital’s canteen, if not we discuss with relatives and inform them about what patient has to eat and before you know you begin to see positive changes in the wound” P8*

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Other participants described their team approach as

*“We mostly discuss with the doctors when there are signs of infection and they will either add some antibiotics or ask that we change the dressing routine and we the nursing staff ensure that it is being implemented, like bd [twice daily] dressings” P3*

*“We make sure that all hands are on deck” P1*

*“I would like to emphasize that preventing the wounds from becoming infected cannot be one person’s work you know; it takes our collective efforts from the cleaner to doctors and us the midwives who spend the most time with the patient”. P7*

Participants expressed that working together as a team allowed them to assist one another without one necessarily asking for help.

*“On days that we are overwhelmed with patients and wound dressing delays those on the earlier shift do not leave when you take over, they stay till the ward is stable before they leave, and this allows for better patient care” P2*

*“Some of us are very skilful at what we do, others not so skilful. One thing that is helping is that when one is stuck another colleague offers a hand and together work is done efficiently” P6*

Even though it is the responsibility of the nursing staff to do wound dressing and ensure that patients are comfortable, participants mentioned that the ward doctors on some occasions co-managed the CS wound dressings with the nursing staff. One participant had this to say:

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*“Some doctors like to do the first dressing post-CS and the nurse takes care of the wound till healing takes place”. P5*

### **4.5 Outcomes of nursing care**

Outcomes depict the effects of structure and process. The structures and processes reported in this study are deemed to have influenced nursing care and the CS wound outcomes. Under this theme, two categories were identified: wound healing and job gratification.

#### **4.5.1 Wound healing**

Participants indicated that the structures and processes proved to be effective in preventing most CS wounds from becoming infected. Participants mentioned that implementing structures and applying practices to facilitate quality wound management lead to wounds healing by primary intention. Some participants made the following statements:

*“Previously, we see many wounds showing signs of infection but because of the structures put in place and how the nurses and midwives provide care, most of our wounds heal well without infection occurring” P8*

*“The wounds are often clean with the edges together and healing takes place well” P4*

Participants noted that even though most of the wounds healed by primary intention some wounds developed infections regardless. This is what a participant said:

*“At times you put in all the measures but some of the wounds still get infected may lead to admission especially in severe infection cases”. P 11*

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*“We had a case who was here because her wound was infected so she stayed in the hospital for almost a week after which we had to take her back to the theatre for secondary suturing before allowing her to go home” P7*

The above statements show that generally, most CS wounds heal by primary intention if the best wound care processes are adopted and structures to prevent risks of infections are implemented.

### **4.5.2 Job Gratification**

Participants expressed their satisfaction with overall CS wound outcomes in the ward. The participants pointed out that practices including patient education and collaborative care brought improvement in patients' wounds. Participants said that observing patients' wounds heal without complications made them happy and satisfied. The following illustrations reflect how participants felt:

*“When you are working in a ward where everyone is coming together to get things done and, then you are satisfied that your patients are safe and will recover and go home in no time” P 6*

Additionally, participants expressed satisfaction in carrying out their responsibilities and seeing patients discharged home without any complication. The participants also expressed happiness from being appreciated by patients when they are discharged:

*“You get some patients coming back to say thank you days after discharge and other times you meet the women in the market and the towns and they call you madam nurse just to say thank you and this is just for doing your work, that feeling is priceless” P 7*

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*“During wound dressing, when you detect a possible infection and you put in all that you know, and you see your patient recover and the wound heals well without complication then I become fulfilled” P1*

Participants also added that structural inputs such as resources and an improved environment made them satisfied. A participant made this statement:

*“When you work in an environment that is clean and organized you feel safe. Knowing that the risk of contamination to you and the patient is less you are happy coming to work and doing what you are to do” P 5*

*“I feel more content going to work now because at least the frequent shortage of materials is better allowing me to give the best care during wound dressing”. P 1*

Another participant added that her satisfaction was in the fact that she could comfortably make contributions to patient care. This was expressed as:

*“During ward rounds and ward conference, our [nursing staff] contributions are considered thus it makes me feel significant and included in the team and for me when my work is recognized that alone gives me satisfaction” P 8*

### **4.6 Integration of evidence-based practices in patient care**

This theme pertains to how nurses and midwives intend to incorporate evidence-based practices into their practice. Participants in this study stated that there are many ways to incorporate evidence-based practice into actual care. This is possible if one knows of the evidence.

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### **4.6.1 Interventions to facilitate the integration of evidence-based practices among nurses and midwives**

Participants mentioned that to incorporate evidence-based practice (EBP) in daily care delivery, nurses and midwives must be equipped with adequate knowledge specifically relating to the prevention of wound infections. The following statement was made:

*“You need to have knowledge about new evidence-based practices on specific protocols regarding wound infection prevention practices. These strategies direct us on what to do for the patient before the surgery. We want to learn what is best and which ways we can apply these practices in our context. Therefore, there must be some form of scheduled training on wound management where we discuss these evidence-based care” P4*

Some participants mentioned the need for training on current evidence-based practices to help incorporate the evidence to improve care. One participant said this:

*“I think we need to have workshops on these new practices to update our knowledge as and when new things emerge so we can all use it to guide us” P1*

*“When new things come, we need to be updated. They [management] can organize in-service training or workshops for us” P3*

### **4.7 Summary**

Four main themes were discussed in this chapter; structures influencing CS wound infection prevention, processes that facilitated CS wound infection prevention, outcomes of nursing wound care practices and integration of evidence-based practices in patient care. CS wound infection is a major threat to the wellbeing of women who develop it. The findings

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indicate that structures such as conducive environments, adequate supplies of resources and supervision play key roles in preventing CS wounds from developing infections. The study also indicated that nurses and midwives use various means to prevent women who delivered through CS from developing infections at their wound sites. The study suggests that despite these processes used by nurses and midwives to prevent CS wound infections, there are still some patients who develop infections at the wound site. Participants in this study also revealed that there have been some initiatives aimed at enhancing the structures for wound care, nonetheless, there was still room for more to be done. The findings also indicated the importance of integrating EBP in patient care to achieve better outcomes. Therefore, to help nurses integrate it into their routine practices, structures must be put in place to enhance the uptake of EBP.

## CHAPTER FIVE

### DISCUSSION OF FINDINGS

This chapter discusses the findings of the study relevant to pertinent literature. The study described CS care and infection prevention practices in the Regional Hospital, Bolgatanga. The discussions were centred on the main themes and subthemes of the study. The findings from the study highlighted some recommended practices thus educating and involving patients in their wound care, teamwork towards wound care, effective communication, provision of logistics for wound care, and support for wound management. The analysis of the data also revealed additional information about the Donabedian Model. This would be discussed after the three main themes which were consistent with the model.

#### 5.1 Demographic Characteristics

A total of twelve participants were recruited into the study. The ages of the participants ranged from 29-38 years. The majority (9) of the participants were Registered Midwives and three (3) were Registered Nurses. This may be because the maternity ward is a special unit where midwives practice. Ten (10) of the participants had a diploma as their highest educational level with two (2) degree nursing staff. This finding is similar to the study by Teshager et al. (2015), which reported that the majority of their study participants had a diploma as their highest qualification. The fact that nursing and midwifery training in Ghana begins at the level of diploma could account for their numbers in this current study being the majority in practice.

In this study, the participants' years of work experience ranged from two (2) to eight (8) years. The years of experience may be associated with the number of years one has practised.

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Similarly, Teshager et al. (2015) found that increased years of experience may be linked to practice over a long period. Therefore, it can be argued that, as the number of years of practice increases, participants are more likely to attain experience from managing women who deliver by CS. As a result of this, participants can provide improved wound care.

### **5.2 Structures influencing CS wound infection prevention**

The findings of this current study indicated that the participants felt the structure of the ward was not adequate for wound dressing. The ward environment aids in the contamination and spread of microorganisms during wound dressing. This finding corroborates with the study in Bangladesh (Rimi et al., 2014), which suggested that the physical structure and environment of health facilities can facilitate the spread of infection. This may be as a result of a lack of adequate space to accommodate the increasing numbers of patients that come into the wards on daily basis.

The study also revealed that the maternity ward lacked a place for wound dressing, thus the initial design of the ward was altered to create a room for wound dressing. This finding is consistent with the study findings of Ogunsola and Mehtar (2020), which reported that health facilities in low resource settings were not purpose built and undergo changes as the need arises. This can be attributed to the fact that nurses and midwives are mostly not consulted when these facilities are being built.

The study findings indicated that the supply of resources such as dressing materials, gloves, dressing solutions, and hand hygiene equipment had improved. As a result, patients received better care during wound dressing. This finding is in line with Barker et al. (2017) who indicated that prioritization of resources in care delivery is crucial for effective

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implementation of infection prevention practices improving care outcomes. This may be attributed to management prioritizing the needs of the maternity ward because of the current SDG target aimed at reducing maternal mortality.

On the other hand, a few participants stated that the resources were inadequate which they claimed influenced the quality of patient care. This finding is similar to the study by Timmins et al. (2018). The findings cited limited resource as an important factor that impedes the performance of nurses in providing quality wound care. The inadequacy of dressing materials may be linked to poor planning. It may also be due to the waste of resources on the part of care providers during the performance of their care duties. This can be avoided with an assessment before wound care, suggesting that planning, support, and supervision from healthcare managers, and prioritization of resources are critical to the effective management of the ward.

Additionally, the present study reported a heavy workload associated with caring for patients who have undergone CS. This according to participants necessitated the addition of more staff to the ward to increase the support enhancing infection prevention practices consequently reducing wound infections. This finding concurs with that of Mitchell et al. (2018) who reported that increased staffing leads to a decrease in the risk of patients acquiring hospital-acquired infections. This can be attributed to the fact that adequate staffing reduces workload, allows for early detection of infections and prompt action to resolve infections. Furthermore, the increase in the number of nurses and midwives presents opportunities for the division of labour and job assignment during patient care. Thus, permitting the nurse or midwife to perform a thorough assessment, wound care and document the wound progress.

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The present study revealed that the participants knew the national policy which recommends the use of methylated spirit and povidone-iodine for surgical wound management. Also, they demonstrated knowledge in the use of normal saline and iodine for infected wound care. On the contrary, Alhassan et al. (2020) reported that most nurses had inadequate knowledge about the existing policy protocol for surgical wound management. This may be attributed to good supervision on surgical wound care management. Perhaps, participants' prior knowledge of surgical wound care influenced their responses which accounted for the differences.

The study identified supervision as another component that influenced CS wound infection prevention. The finding shows that the presence of supervisors positively influenced nurses and midwives to adhere to recommended practices that prevent wound infections. This finding concurs with studies in the United Kingdom (UK) and Portugal (Bifarin & Stonehouse, 2017; de Abreu & Marrow, 2012; Enterkin et al., 2013), which reported that the presence of supervisors increased adherence practices that led to the prevention of infections. This implies that the presence of supervisors leads to positive patient outcomes. Furthermore, the availability of nurse managers and in-charges provides the opportunity for them to share their knowledge and correct their subordinates where necessary. Also, the fact that supervisors pay regular visits to the ward makes nurses and midwives do the right thing. Hence, ward in-charges and nurse managers need to regularly supervise nurses and midwives to ensure quality care is provided.

### **5.3 Processes used to prevent CS wound infections**

The prevention of surgical wound infections depends largely on the care processes employed throughout the perioperative phase (Boga, 2019). The study reported the cleaning

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of the skin with an antiseptic solution as preoperative skin preparation before CS. This finding is consistent with other studies in England, and the United States of America which recommend anti-septic skin preparation before surgery (Shea & Soper, 2019; Tuuli et al., 2016; Wang et al., 2017). This finding can be attributed to the reports that pre-operative skin preparation reduces rates of infection.

The current study findings revealed that the nurses and midwives in the maternity ward removed hair from the site of the incision before CS. Preoperative hair removal (shaving) was a common practice that participants believed helped in preventing CS wound infections. Similar to the finding by Shea and Soper (2019), which reported hair removal as a means to reduce post-operative CS infections. Contrary to this study finding, Shi, Yao, and Yu (2017) reported that shaving hair before surgery did not reduce SSIs. This appears to suggest that preoperative hair removal may necessarily not reduce the risk of wound infections after CS. Hence, nurses and midwives need to revise current practices to inform their practice.

Participants in this study indicated that the administration of antibiotics contributed to the prevention of CS wound infection. This current study finding is in line with that of Shea and Soper (2019) who reported that an appropriate antibiotic regimen reduces CS wound infections. This will help to destroy bacteria, which will prevent the occurrence of infection in the patient. Participants acknowledged there were occasions when medications were omitted. This can be due to a disruption in communication, the lack of responsibility on the part of nurses and the patient not being able to purchase the needed antibiotics. Therefore, adopting an effective means of ensuring that antibiotics are available and correctly administered so that patients can benefit from the therapeutic effects.

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The management of wounds involved inspection, change of dressings and documentation to detect the progress of wound healing. The current study suggests that participants used the aseptic technique in applying dressings during wound care. Similar to the findings of Lin et al. (2019) which demonstrated that the use of aseptic techniques prevents infection. Contrary to this finding, Ding et al. (2017) and Sijimol et al. (2020) reported poor aseptic wound dressing practices among healthcare professionals. The differences in these studies may depend on the individual's commitment to ensuring infection prevention.

Furthermore, participants mentioned using a single gauze at a time to swab wounds during dressing. This finding is in line with Timmins et al. (2018) recommendation for single gauze use. They indicated that wound care practices appeared to be well integrated but the use of aseptic technique during wound dressing was poor. According to the participants, the first dressings change was routinely done 48-72 hours post-CS. This finding is consistent with the study by Kilic et al. (2020). The study showed that the removal of dressings at 48hrs helps to reduce the risk of infections. However, Peleg et al. (2016) recommend the early removal of dressing at 6 hours post-CS because it allows the woman to attend to their hygiene needs satisfactorily. Perhaps, the findings of Peleg et al. (2016) may reflect the different environmental conditions that exist in the setting where there may be better environmental hygiene and availability of resources, which is contrary to what is found in the setting of this present study. Also, participants added that the appropriate wound dressing and the use of suitable dressings for specific wounds facilitated healing. This agrees with the recommendations made by Shea and Soper (2019), on the use of appropriate dressing

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technique. Thus, it is likely that when care standards are maintained, most patients' wounds will be free from infections.

The participants mentioned that instruments and equipment were decontaminated and sterilized after a single use. This they indicated helped to break the chain of the possible transfer of microorganisms onto patients wound during dressing. This conforms to that of Rutala and Weber (2016), who indicated proper processing of medical equipment before use ensures that it does not pose risks to patients. This finding emphasizes the need to ensure that medical and surgical instruments are clean to prevent the transfer of organisms onto the wound surface during dressing.

Most participants indicated that the practice of hand hygiene helped to prevent the contamination of patient wounds during dressing. The participants maintained that they washed their hands before and after dressing patients' wounds. Hand hygiene is considered an important practice to prevent contamination, ensure standard care, and minimize the potential for the spread of infections (Berrios-Torres et al., 2017). On the other hand, Awoke et al. (2018) and Yawson and Hesse (2013) reported poor hand hygiene practices among nurses. Perhaps the availability of hand washing facilities located close to the patient made it convenient for the nurses and midwives in this study to perform proper hand hygiene. It can also be attributed to the fact that nurses and midwives understand the essence of hand washing as an effective infection prevention control measure.

Educating patients to participate in the care of their wounds has been widely accepted as a strategy that will help prevent complications such as infections (Ward, 2011). Participants in this study stated that providing patients with information about their care increased patient cooperation. Similarly, the findings by Ueno et al. (2019) indicated that the

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patient communicates and complies with treatment when they have information concerning their health from health professionals. The participants also asserted that education helped to reduce wound contamination as patients were taught what to do to keep their wounds safe. This finding is in line with what was reported by Holland et al. (2017), emphasizing that, the integration of health education in patient care improves outcomes for women post CS. When patients are educated about their wound's they become aware of what is at stake. Additionally, the patients are equipped with information that helps them to, detect and report signs of infection thus preventing complications. Therefore, nurses and midwives need to see patients as stakeholders in their wound care and provide them with adequate information that will enhance wound healing and recovery. Hence, ensuring a well-structured educational schedule may contribute to patient literacy, participation, and promote wound healing consequently improving patient outcomes. When patients do not have information concerning the care, it may contribute to the misunderstanding of their roles in the care process.

Furthermore, educating patients and their families is a significant part of nursing care activities. The participants indicated that educating family helps them provide patients with the needed support to recover. The importance of providing information to the family about the care of the patient's wound was emphasized by Keast and Swanston (2014). In the setting of the current study, family members participate in the care of a patient. Therefore, as key members in patient care, families serve as resources for the prevention of wound infections among patients.

Communication was revealed as an important part of the care process. Participants noted that proper communication helped them to avoid misunderstandings about the care of the

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patients' wound. Similarly, Macdonald et al. (2015), established that communication is necessary to enhance collaboration among health professionals. The participants stated that daily discussions on the progress of the patient's wound were done during ward rounds where the staff's opinions were welcomed. This was highlighted by Lancaster et al. (2015), who emphasized the importance of coordinating care through interdisciplinary communication to prevent errors, demonstrating the unique roles of each professional.

Also, changes in patient treatment plans were documented and verbally communicated to the nursing staff on the shift which is later communicated during handing over. Participants indicated communication during handover allows the nurse or midwife to know what is required and demand explanations when needed. This supports the findings by Randell et al. (2011) indicating that communication during handing over allows healthcare professionals to know and ask for further explanations where needed. Therefore, it is essential to coordinate the different interventions and treatments to prevent the occurrence of errors during care and ensure patient safety. Poor communication impedes the quality of care delivery, leading to undesirable patient outcomes (Vermeir et al., 2015). Consequently, improving communication leads to better patient care outcomes.

Teamwork allows care providers to discuss the progress of wounds, thus avoiding potential infections and ensuring patient safety. In this current study, participants acknowledged the importance of working as a unit. This study revealed that most participants relied on other professionals to reduce the risks of complications of patients' wounds. Other studies have revealed findings consistent with the present finding (Gillespie et al., 2015; Harrington, 2014). Their studies also highlighted the importance of a multidisciplinary team approach in reducing SSIs. This implies that a team approach to care

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ensures care, accelerates better outcomes, and reduces the incidence of wound infections. Thus, nurses and midwives must build a healthy professional relationship with other experts to achieve optimal outcomes for patient wound care.

### **5.4 Outcomes of nursing care**

In this study, nursing care outcomes refer to the effects of the structures and the processes of nursing care. According to participants in this study, they observed that most of the CS wounds healed by primary intention. A similar finding was reported by Oliveira et al. (2016) emphasizing that the main nursing outcome in wound care is wound healing. The quality of wound care patient receive contributes to wound healing by primary intention. Wound healing may be credited to the nature of the wound, the efforts made by nurses, using infection prevention practices, effective communication, patient education, and a team approach to patient care. However, the participants' responses also demonstrated that there were instances when patients developed infections at the site of the incision. When this occurred, patients stay in the hospital is prolonged. This current study finding is similar to the findings of Guest et al. (2018). They mentioned that complications after surgery increase the length of hospital stay. Therefore, during wound care, nurses must perform a proper assessment to identify early signs of infections. Furthermore, wound healing can be achieved by utilizing standard practices. Based on this, nurses and midwives must be able to identify and adhere to the appropriate interventions needed to prevent wound infections from occurring post-CS.

Another finding in this study was job gratification among nurses and midwives. According to the participants, wounds healed devoid of infections gave them a sense of satisfaction with the outcome of their work. This finding concurs with the results of other

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studies (Baik & Zierler, 2019; Kvist et al., 2014). This feeling of satisfaction is indicative that most nurses and midwives often work to ensure that their patients receive the best care. It may be that when nurses and midwives feel appreciated, they are motivated to provide quality care which will intend lead to positive patient outcomes.

Also, satisfaction among participants was reportedly due to the team approach to work and open communication based on respect (Aiken et al., 2011; Hinno et al., 2011; P. Van Bogaert, van Heusden, Timmermans, & Franck, 2014). Some participants working together ensured that patients received efficient care which prevented infections and facilitated wound healing. This means that nurses and midwives get job satisfaction from a supportive environment which helps build relationships and foster collaborative practice.

### **5.5 Integrating evidence-based practice into clinical care**

The current study also found that most of the participants often rely on physicians, nurse colleagues, and their own experiences rather than the use of current evidence for wound care practices. Likewise, though nurses were aware of the existence of research evidence for the practice, it was noted that most nurses and midwives often wanted to be fed with information on current practices before they incorporate it into their practice. This finding is consistent with the findings by Skela-Savič et al. (2016). Therefore, improvement in nurses and midwives' application of evidence-based practices, educational programmes, in-service training, and ward clinical meetings will influence patient wound care. When learning opportunities are created, it provides nurses and midwives with the means to equip themselves with the right skills necessary to improve patient outcomes.

### **5.6 Summary of Discussion**

In summary, the study findings indicate that there are several preventive practices nurses and midwives adopt to ensure that women who deliver by CS do not develop wound infections. The participants highlighted some practices they believed influenced the wound care outcomes. These include physical preparation of the patient before CS, educating and involving patients, timely administration of medication, use of the sterile dressing, and aseptic techniques during patient care. Other means used to prevent wound infections were communication and a team approach. The study also revealed that wound infection prevention is attained with support from the healthcare facility. When healthcare facilities put the appropriate structures in place it enables health professionals to implement these practices. Furthermore, participants noted that the availability of organisational structures in addition to the use of preventive practices leads to most wounds healing by primary intention. As a result, participants expressed that, positive outcomes in patients' wounds gave them job satisfaction.

## CHAPTER SIX

### SUMMARY, IMPLICATIONS, LIMITATIONS, CONCLUSION, AND RECOMMENDATIONS

This chapter presents a summary of the entire study, the implication of the study findings to the nursing profession, conclusion, and recommendations.

#### 6.1 Summary

Caesarean section wound infection prevention is crucial because it accounts for about 12% of mortality in women who give birth through CS. Other consequences of developing CS wound infection include prolonged hospital stay and overall healthcare costs. The study explored and described the practices used by nurses and midwives to prevent Caesarean wound infections in the Upper East Regional Hospital, using the Donabedian Quality Care Model as the organizational framework.

The collection of data began after ethical clearance approval was obtained from the Ethics Review Committee of the Ghana Health Service. Permission was sought from the Upper East Regional Health Directorate to access the participants. A purposive sampling technique was used to recruit twelve (12) participants who met the inclusion criteria. Interviews were conducted after participants gave their consent to be part of the study. The interview guide was pretested at the War Memorial Hospital. The interviews were audio-recorded and transcribed verbatim. Data analyses were done using thematic content analysis. The interviews lasted for 35 - 50 minutes.

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The study revealed that structures within the healthcare facility influence CS wound care. These structures included the hospital design and available protocols for the management of CS wounds. The participants indicated that they used processes such as preoperative skin preparation, education of patients, and administration of antibiotics, aseptic wound dressing techniques, communication, and team approach to work to ensure that patients' wounds were not infected. The participants mentioned wound healing by primary intention as an outcome. However, they noted that there was some incidence of wound infections. Overall, participants stated that they were gratified when they saw most of the patients' wounds heal by primary intention and their hospital stay reduced.

### **6.2 Implications**

The findings of this study have implications for nursing and midwifery practice, research, and education.

#### **6.2.1 Nursing and Midwifery practice**

Wound infection prevention is important in women who give birth through CS. The study revealed that nurses and midwives used varied interventions to prevent CS wound infections. Nurses are the core members of the team of healthcare professionals. They ensure that the care of CS wounds yields positive outcomes. Nurses and midwives are more likely than other healthcare professionals to detect critical changes that may suggest possible infections or anything that may lead to poor wound healing. Therefore, nurses and midwives are expected to equip themselves with information on specific protocols about CS wound infection prevention. This will enable them to provide better and improved care to patients. The study findings highlight the important role communication and teamwork play in

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achieving quality patient care outcomes. This may bring about the importance of communication and teamwork and the organisation of regular clinical meetings/conferences where discussions will be centred on clinical practices

### **6.2.2 Nursing education**

The study portrayed that there were inconsistencies in wound care and highlights the importance of developing interventions to enable nurses and midwives to integrate evidence-based wound care protocols into clinical practice. It is likely to bring about the establishment of regular in-service training and workshops on evidence-based practices where nurses and midwives would be given the means to learn how to incorporate these research evidence into clinical practice.

### **6.2.3 Nursing research**

The study revealed practices adopted by nurses and midwives to prevent CS wound infections. It also revealed how the structures of a health care facility can influence wound outcomes. Generally, the study portrayed positive outcomes of patients' wounds post-CS. Thus, a replication of the current study may be conducted using an observation checklist to assess the level of nursing practice. Additionally, research may be conducted to build more evidence specific for CS wound management.

### **6.2.4 Policy formulation**

The findings from the study revealed that wound management policies were inadequate and need to be regularly updated with current research evidence. Therefore, these findings may encourage the policymakers to formulate policies that will promote the integration of best practices into clinical practice.

### **6.3 Limitations**

The practices used to prevent CS wound infections could be specific to the healthcare facility. Also, the small sample size from a single healthcare facility may not reflect the wound infection prevention practices in other facilities. It will also limit the extent to which these findings can be generalized to other settings. The study findings were based on the subjective responses of participants which has the potential to be biased because participants' responses could be from previous knowledge rather than actual clinical practice. Thus, future studies should adopt methods of inquiry that would allow the researcher to gather objective data.

### **6.4 Conclusions**

In conclusion, the study achieved the aims and objectives outlined in chapter one. Overall, the findings of the study identified the structures that influence CS wound infection prevention practices in the Regional Hospital, Bolgatanga. Also, the processes used by nurses and midwives to prevent CS wound infection were identified. The study findings suggest that the use of EBP in healthcare ensures quality patient care, hence, nurses and midwives must strive to gain information on the best available research evidence to guide their practice. This study also demonstrated that a qualitative approach is an appropriate methodology because it highlights CS wound infection prevention practices that are of empirical evidence as well as those that are unique to the study setting.

## **6.5 Recommendations**

Based on the study findings, the following recommendations have been made.

### **6.5.1 Ministry of Health (MOH)**

The MOH

- In building healthcare facilities, the local context of the setting, and users of the facilities should be considered while meeting the international standards.

### **6.5.2 Nursing and Midwifery Council (NMC)**

The NMC should

- Develop structured specialization programmes in wound care education at the diploma and undergraduate level.

### **6.5.3 Healthcare providers**

- In-service training on wound management must be conducted periodically for nursing and midwifery staff
- Organisational policies/procedures should promote best practices for optimal patient care.
- Management in healthcare facilities should encourage and motivate highly educated nurses and midwives to concentrate on applying their knowledge to practice

### **6.5.4 Nursing and Midwifery practice**

- Communication should be encouraged by organising regular clinical meetings and conferences where discussions are centred on clinical practices.

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- Teamwork and interdisciplinary collaboration should be encouraged during patient care.
- Nursing and midwifery managers must commit to supporting innovations and best practices through continuous supervision
- Nurses and midwives should seek research evidence and integrate the evidence during wound care.

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**APPENDICES**

**Appendix 1: Consent form**

CONSENT FORM

CAESAREAN WOUND INFECTION PREVENTION PRACTICES AMONG NURSES AND MIDWIVES IN THE UPPER EAST REGIONAL HOSPITAL

PARTICIPANTS' STATEMENT

I acknowledge that I have read or have had the purpose and contents of the Participants' Information Sheet read and satisfactorily explained to me in a language I understand (English). I fully understand the contents and any potential implications as well as my right to change my mind (i.e. withdraw from the research) even after I have signed this form.

I voluntarily agree to be part of this research.

Initials of Participant..... ID Code .....

Participants' Signature .....OR Thumb Print.....

Date: .....

INVESTIGATOR'S STATEMENT AND SIGNATURE

I certify that the participant has been given ample time to read and learn about the study. All questions and clarifications raised by the participant have been addressed.

Researcher's name: Guure Monica Yinpok

Signature .....

Date: .....

CAESAREAN SECTION WOUND INFECTION PREVENTION

**Appendix 2: Interview guide**

**SECTION A – Personal Data**

This section will consist of personal information about participants gathered after gaining their consent to participate in the study. The information will enhance the understanding of the different characteristics of participants and examine the characteristics of the data gathered. Please tell me about yourself

**Code** .....

**Age** .....

**Gender** .....

**Educational level** .....

**Marital status** .....

**Rank** .....

**Ward** .....

**Years of experience** .....

**Years working in the maternity ward** .....

## CAESAREAN SECTION WOUND INFECTION PREVENTION

### SECTION B

1. Kindly share with me how you prepare a patient for a caesarean section (CS)

Probes:

- Nursing care
- Availability of information to patients

2. Please share with me the care you render to a patient post CS (wound care)

3. Please describe how you incorporate evidence-based practice in your routine wound care

4. Please describe the perioperative practices for the prevention of CS wound infections.

5. What informs your decisions regarding the wound care process?

6. What are the structures available to facilitate Caesarean wound infection prevention practices?

7. What do you do in your clinical practices to prevent CS wound infections?

8. Please tell me about the interventions you implement to prevent CS wounds from becoming infected.

Probe

- Hand hygiene
- Decontamination and sterilization
- Wound infection prevention strategies
- Environmental cleanliness
- Preoperative practices
- Postoperative practices

9. How do the processes used to prevent wound infections impact on nursing care?

CAESAREAN SECTION WOUND INFECTION PREVENTION

10. Please share with me the consequences / outcomes of the structures put in place, actions, activities and interventions nurses and midwives perform to prevent wound infections in patients.
11. What else would you like to share about today's interviews?

Thank you for your time and participation.

**Appendix 3: Letters of introduction**



**UNIVERSITY OF GHANA**  
**SCHOOL OF NURSING AND MIDWIFERY**

Ref. No.:.....10703852.....

November 6, 2019

The Chairperson  
Ethics Review Committee  
Ghana Health Service  
Accra.

Dear Sir/Madam,

**LETTER OF INTRODUCTION**

I write to introduce to you Monica Yinpok Guure, an MPhil second year student of the School of Nursing and Midwifery.

The Scientific Review Committee of the School has approved the thesis topic: **“Practices of Caesarean Wound Infection Prevention Among Nurses and Midwives: A study in the Upper East Regional Hospital, Bolgatanga”**.

I hope that the Ethics Review Committee will consider the proposal and grant her Ethical Clearance to enable her collect data.

Counting on your usual co-operation

Thank you.

Yours faithfully,

Dr. Gwendolyn Mensah  
SUPERVISOR

**COLLEGE OF HEALTH SCIENCES**



**UNIVERSITY OF GHANA**  
**SCHOOL OF NURSING AND MIDWIFERY**

10703852

November 6, 2019

Ref. No.: .....

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Ethics Review Committee  
Ghana Health Service  
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Dear Sir/Madam,

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I hope that the Ethics Review Committee will consider the proposal and grant her Ethical Clearance to enable her collect data.

Counting on your usual co-operation

Thank you.

Yours faithfully,

Ms. Patricia Avadu  
**SUPERVISOR**



**COLLEGE OF HEALTH SCIENCES**

P. O. Box LG 43, Legon, Accra, Ghana.

• Telephone: (0) 303 970 801 / 0553 089 267 • Email: [nursing@ug.edu.gh](mailto:nursing@ug.edu.gh) • Website: [www.nursing.ug.edu.gh](http://www.nursing.ug.edu.gh)

CAESAREAN SECTION WOUND INFECTION PREVENTION

**OUR CORE VALUES**

*People-Centred*

*Professionalism*

*Team work*

*Innovation*

*Discipline*

*Integrity*

*My Ref No. GHS/UER/RESEARCH/20*

*Your Ref. No*

Regional Health Directorate

Ghana Health Services

Private Mail Bag

Bolgatanga, UER

GHANA.

14<sup>th</sup> January 2020

Tel: (03822) 22335

Fax: 072-24390

E-mail [ghs-uer@4u.com.gh](mailto:ghs-uer@4u.com.gh)

---

**UNIVERSITY OF GHANA  
COLLEGE OF HEALTH SCIENCE  
SCHOOL OF NURSING AND MIDWIFERY**

Dear Ms. Monica Yinpok Guure,

**RE: PERMISSION TO ACCESS PARTICIPANTS FOR AN ACADEMIC STUDY**

This serves to inform you that you have been granted permission to undertake your research titled **“Practices of caesarean wound infection prevention among nurses and midwives: a study in the Upper East regional Hospital, Bolgatanga”**

By a copy of this letter, the Medical Director of the Regional Hospital, Bolgatanga is entreated to grant you the necessary support you may need to make your study a successful one.

You are also by this letter, directed to submit a copy of the final report on this study, which is a requirement to this office.

Thank you.



**DR. WINFRED OFOSU**  
REGIONAL DIRECTOR OF HEALTH SERVICES (UER)

CC: THE MEDICAL DIRECTOR  
REGIONAL HOSPITAL, BOLGATANGA

REGIONAL RESEARCH OFFICER, RHD

CAESAREAN SECTION WOUND INFECTION PREVENTION

**Appendix 4: Ethical approval**

**GHANA HEALTH SERVICE ETHICS REVIEW COMMITTEE**

*In case of reply the number and date of this Letter should be quoted.*



MyRef. GHS/RDD/ERC/Admin/App 1191614  
Your Ref. No.

Research & Development Division  
Ghana Health Service  
P. O. Box MB 190  
Accra  
GPS Address: GA-050-3303  
Tel: +233-302-681109  
Mob: 0503539896  
Email: [ethics.research@ghsmai.org](mailto:ethics.research@ghsmai.org)  
11<sup>th</sup> November, 2019

Monica Yinpok Guure  
School of Nursing and Midwifery  
University of Ghana  
Legon, Accra

The Ghana Health Service Ethics Review Committee has reviewed and given approval for the implementation of your Study Protocol.

GHS-ERC Number	<b>GHS-ERC029/10/19</b>
Project Title	Practices of Cesarean Wound Infection Prevention among Nurses and Midwives: A Study in the Upper East Regional Hospital, Bolgatanga
Approval Date	11 <sup>th</sup> November, 2019
Expiry Date	10 <sup>th</sup> November, 2020
GHS-ERC Decision	<b>Approved</b>

**This approval requires the following from the Principal Investigator**

- Submission of yearly progress report of the study to the Ethics Review Committee (ERC)
- Renewal of ethical approval if the study lasts for more than 12 months,
- Reporting of all serious adverse events related to this study to the ERC within three days verbally and seven days in writing.
- Submission of a final report **after completion** of the study
- Informing ERC if study cannot be implemented or is discontinued and reasons why
- Informing the ERC and your sponsor (where applicable) before any publication of the research findings.

Please note that any modification of the study without ERC approval of the amendment is invalid.

The ERC may observe or cause to be observed procedures and records of the study during and after implementation.

Kindly quote the protocol identification number in all future correspondence in relation to this approved protocol

SIGNED.....

Dr. Cynthia Bannerman  
(GHS-ERC Chairperson)

Cc: The Director, Research & Development Division, Ghana Health Service, Accra