

**CLINICAL DECISION MAKING AND REFERRAL OF OBSTETRIC  
EMERGENCIES: A CASE OF EmONC TRAINED AND UNTRAINED  
NURSES AND MIDWIVES IN MPIKA DISTRICT, MUCHINGA  
PROVINCE, ZAMBIA**

**By**

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A Dissertation submitted in partial fulfillment of the requirement for the Degree  
of Masters of Science in Nursing at the University of Zambia

**JUNE, 2016**

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## ABSTRACT

**Introduction:** The study was conducted to determine whether there was a difference in clinical decision making between nurses and midwives trained in Emergency Obstetric and Neonatal Care (EmONC) and the untrained on referral of obstetric emergencies and whether there was a relationship between being trained in EmONC and the outcome of an obstetric emergency. Prompt decision making in referring women with obstetric complications to the next level of care for further management by nurses and midwives is critical in reducing maternal mortality rate. The total maternal mortality for Mpika District in 2014 was 12 and out of the 12 recorded deaths, 10 were from the referred cases. There is still high maternal mortality in Zambia despite strategies like EmONC being implemented whose goal is to provide knowledge, clinical and decision making skills to nurses and other relevant staff to respond appropriately to obstetric emergencies. The main objective of the study was to determine the differentials in clinical decision making and referral of obstetric emergencies between nurses and midwives who have undergone training in EmONC and those who have not.

**Methods:** This was a cross sectional survey conducted in Mpika District. A sample size of 18 nurses and midwives was selected using census method as they were limited in number; and 111 obstetric referral records were purposively sampled. A pre-tested self-administered questionnaire and checklists were used to collect and record the information. Data was analyzed using IBM SPSS for windows statistical software version 22.0. Chi-square test was used to test associations between the dependent and independent variables.

**Results:** The study findings revealed that out of the 18 nurses and midwives who participated in the study, (44%) 8 were trained in EmONC while (66%) 10 were not. The findings showed no difference in timely referral of obstetric emergencies ( $\chi^2 = .407$ ;  $p > 0.005$ ). The findings did not show a strong relationship between being trained in EmONC and the outcome of an obstetric emergency ( $\chi^2 = 0.644$   $p > 0.005$ ). However, Environmental and organizational contexts of decision making such as availability of transport by the referring unit (**95% CI, P- Value 0.002**), going to hospital with a referral letter (**95% CI, P- value =0.016**) and documentation of pre-referral treatment on the referral form (**95% CI, P-value= 0.019**) were significantly related to being referred by EmONC trained nurse or midwife.

**Conclusions:** The study results indicate that there is no difference in clinical decision making between the EmONC trained and the untrained in relation to timely referral, foundational knowledge and outcome of referred obstetric emergencies.

However, availability of transport has been seen to have an influence on the number of cases referred. This study highlights the fact that given all the logistics, nurses and midwives can make timely decisions on referral of obstetric emergencies.

**Recommendations:** There is need for future studies on the impact of EmONC to determine differentials in maternal mortality between the trained health workers and the untrained at a large scale.

## **DEDICATION**

I dedicate this study to my wife Joyce Namalongo and our lovely children Kondwani, Chanda, Katongo, Nchimunya and Mutinta for being the driving force behind this study.

## ACKNOWLEDGEMENTS

My heartfelt gratitude goes to Dr. Catherine M. Ngoma my supervisor for the tireless efforts rendered to me for this study to be successfully completed.

I also want to thank the following:

- Mr. Emmanuel Musenge the Co- supervisor
- Ministry of Health for the sponsorship during my training.
- The medical superintendent Chilonga Hospital for permission to conduct this research.
- The District Medical Officer- Mpika for permission to conduct this research
- Sr. R. Kabonga for the support and encouragement
- Mr. P. Kaleng'a for assistance and guidance
- The staff of Chilonga School of nursing for a lot of support rendered during data collection.
- My classmates especially Esther Banda for their advice and constructive critical analysis of my study.
- My beloved children for their encouragement.
- Various people and organizations who contributed in anyway.

Above all the ALMIGHTY GOD for the inspiration and making it possible for me to conduct this study.

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## LIST OF ABBREVIATIONS

|             |  |
|-------------|--|
| APH .....   | Antepartum Hemorrhage                  |
| CEmOC ..... | Comprehensive Emergency Obstetric Care |
| DMO .....   | District Medical Office                |
| EmONC.....  | Emergency Obstetric and Neonatal Care  |
| GMO .....   | General Medical Officer                |
| PPH .....   | Postpartum Hemorrhage                  |
| RHC .....   | Rural Health Centre                    |
| UNZA .....  | University of Zambia                   |
| USA .....   | United States of America               |
| WHO.....    | World Health Organization              |
| ZCA .....   | Zambia College of Agriculture          |
| ZDHS.....   | Zambian Demographic Health Survey      |

## **CHAPTER ONE**

### **1.0 INTRODUCTION**

The death of a woman during pregnancy or in pregnancy-related circumstances has an emotional impact not only on the attending health care provider but also on the family. As a result, maternal mortality continues to generate serious public health concerns because of its social, economic, and political implications (CSO, 2010). It is even more worrisome when such deaths are preventable (SOGON, 2004), particularly when the factors that result in the three known delays are adequately tackled (Harrison, 2009). Maine (1991) stated that delays in the management of pregnancy complications are the key determinants of maternal mortality in the developing countries. Type I delay results from failure to seek medical treatment on time (40%); Type II delay results from difficulty in transportation (20%); and Type III delay occurs when the woman has arrived at the hospital (40%) (Okonofua, 2006). Type III delays can be prevented by prompt decision making and timely referral of obstetric emergency cases EmONC trained nurses and midwives and medical officers.

Chapter one (1) covers the background information about the clinical decision making and referral of emergency obstetric cases among nurses' and midwives and discusses the extent of the problem in Mpika District which is covered under statement of the problem and the justification for the study. Among other things covered in this chapter are; the theoretical framework, research questions, hypothesis, conceptual and operational definitions of key words and important variables. The chapter concludes with an outline of variables, indicators and cut off points.

### **1.1 BACKGROUND**

Nurses and midwives face endless variety of clinical situations and in every situation it is important for them to think critically and make accurate, timely and appropriate clinical decisions so that clients receive best care (Potter & Perry, 2005). Nurses and midwives' clinical decision-making on referral of obstetric emergencies include among other things deciding why the woman should be referred, when to refer and how to refer (Clark, 2009).

The situated clinical decision-making framework provides a structured approach to analysing nurses' and midwives' decision-making in clinical nursing practice, assists educators in identifying specific issues within nurses' clinical decision-making, and guides selection of relevant strategies to support development of clinical decision-making (Minick & Harvey, 2003). The situated clinical decision-making framework incorporates context, foundational knowledge, decision-making processes and thinking processes.

Cranley et al. (2009) conducted a systematic review from 1990 to 2007 on nurse's clinical uncertainty and conceptualization. The findings revealed that little exploration has been done of nurses' experience of uncertainty in practice. Many investigators have not theorized the uncertainty in their studies, but have described nurses' uncertainty in the context of clinical decision-making.

Hagbaghery (2004) identified five main themes from the data collected. From the participants' points of view, "feeling competent", "being self-confident", "organizational structure", "nursing education", and "being supported" were considered as important factors in effective clinical decision-making. However, the researcher did not find any similar study conducted in Zambia and hence little is known on nurses and midwives situated clinical decision making especially when it comes to referral of obstetric emergencies.

Global and Zyang (2011) state that the leading direct causes of maternal deaths include haemorrhage, infection, eclampsia, obstructed labour and septic abortion. They also explained that prevention and management of the above mentioned complications require care by a skilled-birth attendant such as nurses and midwives and timely accesses to comprehensive emergency obstetric care (CEmOC).

Since the primary causes of maternal mortality are difficult to predict in advance global health experts such as: the World Health Organization (WHO), United Nation Children's Fund (UNICEF) and UN Population Fund (UNFPA) advocate for improved access to emergency obstetric and new born care (EmONC) as the best means for reducing maternal mortality in low and middle-income countries (WHO, 2007). Nurses and midwives trained in EmONC are expected to make accurate and timely clinical decisions regarding referral of emergence obstetric cases for further management. Most obstetric complications occur suddenly, without warning and can neither be predicted nor prevented but if women received

treatment in time almost all can be saved. If women do not receive medical treatment on time, they will probably suffer disability or die.

Therefore, in order for nurses and midwives to provide quality emergency obstetric care, they need to have good clinical decisions and judgement abilities which are mostly covered in EmONC trainings (Clack, 2009).

However, according to the available data at Mpika DMO, only 13 nurses and midwives were trained in EmONC and of the 13, only three (3) nurses and 5 midwives are from the rural health centres. In addition, there were 114 referred cases of obstetric emergencies from rural health centres, and of the 12 recorded maternal deaths in the district, 10 were from the referred cases (Mpika DMO and Chilonga General hospital HIMS, 2014). A review of the maternal mortality by the Maternal Mortality Review Committee for Mpika District Hospital and Chilonga suggested poor decision making by nurses and midwives as a contributing factor to the said maternal deaths and identified that there were more maternal deaths among the referred cases compared to those who were directly admitted by the two hospitals. Hence this study has helped in identifying the major contributing factors to the high maternal deaths among the referred cases and has also identified gaps as far as nurses and midwives' clinical decision making is concerned.

## **1.2 STATEMENT OF THE PROBLEM**

This study emanated from the findings of the Maternal Mortality Review Committee for Mpika District which stated that maternal mortality was high among referred obstetric cases than the walk-in clients. The total maternal mortality for Mpika district for 2014 was twelve (12). Of the 12 recorded maternal deaths 10 were referred cases. Prompt decision making in referring women with obstetric complications to the next level of care for further management by nurses and midwives is critical if maternal mortality rate is to be reduced. It is expected that nurses and midwives should make timely and appropriate clinical decisions when making referrals to reduce maternal mortality. Nurses and Midwives' clinical decision-making is a complex process with potential to influence the quality of care provided and, subsequently, patient outcomes (Tanner, 2006). Effective clinical decision-making processes develop over time as nurses acquire necessary knowledge, critical thinking processes and clinical experience (Benner et al., 1996). For Nurses and Midwives to have effective critical decision making, they should possess all the critical elements of Gillespie and Paterson's clinical decision making model.

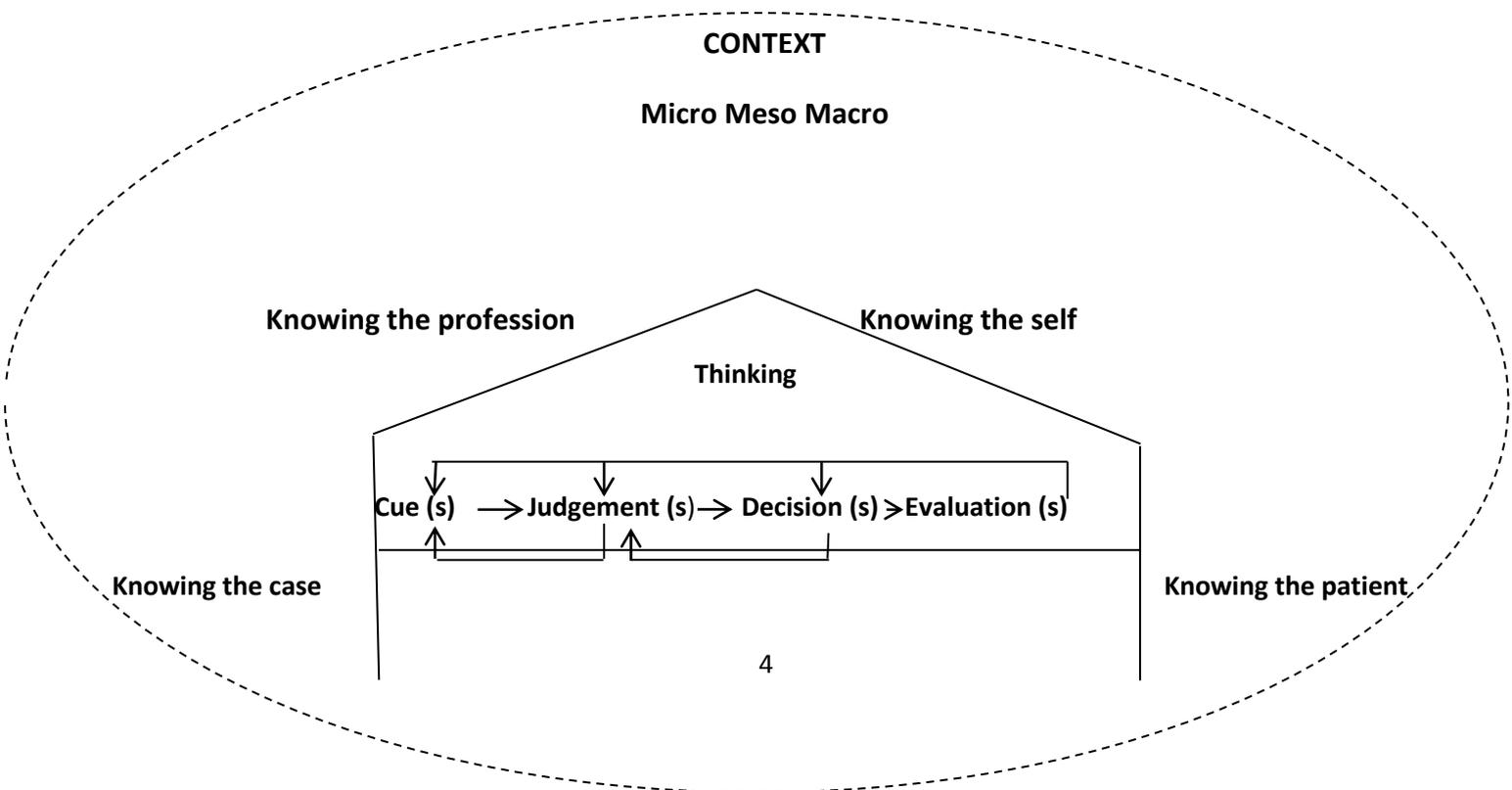
Currently maternal mortality rate in Zambia stands at 398/ 100, 000 live births which is one of the highest in the sub-Sahara region (Republic of Zambia 2013-2014) despite strategies being implemented by the country to mitigate maternal deaths. One of such strategies being implemented by Zambia is EmONC.

The cardinal goal of EmONC is to provide knowledge, clinical and decision-making skills to nurses and midwives and other relevant health staff to respond appropriately to obstetric emergencies. However, not many nurses and midwives have been trained in EmONC especially those working in the rural health facilities. For instance, Mpika District has 20 rural health centres, a district hospital and a general hospital where obstetric emergencies are referred. Of the 20 health centres, 16 are run by nurses and midwives and only (3) three nurses and 5 midwives are trained in EmONC. The impact of EmONC has not been assessed to determine differentials in maternal mortality between nurses and midwives who have undergone the training and those who have not in clinical decision making and referral and hence the study.

### 1.3 THEORETICAL FRAMEWORK

#### 1.3.1 The situated clinical decision-making framework

The situated clinical decision making framework guided this study. The situated clinical decision-making framework incorporates (i) context (ii) foundational knowledge (iii) decision-making processes and (iv) thinking processes (Fig. 1) as critical elements in nurses' and midwives' decision making.



| <b>Foundational Knowledge: Definitions</b> |  |
|--|--|
| Knowing the profession                     | Knowledge of standards of practice, competencies, skills and roles of nurses ( <i>The study findings showed that nurses and midwives had adequate knowledge of standard practice, competencies and skills</i> )  |
| Knowing the self                           | Knowledge of individual strengths, limitations, skills, experience, assumptions, preconceptions, learning and other needs. ( <i>Knowledge of self was evident from the nurses studies as they were able to consult others and refer when situation demanded</i> )  |
| Knowing the case                           | Knowledge of pathophysiology, patterns that exist in typical cases, predicted trajectory and patient responses ( <i>The study results showed that majority of the nurses had good knowledge of the cases as can be seen from the majority of cases on which they made right diagnoses</i> )  |
| Knowing the patient/ client                | Knowledge of a patient's or client's baseline data, patterns that exist in laboratory or other data, or patterns in physiological responses to pathology and treatment ( <i>This was also evident as correct observations and investigations were done in most cases before referral</i> )   |
| Knowing the person                         | Knowledge of a patient's or client's past experience in relation to health and illness, patterns in relation to personal response to pathology and treatment, preferences, supports and resources ( <i>Nurses and midwives had adequate knowledge of their clients considering that most of them were coming from within their localities</i> ). |

Fig.1. Clinical decision-making framework by Gillespie and Paterson, 2009)

### 1.3.2 Context

The context part of the framework emphasises the fact that nurses and midwives make clinical decisions within a multi-layered context that includes micro- (nurse and patient in relationship). For example, basing on the relationship with the patient, the nurse or midwife may fail to persuade patient to be referred to the next level of care. Meso (nursing unit and health care agency), this may relate to the infrastructure where care is to be provided e.g. the labour ward if not well equipped, the nurse or midwife may fail to provide the needed care. And macro-levels (profession, society and government), may relate to protocols and guidelines provided on referral process. Each level potentially includes social, cultural, political, ideological, economic, historical, temporal, and physical factors that may influence clinical decision-making (Gillespie & Paterson, 2009).

### **1.3.3 Foundational knowledge**

Basing on the foundation knowledge, Nurses and midwives' clinical decision-making is informed by foundational knowledge that arises from multiple dimensions: the nursing profession, self, general and specific aspects of the patient situation (Benner et al, 1996). The use of *knowing* rather than *knowledge* in naming the various dimensions reflects the need for nurses to move beyond 'having' knowledge: Effective decision-making entails active acquisition of new knowledge pertinent to the specific patient and situation, along with thoughtful use of existing knowledge. In the case of obstetric emergencies, there is need for nurses and midwives to be updated with new trends in the identification of danger signs and general management of cases. For novice practitioners, case knowledge will be drawn primarily from text books; with experience this base is expanded through the acquisition of experiential knowledge (Benner et al, 1996).

### **1.3.4 The clinical decision-making process**

In this framework, the phases that comprise the clinical decision-making process (i.e., cues, judgments, decisions, and evaluations of outcomes) are non-linear, inform and may be informed by one another.

#### **Cues**

Nurses' and midwives' clinical decision-making processes are initiated when they recognize a cue from the patient; this may be either a particular patient response or the absence of something expected. From this beginning point, nurses collect additional cues from multiple sources in order to understand the situation. In obstetric emergencies, this may involve early detection of danger signs of an impending complication (Benner et al, 1996).

#### **Judgment**

Judgment is defined as the *best* conclusion a nurse can reach at a point in time, given the information available (Gillespie & Paterson, 2009). This definition reflects the clinical reality in which nurses and midwives engage in a dynamic process, moving between possible judgments and cue collection. Ongoing cue collection informs, and is informed by, a nurse's and midwives' 'evolving understanding of the situation and continues toward a best conclusion.

When a judgment is favoured, nurses and midwives may collect cues to ‘rule in’ that judgment, and consequently narrow their scope of consideration. In contrast, when cue collection is structured to build evidence related to a variety of possible judgments and ultimately ‘rule out’ less likely explanations, the probability of an accurate judgment is increased (Evans, 2005). Finally, the time spent in collecting cues to confirm judgments must always be weighed against the patient’s clinical state. In more acutely ill patients like most obstetric emergencies e.g. postpartum haemorrhage, delay in forming a judgment may result in deterioration in patient condition. Safe practice is supported by nurses and midwives’ awareness of their progress toward forming a judgment (knowing self) and their willingness to seek assistance from other health care professionals.

### **Decision(s)**

Having reached a ‘best conclusion’, the nurse or midwife must determine a course of action, a phase that requires consideration of both *what* should be done and *how* that should occur (Boblin-Cummings et al., 1999). The situated clinical decision-making framework acknowledges that nurses and midwives may enact decisions in various ways including ‘waiting and watching’ and ‘trying something’ (Gillespie & Paterson, 2009). However, issue of trying something in case of an obstetric emergency will depend on the knowledge base of the nurse or midwife of the obstetric emergency and availability of EmONC resources for use in the management of the case.

When assessing this phase of nurses’ clinical decision-making, there should be a differentiation between the outwardly similar states of choosing to ‘wait and watch’ and a delay in decision-making that arises from uncertainty. Inaction arising from uncertainty holds significant implications for patient safety, and highlights the importance of nurses and midwives recognizing when they need to seek assistance such as when to refer a patient for a comprehensive emergency obstetric complication care facility. The decision option of ‘trying something’ recognizes a quality of testing that is inherent in many nursing and midwifery decisions. In this decision variant, nurses and midwives choose to proceed with a tentative course of action but remain open to revising the actions as new information becomes available to them.

Patient safety rests on the nurses' and midwives ability to differentiate between consciously choosing to test a course of action versus trying something because they lack other alternatives, as well as the nurses' capacity to revise actions based on patient responses.

The situated clinical decision-making framework frames the goal of the decision phase as a *best* decision, highlighting two relevant points for consideration. First, there may be more than one course of action that constitutes safe, appropriate, and ethical care. Second, the best decision will consider the uniqueness of the patient and the surrounding context.

### **Evaluation of outcomes**

In the final phase of clinical decision-making, nurses and midwives may consider the effectiveness of the decision, a process that requires effective assessment processes and adequate cue collection. In response to their conclusion regarding outcomes, nurses and midwives may return from evaluation to any point in the decision-making process, or may recognize the need for assistance and choose to involve another health care professional. However, this may be difficult especially in rural areas where most of the nurses and midwives work independently with no one to consult due to staff shortages.

### **1.3.5 Thinking**

The situated clinical decision-making framework makes explicit the critical contribution of critical, systematic, creative, and anticipatory thinking to clinical decision-making. This multidimensional perspective of thinking mirrors Tanner's (2006) assertion that nurses use a variety of reasoning processes in making clinical decisions.

Critical thinking underpins nurses' and midwives inquiry and generative thinking and has been linked to effective clinical decision-making (Cruz et al., 2009; Del Bueno, 2005). Critical thinking becomes evident in nurses' ability to identify and challenge assumptions, values, and beliefs that they bring to a situation; consider the influence of context; generate possible explanations, judgments and decisions; and maintain reflective scepticism (Brookfield, 1987). Critical thinking ability may be inhibited by a variety of contextual factors including workload, time pressures, and a narrow focus on a patient issue (Ebright et al., 2004; Potter et al., 2005).

Systematic thinking is reflected in nurses' ability to collect, analyse and organize information in a methodical manner that supports pattern recognition, formation of sound judgments, selection of actions, and evaluation. This can be achieved by proper documentation and use of protocols and guidelines such as the one for referral of obstetric emergencies.

Creative thinking is integral to and made evident in nurses' responses to everyday challenges in the clinical environment that arise from patients' individuality, increasing acuity and complexity of patients, and limitations in resources. Finally, anticipatory thinking or 'thinking ahead' is essential to prevention and early detection of potential patient problems, timely intervention when problems occur, alignment of specific decisions with broader patient care goals and, consequently, favourable outcomes for patients (Benner et al., 1999; Minick & Harvey; 2003). Anticipatory thinking also supports prioritization and workload planning (Ebright et al., 2003).

#### **1.4 JUSTIFICATION FOR THE STUDY**

Good and timely decision making to refer patients with obstetric emergencies for further management is cardinal to good maternal and neonatal outcome. The researcher did not come across any local information on the topic under study therefore, this study will provide baseline data for further research on the subject.

It is hoped that the findings of this study will be utilised by clinical educators, nurse educators in selecting relevant strategies to support development of clinical decision making. The study will also assist nurses and midwives to identify gaps in their decision making abilities and help them to improve in their clinical decision and hence promote quality nursing and midwifery care. This will help to reduce maternal deaths. The principal investigator has benefitted from this study in terms of knowledge expansion on issues surrounding obstetric emergencies and referral. The Principal investigator will also benefit from this study by using the study as a basis for further researches in nursing education and maternal and obstetric care. The findings will also be used by Nurse Managers, nurses and midwives; and other stakeholders to design continuous professional development to ensure quality of nursing care and uplift the nursing profession as a whole.

## 1.5 RESEARCH QUESTIONS

1. Is there a difference in clinical decision making between EmONC trained nurses and midwives and non EmONC trained on referral of obstetric emergencies?
2. Is there a relationship between being trained in EmONC and the outcome of an obstetric emergency?

## 1.6 NULL HYPOTHESIS

There is no difference in clinical decision making between EmONC trained nurses and midwives and non EmONC trained on referral of obstetric emergencies.

## 1.7 OPERATIONAL DEFINITION OF VARIABLES

**Obstetric emergency:** refers to conditions such as pre-eclampsia, haemorrhage, obstructed and prolonged labour; and sepsis.

**Foundation Knowledge of Emergency obstetric Care (EmONC):** refers to the ability of the nurses and midwives to correctly identify the signs and symptoms of an emergency obstetric complication and outline its management and will be considered as either good or poor basing on the score by the respondent.

**Timely referral of an obstetric emergency:** refers to respondents ability to transfer of a woman with an obstetric emergency condition from a rural health centre to a district or general hospital where comprehensive EmONC is offered within the earliest possible time, in this study deciding to refer within 1 hour 30 minutes is to be considered timely referral.

**Environmental and organizational context for clinical decision making:** refers to evidence of clinical decision making being influenced by moral, ethical issues, nurses and midwives experience, confidence, workload, availability of appropriate EmONC resources, communication systems and infrastructure.

**Foundational knowledge of nurses and midwives:** refers to awareness of strengths, limitations, skills, experience and learning needs by nurses and midwives on obstetric emergencies and referral to be based on a score of more than 10 out 15 Likert's scale questions

**Clinical decision making process:** refers to recognition of abnormal responses, collection of cues from multiple sources, observation, physical assessments, documentation and intuition for obstetric emergencies, coming up with decisions and evaluating the outcomes of an action by nurses and midwives.

**Outcome:** refers to the end result of the referred obstetric emergency i.e. operation, discharge or death.

## **1.8 VARIABLES**

The major variable for this study are the independent and dependent variables.

The following outlined variables were used in this study:

### **1.8.1 DEPENDENT VARIABLE**

Timely referral of obstetric emergencies.

### **1.8.2 INDEPENDENT VARIABLES**

1. Environmental and organizational context of decision making.
2. Foundational knowledge of nurses and midwives on EmONC.
3. Clinical decision making process.

## 1.9 VARIABLES, INDICATORS AND CUT OFF POINTS

|                    | VARIABLES                                | CUT-OFF POINTS | INDICATORS   | QUESTION   |       |
|--------------------|--|----------------|--|--|-------|
| <b>DEPENDENT</b>   | Timely referral of obstetric emergencies | Yes            | If respondent's evidence show ability to identify an obstetric emergency and refer patient within 2 hours - for Postpartum Hemorrhage<br>Before 12 hours - for Antepartum Hemorrhage<br>Within 24 hours for Obstructed Labor and before 6 days - for Infection | 5- 10  |       |
|                    |  | No             | If respondent's evidence show inability to refer patient within 2 hours - for Postpartum Hemorrhage<br>Before 12 hours - for Antepartum Hemorrhage<br>Within 24 hours for Obstructed Labor and before 6 days - for Infection                                   |  |       |
| <b>INDEPENDENT</b> | Environmental and organizational context | Yes            | If respondent show evidence that decision making is being influenced by moral or ethical issues, experience, workload, availability of appropriate resources for EmONC, communication facilities and infrastructure  | 1-4 and 11-15  |       |
|                    |  | No             | If respondent does not show evidence that decision making is being influenced by moral or ethical issues, experience, workload, availability of appropriate resources for EmONC, communication facilities and infrastructure                                   |  |       |
|                    | Foundational Knowledge on EmONC          | Good           | If respondent score more than 10 on the 15 Likert's scale questions on foundational knowledge on EmONC   | 16- 30   |       |
|                    |  | Poor           | If respondent score less than 10 on 15 Likert's scale questions on foundational knowledge on EmONC   |  |       |
|                    | Clinical decision making process         | Good           | Good   | If respondent indicate early recognition of abnormal patient responses, cue collection from multiple sources, documentation and intuition          | 31-34 |
|                    |  |                | Bad  | If respondent does not indicate early recognition of abnormal patient responses, cue collection from multiple sources, documentation and intuition |       |
|                    |  |                |  |  |       |

## **CHAPTER TWO**

### **2.0 LITERATURE REVIEW**

#### **2.1 INTRODUCTION**

Chapter two (2) provides information on the literature review on situated clinical decision making and referral of obstetric emergencies among nurses' and midwives. The literature review focuses on studies conducted in different countries on nurses and midwives clinical decision making ability and referral of obstetric emergencies. Sources of literature included books, articles from professional journals, abstracts, critique reviews and hospital records mainly from the internet using search engines such as Pub-med, Google scholar, Medline and others.

The review assisted in establishing what has been done or known about the topic and identified gaps in the existing literature. The literature review is organized according to some study variables such as timely referral of obstetric emergencies, Environmental and organization context for decision making, foundation knowledge of nurses and midwives, decision making processes and thinking processes.

#### **2.2 TIMELY REFERRAL OF OBSTETRIC EMERGENCIES**

Maternal mortality remains a major public health challenge, not only in Mpika district, but in the developing world in general. Health systems functioning with adequate equipment, resources and trained personnel to handle maternal complications can reduce the risks of mortality. In Africa maternal deaths are associated with delayed referrals for women from lower level facilities, and where referral systems are not well equipped to handle emergency obstetric care (Etuk et al., 1999). The presence of skilled attendants during birth is also important in managing life threatening complications.

Referrals pose a great challenge to the primary health care providers. Before a decision is made to refer, medical personnel often think of the following: is it necessary to refer the case or can it be managed at the health centre. What is the best specialty to manage the case? Am I going to have a feed back? How am I going to learn from this case? (Al Hajeri, 2010). However, it becomes difficult to ascertain the real cause of maternal death when a decision to refer a woman is made at the rural health facility and the referred woman ends up dying at the receiving hospital.

The case of Mpika district where ten (10) of the recorded twelve (12) maternal deaths were from the referred cases raise more questions than answers. It is expected that when timely referral is made for an obstetric emergency, a woman's life is saved.

Factors affecting the decision making for referrals can be categorized into 3: Health worker related, condition related and patient related, or a combination of all (Al Hajeri, 2010). For instance, a study conducted by Kihlgren et al. (2014) in Sweden showed that complex illnesses, non-adapted organizations, considerations about what was good and right in order to meet the older person's needs, taking account of her/his life-world, health, well-being and best interests were among the factors influencing Registered Nurses' decision making to refer old older persons to emergency departments. Other crucial factors for the nurses' confidence in the decision included Co-worker competencies and open dialogues in the "inner circle. Hesitation to refer was associated with previous negative reactions from emergency department professionals. The findings also revealed that lack of medical knowledge and uncertainty on how to judge the acute illness or changes influenced RNs decision making ability. Hence the study concluded that access to the "outer circle", *i.e.* physicians and hospital colleagues, was necessary to counteract feelings of insecurity about referrals. The other conclusion was that; when difficult decisions have to be made, not only medical facts but also relationships are of importance. Therefore, strengthening of the RNs' and staff members' competence by means of education seemed to be important in order to avoid unnecessary referrals. Guidelines and work routine need to be more transparent and referrals due to the lack of resources are not only wasteful but can worsen the older persons' health. The above findings explain to a larger extent the theoretical framework contents relating to the nurses' and midwives' clinical decision making. The study also reveals the fact that nurses and midwives may fear to timely refer a patient with a serious condition like an obstetric emergency just for fear of being rebuked by fellow nurses or doctor from the receiving end.

Ghazi et al. (2012) conducted a study on "Home birth and barriers to referring women with complications to hospital" in South Eastern Iran. The objective of the study was to determine the factors that hinder midwives and parturient women from using hospitals when complications occur during home birth in Sistan and Baluchestan province, Iran, where 23% of all deliveries take place in non- hospital settings.

The findings demonstrated that three distinct factors lead to indecisiveness and delay in the use of EmONC by the midwives and mothers studied.

Socio-cultural and familial reasons compel some women to choose to give birth at home and to hesitate seeking professional emergency care for delivery complications. Apprehension about being insulted by physicians, the necessity of protecting their professional integrity in front of patients and an inability to persuade their patients lead to an over-insistence by midwives on completing deliveries at the mothers' homes and reluctance to refer their patients to hospitals. The low quality and expense of EmONC and the mothers' lack of health insurance also contribute to delays in referral. The conclusion was that Women who choose to give birth at home accept the risk that complications may arise. Training midwives and persuading mothers and significant others who make decisions about the value of referring women to hospitals at the onset of life-threatening complications are central factors to increasing the use of available hospitals. This study can relate well to the prevailing situations in rural areas like Mpika where most centres have no EmONC facilities and socio-cultural influences are at play. However, the two studies have not specifically explained why there are high maternal deaths among referred cases as compared to normal hospital admissions.

A study by Yego et al. (2013) on “risk factors for maternal mortality in tertiary hospital in Kenya gives an insight to the high maternal mortality among referred cases as compared to normal hospital admissions. It was a retrospective review of obstetric service delivery records of all maternal deaths over an 11-year period (01 January 1999 to 31 December 2009). All pregnancy-related deaths of patients managed at the hospital were included in the study. A total of 15,264 live births and 231 maternal deaths were recorded during the period under review, giving a maternal mortality ratio of 1513.4 per 100,000 live births. The findings were that obstetric hemorrhage was the leading cause of death (32.23%), followed by hypertensive disorders of pregnancy. Type III delay accounted for 48.48% of the deaths, followed by Type I delay (35.5%). About 69.26% of these women had no antenatal care. The majority (61.04%) died within the first 48 hours of admission.

Related findings to the above study are found in the “Report of the 2006 National Population Census, Cross River State. Federal Republic of Nigeria official Gazette. 2009; 2:b25-b26. The report covered the Cross River State of Nigeria which covers a large area with a very difficult geographic terrain.

It has a population of about 3,155,932 people with a population growth rate of 2.99%, and 45.5% of the population are rural dwellers. About 22% of the total population is in the reproductive age group (15–49 years).

The report stated the relationship between annual pregnancy-related admissions, total maternal deaths, cases referred to the hospital, deaths among those referred, live births, and percentage survival. A total of 18,728 pregnancy-related admissions were recorded, of which 18,510 (98.8%) survived. About 633 (3.4%) were referred either from hospitals of lower status or came un-booked, and 26.7% of those classified as referrals died. About 73.2% of those who died resulted from the referred cases. These findings are significant to the study to be undertaken in which 114 women with obstetric emergency conditions were referred to Mpika District hospital and Chilonga out of which ten (10) died compared to 3228 normal admissions.

In the same study, the delay phenomenon in these maternal deaths was also reviewed. The analysis showed that in 8.6% of the cases there were no delays, 35.5% died as a result of Type I delay, while 7.4% had Type II delay. Type III delay was responsible for 48.5% of the maternal deaths. Of the 112 (48.5%) resulting from Type III delay, failure of the junior health care providers to call a senior staff member early enough to manage serious cases was responsible for 32.1% of the deaths. About 30.4% of the deaths were attributed to lack of or inadequate blood for transfusion, while 7.1% refused blood transfusion for religious reasons. Other causes of Type III delays in this study were inability to pay hospital fees (13.4%), personnel problems (13.4%), and lack of drugs and/or logistic issues (3.6%). The findings of this study has brought to light the third delay phenomenon in decision making which attributed to high mortality among the referred cases. It can therefore be said if nurses and midwives responsible for such referrals made timely referral basing on sound clinical judgements, such deaths were going to be averted.

Type III delay accounted for almost half of all the deaths. This is less than reports from Benin City (Omo- Aghoja et al., 2010) in Nigeria, but higher than in an earlier report from Ile-Ife in Nigeria (Etuk et al., 2010). The main reasons for these deaths were delayed referral, inadequate blood for transfusion, or refusal of blood on religious grounds. The concept of a user fee as a basis for treating women who require emergency obstetric care has a direct relationship with medical emergencies, deliveries, and the number of women with complications (Prevention of maternal mortality network, 1995).

From the above studies it can be appreciated that timely referral is an essential component of health systems. However, referral patterns, as reported by hospitals in developing countries, show that actual referral rates for obstetric care were low (Jahn & De Brouwere, 2001).

For example, a study conducted in Bulawayo by Tshimanga et al. (1995) quantified reasons for referral from urban primary health care clinics to central hospitals and assessed the outcome of such referrals. In this study, 914 referrals were studied and out of these, 863 (94%) were made by Registered general nurses and 51 (6%) by Medical Officers. Four hundred and forty four (49%) referrals made by registered general nurses were for doctors to establish the diagnosis, and 341 (37%) were for treatment or operation. The other referrals were for specialists to take over management, for advice on management and referral back to the clinic, and for the hospital to carry out specific tests. Of all referrals, 844 (92%) were consulted by General Medical Officers (GMOs), and only 70 (8%) by specialists. A total of 148 (16%) patients were admitted. Nine (18%) of 51 referrals made by medical officers were admitted compared to 139 (16%) of 863 by registered general nurses.

Basing on these findings, it was established that the main reasons for referral from urban clinics to central hospitals are for doctors to provide confirmed diagnosis and prompt treatment. The other conclusion made was that there is scope for reducing the number of referrals made primarily for these reasons if a secondary or tertiary level of care institution is availed and /or if clinic operations are reorganized to make medical officers more accessible to registered nurses during working hours which is not always a case especially in rural areas like Mpika District where in most cases, the only available health worker at the clinic is a nurse, midwife, EHT or none at all.

A study was conducted by Afari et al. (2014) in rural Ghana to identify gaps in the referral process of obstetric emergence. In this study, 18 HCWs (8 midwives, 4 community health officers, 3 medical assistants, 2 emergency room nurses, 1 doctor) at different facility levels within the district were interviewed. The study identified gaps in the referral processes which included among others recognition of danger signs, alerting receiving units, accompanying critically ill patients, documenting referral cases and giving and obtaining feedback on referred cases. Main root causes identified by providers were in four domains: (1) transportation, (2) communication, (3) clinical skills and management and (4) standards of care and monitoring, and suggested interventions that target these barriers.

Mapping these challenges allowed for better understanding of next steps for developing comprehensive, evidence-based solutions to identified referral gaps within the district. The conclusions drawn from these findings were that; providers are an important source of information on local referral delays and in the development of approaches to improvement responsive to these gaps.

Better engagement of HCWs can help to identify and evaluate high-impact holistic interventions to address faulty referral systems which result in poor maternal outcomes in resource-poor settings. These perspectives need to be integrated with patient and community perspectives.

Another study conducted by Kongnyuy et al. (2008) used a criteria-based audit to assess the Salima District referral system in Malawi. A retrospective review of 60 obstetric emergencies referred from 12 health centres was conducted and compared with prior established standards for optimal referral of emergencies. Recommendations were made and implemented. Three months later, a re-audit was conducted (62 cases). The results of the re-audit showed significant improvements in 4 out of 7 standards: adequate resuscitation before referral (33.3% vs 88.7%;  $p = 0.001$ ); delay of less than 2 hours from the time the ambulance is called to when the ambulance brought the patient to the hospital (42.8% vs 88.3%;  $p = 0.014$ ); clinician attends to patient within 30 minutes of arrival to hospital (30.8% vs 92.6%;  $p = 0.001$ ) and feedback given to the referring health centres (1.7% vs 91.9%;  $p < 0.001$ ). The rest of the three standards showed a high level of attainment ( $>95\%$ ) in both the initial audit and the re-audit: referred patients accompanied by a referral form; ambulances are available at all times and the district hospital is informed through short-wave radio by the health centre when a patient is referred. The conclusion of the study was that criteria-based audit can improve the ability of a district referral system to handle obstetric emergencies in countries with limited resources. The findings of this study indicated that the referral system is working. However, most referrals fall short of the criteria of an effective referral thus rendering the referral system mostly ineffective. This is even worse in rural areas like Mpika district where distances to the receiving facility coupled with health workers work overload are factors at play.

## **2.3 ENVIRONMENTAL AND ORGANIZATIONAL CONTEXT FOR CLINICAL DECISION MAKING**

Changing healthcare environments require nurses and midwives to become more independent in their decision making, especially in advanced practice roles such as in management of obstetric emergencies. The ability to make appropriate clinical decisions is a hallmark of professional nursing practice (Carneyali, 2003). A study by Kremer et al. (2010) in Chicago on Certified Registered nurses' clinical decision making is a clearer description of the types of cognitive errors that lead to inaccurate judgment.

Descriptions of the errors nurses make may provide important and useful insights to further understand the complex cognitive aspects of judgment, which will improve understanding of these errors and may ultimately lead to even better patient outcomes. This study used information-processing theory (IPT) as a guiding framework. Information-processing theory is a descriptive theory of decision making that describes problem-solving behaviour as an interaction between the information-processing system (the nurses) and the judgment task. A major tenet of IPT is the concept of bounded rationality, which suggests that there are inherent limitations to human information-processing abilities, especially with respect to short-term working memory. This is a significant issue when nurses and midwives are providing care on call, with limited rest and the added stress of an emergency situation. Prompt recognition of a clinical problem and rapid recall of relevant differential diagnoses and appropriate treatment algorithms may be flawed with these constraints. The other tenet of IPT is that long-term memory is a network of knowledge gained from education and experience, which is potentially infinite.

Effective problem solving, therefore, depends on the degree to which the nurses and midwives can adapt to the limitations of short- and long-term memory. Since both short- and long- term memory are limited, rarely used information such as the treatment for Eclampsia may be difficult to access on occasions that require it. The complexity of the judgment task, e.g. differential diagnosis, determines the level of cognitive strain (determining the diagnosis and beginning treatment). It is mentally stressful to make difficult or complex decisions. The more complex the task, the greater the strain, and the system (the cognitive processing of the nurses) attempts to develop strategies for dealing with this complexity (Elstein et al., 2010).

This explains to a large extent the stressful situations nurses and midwives undergo as they work in rural health facilities where there is shortage of manpower and a nurse has to work 24 hours a day.

On the other hand, although the medical interventions needed to prevent pregnancy-related deaths exist, programs to reduce maternal mortality in developing countries have a mixed track record. On a "macro" level, the success of Sri Lanka in dramatically reducing maternal mortality over the past half century is evidence that long-term government commitment to broad, systematic improvement of health services for pregnant women can save lives effectively in a low-income country (Levine, 2002). On a "micro" level, however, no rigorous evidence for the effectiveness of many seemingly logical interventions has been found (Levine, 2002).

Situated in a practice setting, clinical reasoning occurs within social relationships or situations involving patient, family, community, and a team of health care providers. The expert nurse/ midwife situate themselves within a nexus of relationships, with concerns that are bounded by the situation. Expert clinical reasoning is socially engaged with the relationships and concerns of those who are affected by the caregiving situation, and when certain circumstances are present, the adverse event. Halpern (2001) has called excellent clinical ethical reasoning "emotional reasoning" in that the clinicians have emotional access to the patient/family concerns and their understanding of the particular care needs.

The ability to perform Emergency Obstetric and New born Care (EmONC) signal functions requires training, supplies, and a functional facility (WHO, 2012). If a facility cannot provide 24-hour medical care in addition to amenities such as toilets, clean water, and obstetric beds, women could be less likely to seek out that facility when they are in labour. Improvements in the facility infrastructure could encourage women to deliver at facilities; provision of a high standard of care at those facilities could improve outcomes, leading to further increases in their use (WHO, 2009).

In Zambia, Levine et al. (2008) assessed the availability of EmONC supplies and medicines as well as skilled health workers in 35 health centres in Central Province. The 35 health centres were graded based on their ability to provide basic functions of EmONC: administering parenteral antibiotics, administering parenteral oxytocics, administering parenteral anticonvulsants, performing manual removal of the placenta, removing retained products of conception and performing assisted vaginal delivery.

The findings revealed that the availability of EmONC in the Central Province of Zambia is extremely limited; the majority of health centres provide only one or two basic functions of EmONC, and no health centres perform all six functions. Of the 29 health centres providing delivery care, 65% (19) were graded as level 1 or 2, 28% (8) as level 3 or 4 and 7% (2) as level 5. No health Centre received a grade of level (six) 6. Similarly, Owensa et al. (2011) conducted a similar study in Southern Province, Zambia, whose aim was to evaluate the capacity of health facilities to perform routine obstetric care and EmONC. The findings showed that; EmONC was available in only six of 10 hospitals; the remaining four hospitals did not perform all basic EmONC signal functions. None of the 90 health centres performed the basic set of EmONC signal functions. Performance of routine obstetric care functions, health worker EmONC training, and facility infrastructure and staffing varied.

The findings from the above studies point to the fact that EmONC facilities in Zambia are limited and health workers skills on EmONC are also limited. However, it's a known fact that non-availability of EmONC facilities and logistics can affect health workers' decision making ability on referral of obstetric emergencies and to a larger extent contribute to maternal mortality. The situation can even be worse in Mpika district which is the biggest district in Zambia with some rural areas that cannot be accessed during the rainy season. To compound the situation, there are few nurses and midwives (6) trained in EmONC working in these health centres.

Lack of inter-professional and/or inter-agency communications can contribute to maternal deaths (WHO, 2006). There were many cases where the care provided to the women who died was hampered by a lack of cross-disciplinary working. In several cases crucial clinical information, which may have affected the outcome, was not passed from the general practitioner to the midwifery or obstetric services, or shared between consultants in other specialities. This fact can explain the importance of proper documentation and handover for all referred cases.

#### **2.4 FOUNDATIONAL KNOWLEDGE OF NURSES AND MIDWIVES ON EmONC**

Foundation knowledge of nurses and midwives on emergency obstetrics care can significantly contribute to proper decision making and timely referral and hence reduction in maternal mortality.

According to Gillespie and Paterson (2009), foundational knowledge involves among other things knowing the standards and ethics of practice, competencies, skills and roles of the nurses or midwives. It also involves knowledge of individual strengths, limitations, skills, experience assumptions, pathophysiology of diseases, baseline data, physiological responses to pathology and treatment and knowledge of the client's past experience in relation to health and illness. Knowledge and clinical experience are the most important factors in clinical decision making. Nurses and midwives are key providers of health services especially in rural areas and hence have to be up to date with knowledge more so when it comes to management of a woman with an obstetric emergency. Studies conducted by WHO (2011) revealed training deficits within medical workforce.

Therefore, WHO recommended that health-centre workers need training in all basic EmONC functions, and hospital workers need training in basic and comprehensive functions. Without trained workers, none of the signal functions of routine or emergency care can be performed safely (WHO, 2011). However, even with these recommendations by WHO, there are fewer nurses and midwives trained in EmONC hence defeating the whole purpose.

A study conducted by Crofts et al. (2012) in United States of America (USA) on the effect of obstetric emergency training on knowledge and whether the acquisition of knowledge is influenced by the training setting or teamwork training revealed that all (100%) of health Centre staff members were comfortable to perform simple vaginal delivery. The vast majority also reported feeling comfortable giving IV medications (89%), treating infection (100%), treating haemorrhage (83%) and manually removing the placenta (80%). About half of the health centre staff felt comfortable treating high blood pressure or seizures, or removing retained products of conception. Few felt comfortable with assisted vaginal delivery (6%) or performing a Caesarian section (0%). The study concluded that Practical, multi-professional, obstetric emergency training increased midwives' and doctors' knowledge of obstetric emergency management.

The World Health Organization advocates for expanded use of skilled birth attendants to reduce maternal mortality (WHO, 2005). Evidence for the use of skilled attendants primarily relies on non-experimental analysis and it is still unclear whether or by how much it may reduce maternal mortality (De Brouwere & Van Lerberghe, 2001).

Two recent studies used non-experimental methods to study the relationship between births attended by skilled attendants and maternal mortality. Neither study found a strong link between the two, though the limitations in the design of these studies make us approach any conclusion with caution (WHO, 2011). The first compared two districts in Burkina Faso, one that received a number of interventions designed to increase use and effectiveness of skilled attendants and another that received a much more limited set of services. The study found no statistically significant difference in maternal mortality rates between the two districts (Horton et al, 2008). The second used country-level data and found that a compelling case for a relationship between skilled attendance and maternal mortality could not be made (Graham, Bell & Bullough, 2001).

Challenges faced by a program to expand the use of skilled attendants include the inadequate supply of midwives and doctors, lack of health facilities to which to refer complicated cases, and reluctance among women to use such services (Koblinsky et al., 2006). The WHO, 2011 study and Crofts et al. (2012) confirm the fact that knowledge of EmONC can significantly lead to improved care of cases and help nurses and midwives make sound decisions. However, the studies have also revealed deficits in the knowledge levels on EmONC among nurses and midwives making it difficult for them to perform basic functions of routine or emergency care safely. On the other hand, the two studies done in Bukina Faso contradicts the WHO 2011 study by stating that there is no direct link between skilled birth attendants and reduction in maternal mortality. As such there is need to research further to find out if training in EmONC by nurses and midwives can lead to timely decision making by nurses and midwives and hence a reduction in maternal mortality.

## **Experience**

Expertise is acquired through professional experience and is indicative of a nurse or midwife who has moved beyond mere proficiency. Gadamer (2009) points out that, experience involves a turning around of preconceived notions, pre-understandings, and extends or adds nuances to understanding. Dewey (2007) notes that experience requires a prepared “creature” and an enriched environment. The opportunity to reflect and narrate one’s experiential learning can clarify, extend, or even refute experiential learning. Nurses and midwives who have had faced different critical conditions and have worked for many years may gain the competence and confidence to handle any situation.

Through a combination of knowledge and skills gained from a range of theoretical and experiential sources, expert nurses also provide holistic care. Thus, the best care comes from the combination of theoretical, tacit, and experiential knowledge (Radwin, 2005).

## **2.5 DECISION MAKING PROCESS**

An essential point of tension and confusion exists in practice traditions such as nursing and medicine when clinical reasoning and critical reflection become entangled, because the clinician must have some established bases that are not questioned when engaging in clinical decisions and actions, such as standing orders (Higuchi, 2002). The nurse/ midwife must act in the particular situation and time with the best clinical and scientific knowledge available.

The nurse or midwife cannot afford to indulge in either ritualistic unexamined knowledge or diagnostic or therapeutic nihilism caused by radical doubt, as in critical reflection, because they must find an intelligent and effective way to think and act in particular clinical situations (Ericsson, 2006). Critical reflection skills are essential to assist practitioners to rethink outmoded or even wrong-headed approaches to health care, health promotion, and prevention of illness and complications, especially when new evidence is available.

Intuition is the instant understanding of knowledge without evidence of sensible thought (Mitchell, 1996). According to Young (2007), intuition in clinical practice is a process whereby the nurse or midwife recognizes something about a patient that is difficult to verbalize (cues). Intuition is characterized by factual knowledge, “immediate possession of knowledge, and knowledge independent of the linear reasoning process (ibid). When intuition is used, one filters information initially triggered by the imagination, leading to the integration of all knowledge and information to problem solve (Dawes, 2005). Nurses and midwives use their interactions with patients and intuition, drawing on tacit or experiential knowledge, to apply the correct knowledge to make the correct decisions to address patient needs. Yet there is a “conflated belief in the nurses’ ability to know what is best for the patient (Sackett, 2000) because the nurses’ and patients’ identification of the patients’ needs can vary.

Good clinical judgment is required to select the most relevant research evidence. The best clinical judgment, that is, reasoning across time about the particular patient through changes in the patient’s concerns and condition and/or the clinician’s understanding, are also required. (Purkis, 2006).

This type of judgment requires nurses and midwives to make careful observations and evaluations of the patient over time, as well as know the patient's concerns and social circumstances. To evolve to this level of judgment, additional education beyond clinical preparation is often required. Evidence that can be used in clinical practice has different sources and can be derived from research, patient's preferences, and work-related experience (Smith et al., 2004). Nurses have been found to obtain evidence from experienced colleagues believed to have clinical expertise and research-based knowledge as well as other sources (ibid).

### **Recognizing cues**

The meanings of signs and symptoms are changed by sequencing and history. The patient's mental status, colour, or pain level may continue to deteriorate or get better.

The direction, implication, and consequences for the changes alter the relevance of the particular facts in the situation (Purkis, 2006). The changing relevance entailed in a patient transitioning from primarily curative care to primarily palliative care is a dramatic example, where symptoms literally take on new meanings and require new treatments.

### **Developing Clinical Knowledge in Specific Patient Populations**

Extensive experience with a specific patient population or patients with particular injuries or diseases allows the clinician to develop comparisons, distinctions, and nuanced differences within the population (Björk, 1995). One of the keys to becoming an expert practitioner lies in how the person holds past experiential learning and background habitual skills and practices. This is a skill of foregrounding attention accurately and effectively in response to the nature of situational demands. Bourdieu, (2005) calls the recognition of the situation central to practical reasoning. If nothing is routinized as a habitual response pattern, then practitioners will not function effectively in emergencies. Unexpected occurrences may be overlooked. However, if expectations are held rigidly, then subtle changes from the usual will be missed, and habitual, rote responses will inappropriately rule. The clinician must be flexible in shifting between what is in background and foreground (Brown, 2001).

## **2.6 CONCLUSION**

The literature review has brought to light the gaps in the nurses and midwives clinical decision making on referral of obstetric emergencies. Among other factors identified is poor knowledge of the conditions requiring referral, non-adherence to referral guidelines and protocols and non-availability of adequate facilities like EmONC in case of obstetric emergencies. Other important facts deduced from the review are that primary causes of maternal mortality are difficult to predict in advance and nearly impossible to prevent and hence the need for improved access to emergency obstetric and Neonatal care (EmONC).

Other factors that have been brought to light through the literature review are the gaps and differences in application of foundational knowledge among nurses and midwives, and the decision making processes. However, what should be appreciated is the fact that good decision making leads to timely referral and saves lives.

Besides, training midwives and persuading mothers and significant others who make decisions about the value of referring women to hospital at the onset of life threatening complication are central factors to increasing the use of available hospitals.

In Zambia, most studies reviewed evaluated the availability of EmONC facilities and the referral system with so many deficiencies which need to be seriously addressed if we are to prevent maternal deaths. However, no study has been conducted on the nurses and midwives clinical decision making and referral of obstetric emergency in Zambia and no related study has been done in Mpika District. Basing on this fact, it was imperative that studies are conducted to address this important subject.

## **CHAPTER THREE**

### **3.0 METHODOLOGY**

#### **3.1 INTRODUCTION**

Chapter three (3) presents the methodology as used in this study and is organized under the following headings: the research design, research setting; study population, sample selection, inclusion and exclusion criteria, sample size, data collection tools, data collection technique, Validity and reliability, pre-test and ethical consideration

#### **3.2 RESEARCH DESIGN**

In this study, a quantitative cross sectional survey was used. The cross-section design was used because data from participants was collected at one point in time and there was no need to go back to the same respondents or study to get the same data.

#### **3.3 RESEARCH SETTING**

The research was conducted in 16 rural health centres within Mpika District, Chilonga general hospital and Mpika district hospital situated in Muchinga Province of Zambia.

There are twenty (20) health centres in Mpika district with one district hospital and one General Hospital (Chilonga Mission). Of the 20 health centres in Mpika District, 16 of them are being run by nurses and midwives. Other centres are manned by either Clinical officers or Environmental Health Technicians. Apart from that, at most of these centres there is either one or two trained health workers. The research setting comprised of 16 health centers. These centres were conveniently selected as they are managed by nurses and midwives and all of them offer maternal and child health services. A review of referral letters and relevant records was also conducted at Chilonga General Hospital and Mpika District Hospital respectively using a checklist to clarify on some information on decision making that was collected by use of a questionnaire.

#### **3.4 STUDY POPULATION**

The study population comprised nurses and midwives working in the rural health centres of Mpika district that met the criteria and were willing to participate in the research study.

### **3.4.1 TARGET POPULATION**

Target population consisted of nurses and midwives in active employment between 18 years and 55 years working in Mpika District.

### **3.4.2 ACCESSIBLE POPULATION**

The accessible population were nurses and midwives working in the 16 selected rural health centres of Mpika district aged between 18 years and 55 years that were found at the health centres during data collection.

### **3.5 SAMPLING METHOD**

Census method was used as a sampling technique to select nurses and midwives because they were limited in number and hence all nurses found working in the 16 selected rural health centres were included in the study after consenting. A review of the referral forms and records for the referred obstetric emergency cases by nurses and midwives from the 16 selected health centres for 2014 was conducted at Mpika District Hospital and Chilonga General Hospital respectively using a checklist. The rural health centres were selected using purposive sampling method because they are manned by nurses and midwives and offer maternal and child health services. As such centres which are being managed by other health personnel such as Clinical Officers and Environmental Health Technicians were not included in the study. This was done with the assistance of the Human Resource Officer who availed the list of centres and Health Personnel manning them.

#### **3.5.1 Inclusion Criteria**

- (a) All nurses and midwives working in the selected 16 rural health centres of Mpika District who gave consent to participate in the study and were available during data collection.
- (b) All referral forms and records of obstetric emergencies that were accessed at Mpika District Hospital and Chilonga General Hospital from the 16 selected rural health centres of Mpika district.

### **3.5.2 Exclusion Criteria**

- (a) Other medical personnel such as Clinical Officers, Environmental Health Technicians working in the 16 selected centres.
- (b) Nurses and midwives who were on study leave and those who did not consent to participate in the study.
- (c) Referral forms and records of patients with other conditions other than obstetric emergencies from the 16 selected health centres.

### **3.6 SAMPLE SIZE**

18 Nurses and midwives were purposively selected (8 trained in EmONC and 10 not trained in EmONC). Hundred and eleven (111 referral) forms and records were reviewed by use of a checklist.

### **3.7 DATA COLLECTION TOOL**

A pretested self-administered questionnaire and checklists were used to collect and record information. The questionnaire consisted of questions in which the wording of both the questions and responses alternatives were predetermined. The questionnaire comprised four sections. Section A consisted of questions on the respondents' demographic data. Section B comprised of questions on timely referral, section C comprised of questions on Environmental and organizational context for clinical decision making, while Section D elicited information on foundational knowledge of nurses and midwives on EmONC. Section E had questions on decision making process.

On the other hand, the hospital checklist had specific outline of predetermined questions basing on the referral forms and other relevant records and gave an insight on some of the decisions made by nurses and midwives basing on the theoretical framework. The RHC checklist had predetermined questions on timely referral, environmental context and foundation knowledge.

#### **3.7.1 VALIDITY**

Validity was ensured by employing strategies like appropriate selection of study design; purposive selection of participants and use of a standardized research instruments to collect data from respondents.

In addition, validity had been ensured by doing, extensive literature review on nurses and midwives clinical decision making and referral of obstetric emergencies. To validate the study tool, questions were constructed in a simple, clear and precise way in order to give respondents chance to give clear and concise answers and the questionnaire was reviewed by EmONC experts and research supervisors. Content validity of the data collection tool was also ensured by adapting WHO (2009) EmONC training guidelines. A self-administered questionnaire and Checklists were developed and were subjected to academic scrutiny by the supervisors and was also used during a pilot study

### **3.7.2 RELIABILITY**

To ensure reliability, a variety of open ended questions were used in the questionnaire to allow for spontaneous responses that brought out more valid answers. Reliability was also measured by testing the research tools before the main study through a pilot study which was done in a similar environment with similar characteristics. Some questions which were not well phrased and changed and rephrased after the pilot study.

### **3.8 DATA COLLECTION TECHNIQUE**

To gather the needed information from the respondents, the researcher started by introducing himself and getting permission from the in-charge. The researcher then introduced himself to the respondents and the purpose of the study was explained carefully to the respondents. The respondents were allowed to read the information sheet where confidentiality was assured. The respondents were also told that all the filled in questionnaires were to be secured by the interviewer in sealed envelopes. Written consents were obtained from the participants. The respondent were then allowed to read instructions on the questionnaire and were given chance to seek for clarifications if any. The respondent were encouraged to answer questions truthfully and were given chance to answer the questions. After filling in the questionnaire, the respondents were given time to ask questions, which were answered accordingly. The respondents were later thanked for the participation and collected the filled in questionnaire. Some responses from the self-administered questionnaires were confirmed with the documentations on referral forms and other relevant documentations which were collected using checklists. As for the data that was collected using a checklists, permission was sought form the in-charge and responsible persons and records were reviewed in a private room.

### **3.9 PILOT STUDY**

A pilot study was conducted at Zambia College of Agriculture (ZCA) clinic and Chilonga General Hospital respectively. At ZCA, two nurses working at the centre were given self-administered questionnaires and eleven (11) referral forms for obstetric emergencies referrals were evaluated using a checklist at Chilonga General Hospital. The two samples were based on 10% calculation of the total accessible population for the nurses and referrals respectively. The centre was chosen for conducting the pilot study because it has similar characteristics to the study population that were included in the main study. Thereafter, adjustments were made to the data collection tool, i.e. some responses were modified on the checklist for hospital and Rural Health Centre (RHC).

### **3.10 ETHICAL CONSIDERATION**

Ethics is defined as a system of moral values that are concerned with the degree to which research procedure adhere to professional, legal and social obligations to the study participants (Polit & Beck, 2005). As such before conducting the study, ethical approval and permission was sought from ERES. After permission was granted, permission from the Provincial Medical Officer for Muchinga province and from the Medical superintendent for Chilonga and District Community Medical Officer for Mpika was also obtained.

Permission was also sought from in-charges of the 16 centres which were included in the study and the one centre for pilot study. In addition to that, the purpose of the study was explained and a written consent was obtained from each respondent before the study. Those who did not consent to participate in the study were reassured that they were to suffer no consequences as a result of not participating. The respondents were not remunerated in any way. Study participants were told that they were free to withdraw from the study at any time without suffering any consequences. The complete self-administered questionnaires and checklists were kept under strict security to avoid unauthorized access to the information gathered. Anonymity and confidentiality were ensured during the data collection by ensuring that codes were used instead of names on the questionnaires and checklists.

## **CHAPTER FOUR**

### **4.0 DATA ANALYSIS AND PRESENTATION OF FINDINGS**

#### **4.1 INTRODUCTION**

In this chapter the investigator discusses the analysis and presentation of findings of the study. The current study answered the following research questions “is there a difference in clinical decision making between EmONC trained nurses and midwives and non EmONC trained on referral of obstetric emergencies. Data was collected from 18 nurses and midwives from 16 health centres using questionnaires and checklists on 2014 obstetric emergency referrals. The response rate of the questionnaire was 100%.

#### **4.2 DATA PROCESSING AND ANALYSIS**

Data analysis is the systematic organization and synthesis of research data, and the testing of research hypothesis using those data (Polit and Hungler, 2007). The raw data that was collected was sorted out and then grouped in categories. The data collecting instruments were checked for completeness, consistence eligibility and accuracy daily after data collection after which data was coded. Data was analyzed using IBM SSPS for windows statistical software version 22.0.

Chi-square test was used to test associations between the dependent and independent variables. Data has been displayed in 2 x 2 tables with 1 degree of freedom. Significant levels was set at 0.05 % with 95% confidence interval. Dependent variable “timely referral of obstetric emergency” (trained in EmONC and not trained in EmONC) has been tested against independent variables ‘Environmental and organizational context for clinical decision making, foundational knowledge of nurses and midwives and decision making process.

#### **4.3 PRESENTATION OF FINDINGS**

The findings of the study are presented in using frequency tables, cross tabulation tables and graphs. The frequency tables summarize the results of the study in a way that enable readers to be able to understand the findings of the research study.

Cross tabulation of the variables helped to show clearly the relationship between variables and hence the researcher was able to draw meaningful inferences.

### 4.3.1 SECTION A: DEMOGRAPHIC DATA

Section A presents the respondents demographic data. The variables considered were age, professional qualification, work experience and duration of working in labour ward. The data is presented in table 4.1 below:

**TABLE 4.1: RESPONDENTS' DEMOGRAPHIC DATA (n=18)**

|  |                    | <b>Frequency</b> | <b>Percent</b> |
|--|--------------------|------------------|----------------|
| <b>Age</b>                                   | 20-30              | 5                | 28             |
|  | 31-40              | 5                | 27             |
|  | 41-50              | 7                | 39             |
|  | 50 and above       | 1                | 6              |
|  | <b>Total</b>       | <b>18</b>        | <b>100</b>     |
| <b>Professional Qualification</b>            | Enrolled Nurse     | 5                | 28             |
|  | Enrolled Midwife   | 7                | 39             |
|  | Registered Nurse   | 4                | 22             |
|  | Registered Midwife | 2                | 11             |
|  | <b>Total</b>       | <b>18</b>        | <b>100</b>     |
| <b>Work Experience as a nurse or Midwife</b> | Less than 2 years  | 4                | 22             |
|  | 2- 4 years         | 5                | 28             |
|  | 5-7 years          | 3                | 17             |
|  | More than 8 years  | 6                | 33             |
|  | <b>Total</b>       | <b>18</b>        | <b>100</b>     |
| <b>Duration working in Labour ward</b>       | Less than 2years   | 4                | 22             |
|  | 2-4 years          | 6                | 33             |
|  | 5-7 years          | 3                | 17             |
|  | more than 8 years  | 5                | 28             |
|  | <b>Total</b>       | <b>18</b>        | <b>100</b>     |

Table 4.1 shows that most of the respondents (39%) were aged between 41 and 50 years and that most of the respondents (39%) were Enrolled Nurses. Most respondents (33%) had worked for more than 8 years and less than (23%) had worked for less than 2 years in the labour ward. The mean age was 40.

### 4.3.2 SECTION B: TIMELY REFERRAL OF OBSTETRIC EMERGENCIES

In this section B, information on responses on timely referral is presented. The information presented include responses on whether respondent's referred any case of obstetric emergency, type of case referred, reasons for referring, number of cases referred, when decision to refer was made and time taken to refer.

**TABLE 4.2 RESPONSES ON WHETHER RESPONDENT REFERRED ANY CASE OF OBSTETRIC EMERGENCY (n= 18)**

| Ever referred a patient with an Obstetric Emergency | Frequency | Percent |
|---|-----------|---------|
| YES   | 18        | 100.0   |
| NO  | 0         | 0       |
| Total   | 0         | 100     |

Table 4.2 shows that all (100%) the respondents have had referred a patient with an obstetric emergency at one time or another.

**FIGURE 4.1: RESPONSES ON TYPE OF OBSTETRIC CASE REFERRED (n= 114)**

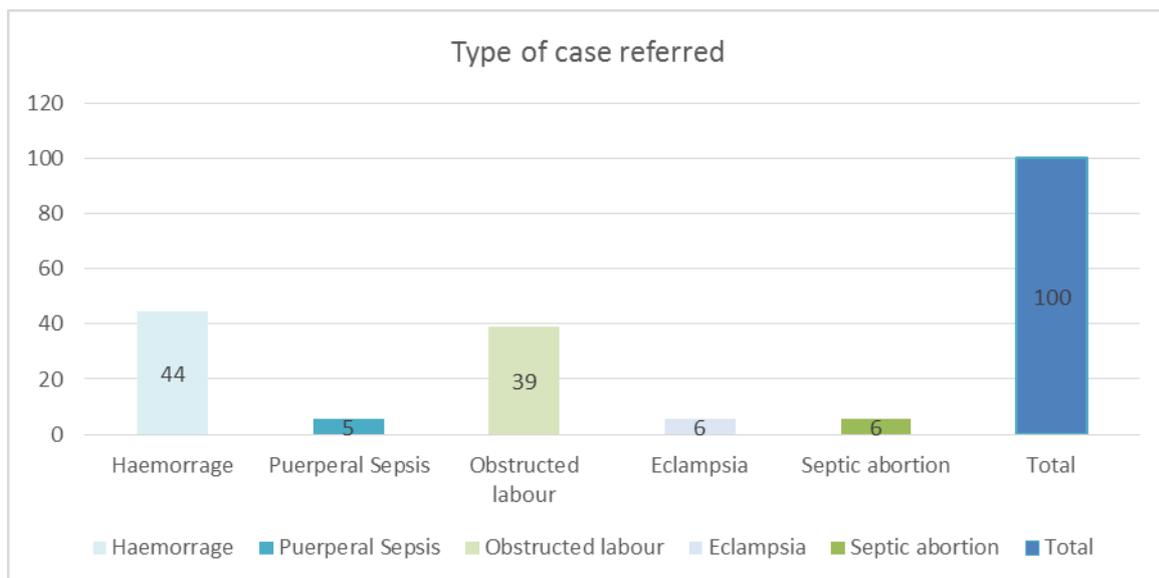


Figure 4.1 shows that Haemorrhage (44%) and obstructed labour (39) were the commonest cases referred by nurses and midwives.

**FIGURE 4.2: RESPONSES ON REASONS FOR REFERRING (n=18)**

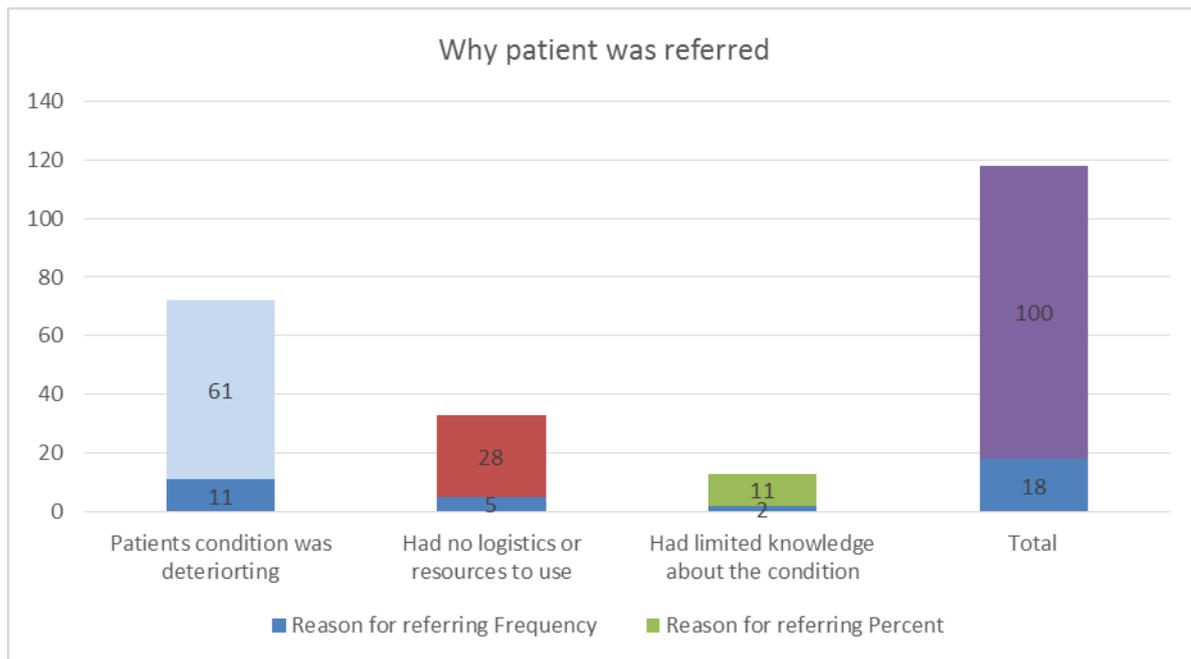


Figure 4.2 shows that majority (61%) of the respondents referred the patients because of deteriorating patients' condition, 28% referred because of lack of logistics for managing the condition and only 11% referred due to lack of knowledge on the condition.

**FIGURE 4.3 RESPONSES ON WHEN DECISION TO REFER WAS MADE (n=18)**

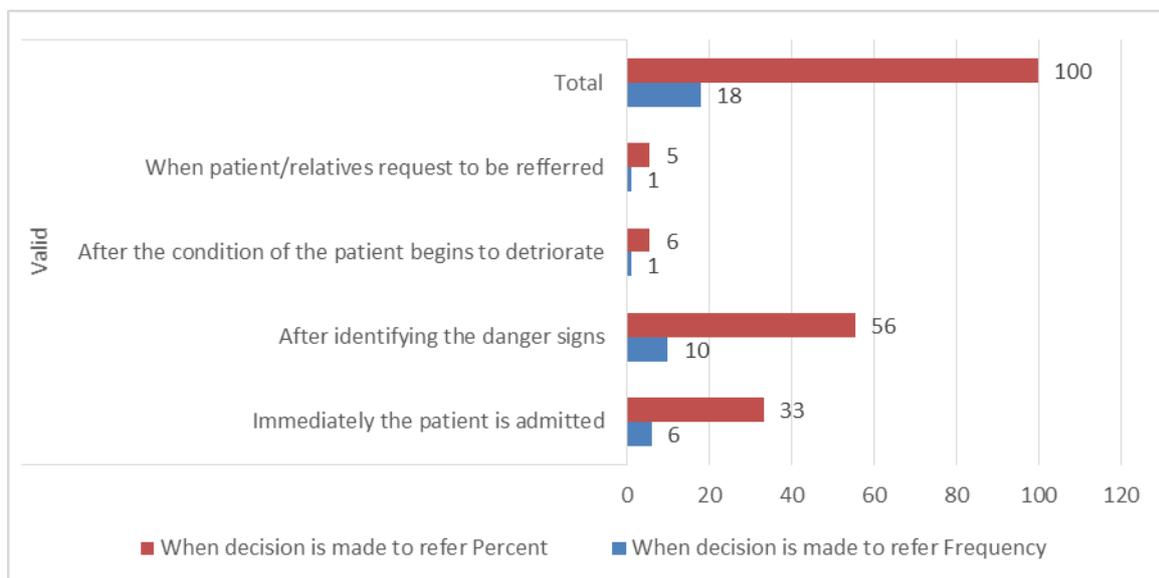


Figure 4.3 shows that most (56%) of respondents' decisions to refer were made after identifying the danger sign while 33% made the decision to refer immediately patient was admitted.

**FIGURE 4.4 RESPONSES ON TIME TAKEN TO DECIDE TO REFER (n=18)**

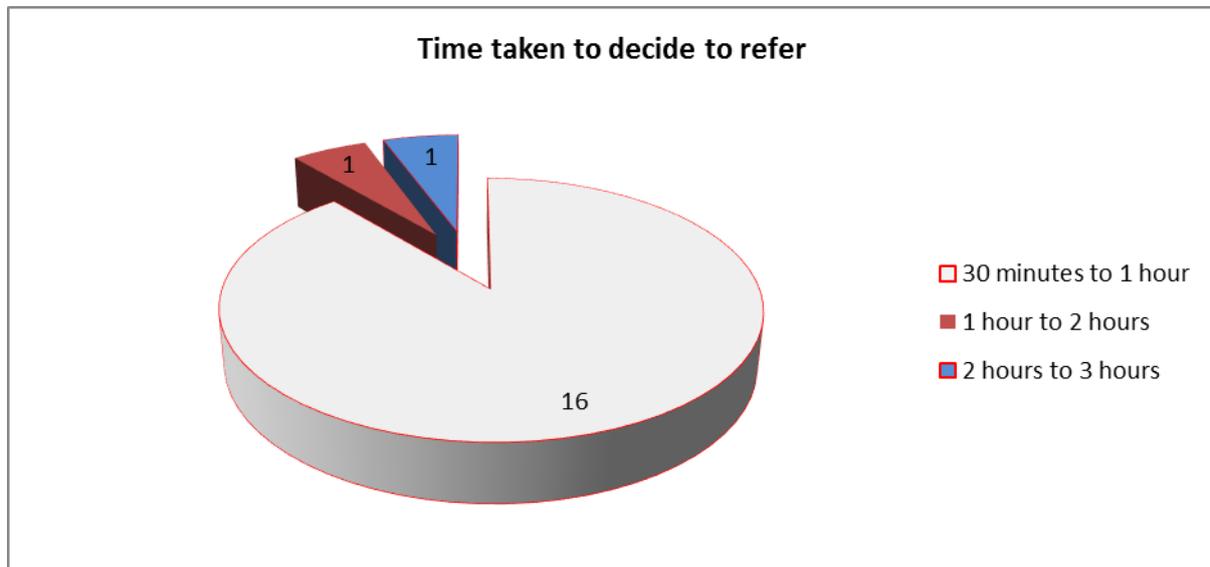


Figure 4.4 shows that when asked to state how long it took them to make a decision to refer patients, majority (89%) of respondents reported that it took them 30 minutes to 1 hour to decide to refer a patient with an obstetric emergency.

### **4.3.3 SECTION C: ENVIRONMENTAL AND ORGANIZATION CONTEXT**

In this section, information on Environmental and Organizational context of decision making is presented. The information presented include; whether facility operated 24 hours, reasons for referring patient, whether respondent felt confident to refer, factors making nurses and midwives not to refer patient with an obstetric emergency and suggestions on how to improve on referral of obstetric emergencies.

**FIGURE 4.5 RESPONSES ON WHETHER FACILITY OPERATED 24 HOURS (n=18)**

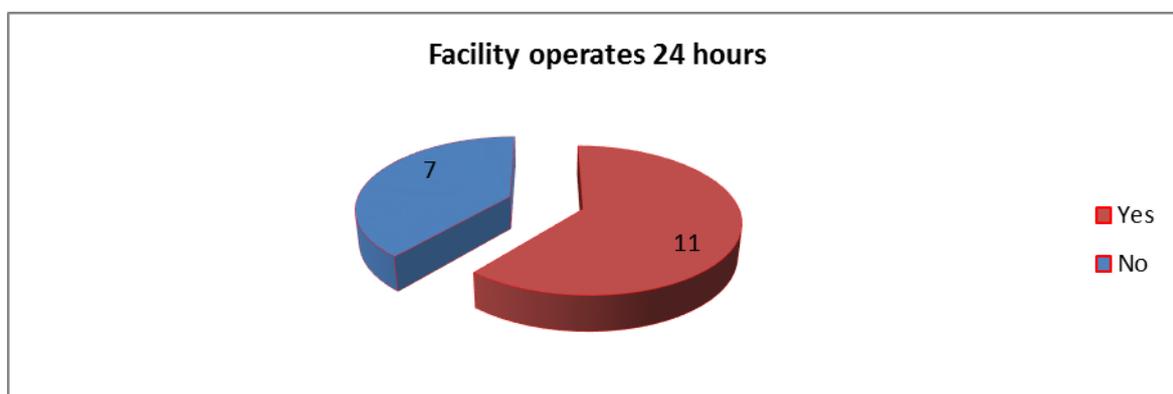


Figure 4.5 shows that most (61%) of the respondents' facilities operated 24 hours, while 39% of the respondents reported their facilities not operating 24 hours.

**FIGURE 4.6 REASONS FOR REFERING PATIENT (n=18)**

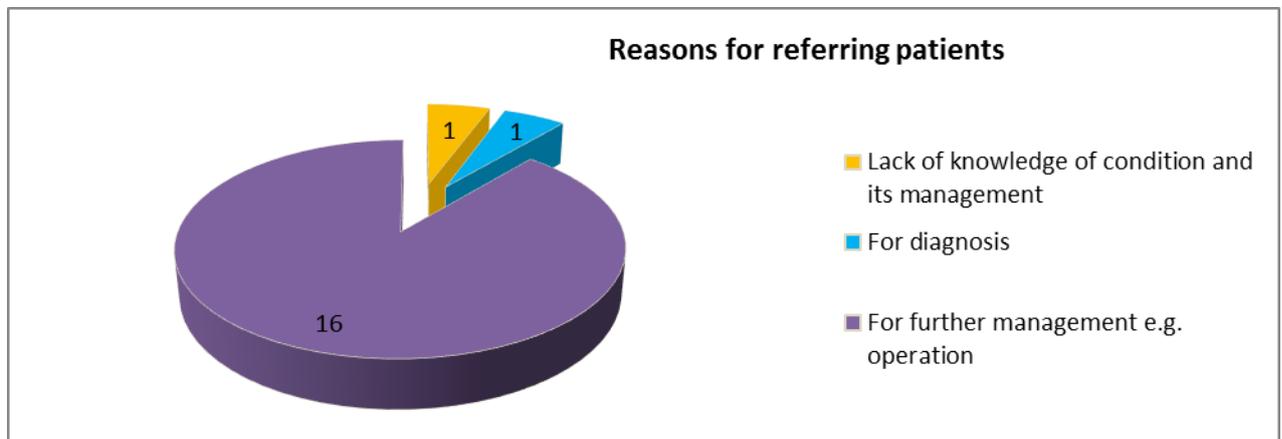
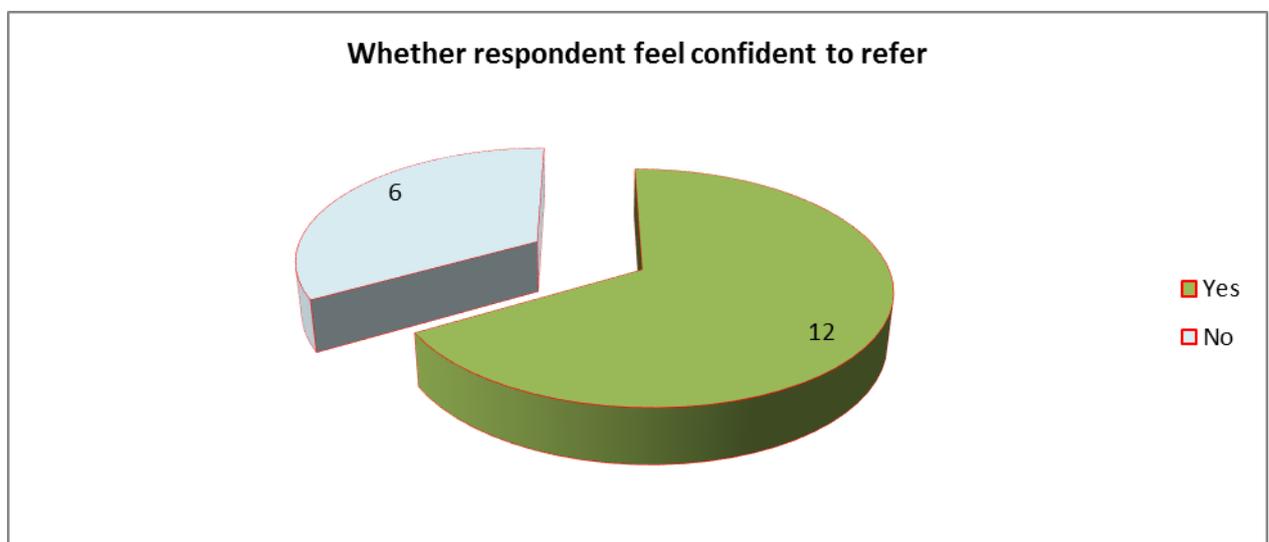


Figure 4.6 shows that more than three quarters (89%) of the respondents stated that they referred patients for further management e.g. operation and 5.6% each respectively referred patients for lack of knowledge of the condition and its management or for diagnosis.

**FIGURE 4.7 RESPONSES AS TO WHETHER RESPONDENTS FELT CONFIDENT TO REFER (n=18)**



As indicated in figure 4.7, more than half (67%) of the respondents said they felt confident to refer obstetric emergency cases, while 33% said no.

**FIGURE 4.8 RESPONSES ON FACTORS MAKING NURSES AND MIDWIVES NOT TO REFER PATIENTS WITH OBSTETRIC EMERGENCIES SOMETIMES (n=18)**

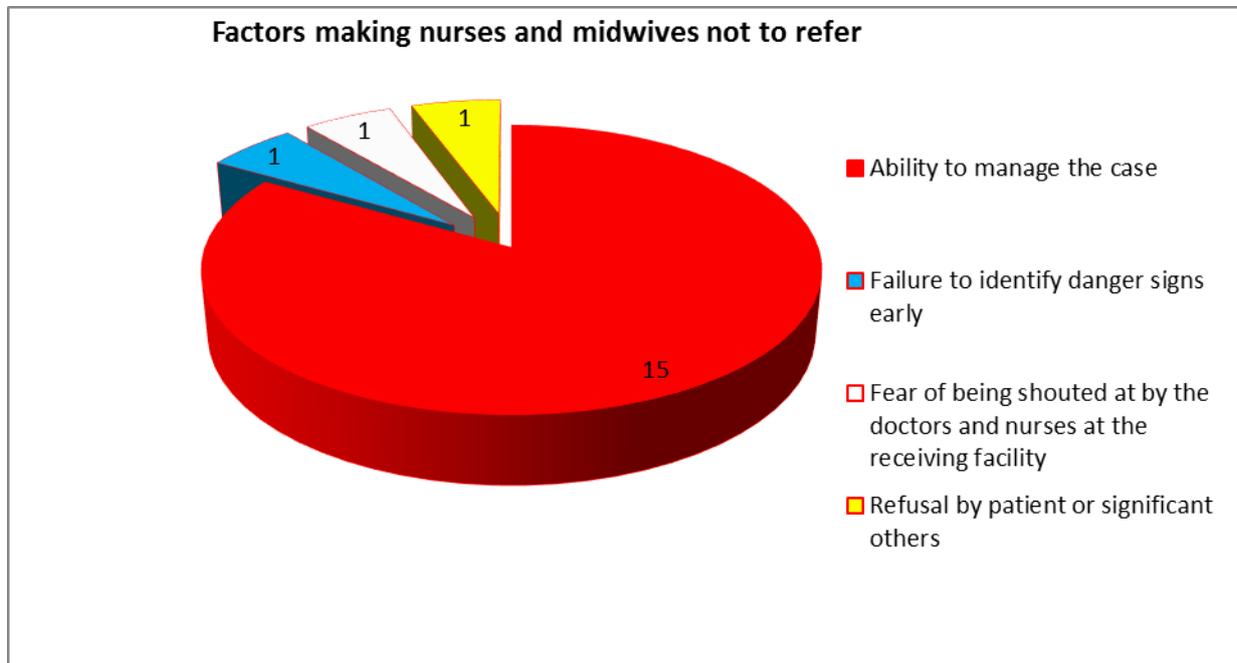


Figure 4.8 shows that majority (83%) of the respondents reported that they have the competences to manage cases and hence couldn't refer them. Only 6% reported fear of being shouted at by the doctors and nurses at the receiving facility as the main reason for not referring.

**FIGURE 4.9 RESPONSES ON WHAT CAN BE DONE TO IMPROVE REFERAL OF OBSTETRIC EMERGENCIES (n=18)**

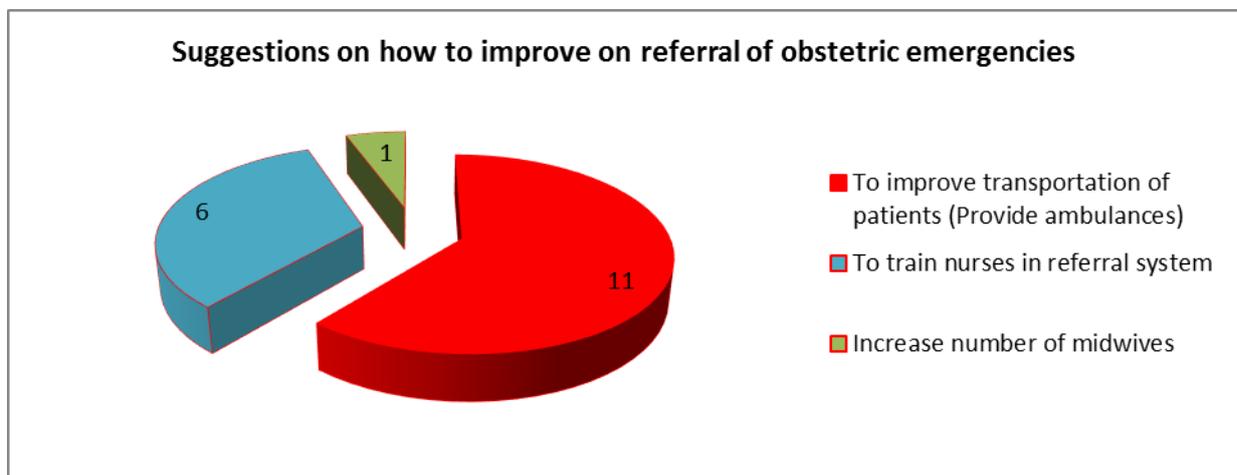


Figure 4.9 shows that more than half (61%) respondents thought improving transportation such as providing ambulances could go a long way in improving the referral of obstetric emergencies, while 33% stated that training of nurses in referral system could be the best answer.

#### 4.3.4 SECTION D: FOUNDATIONAL KNOWLEDGE

In section D, information on nurses and midwives’ foundational knowledge on EmONC is presented. The information presented include whether respondent is trained in EmONC, Cases that can be confidently handled, Basic EmONC functions performed at the centre, Basic EmONC functions that can be confidently performed, Action taken before referral, whether receiving facility was informed and waiting time before referred case was transferred. Other things covered in this section include; whether relatives of the patient were informed, whether documentation was completed, whether referred case was accompanied, whether feedback was received from the referral hospital and suggestions on how to improve on referral process.

**FIGURE 4.10 RESPONSES ON WHETHER TRAINED IN EmONC OR NOT (n=18)**

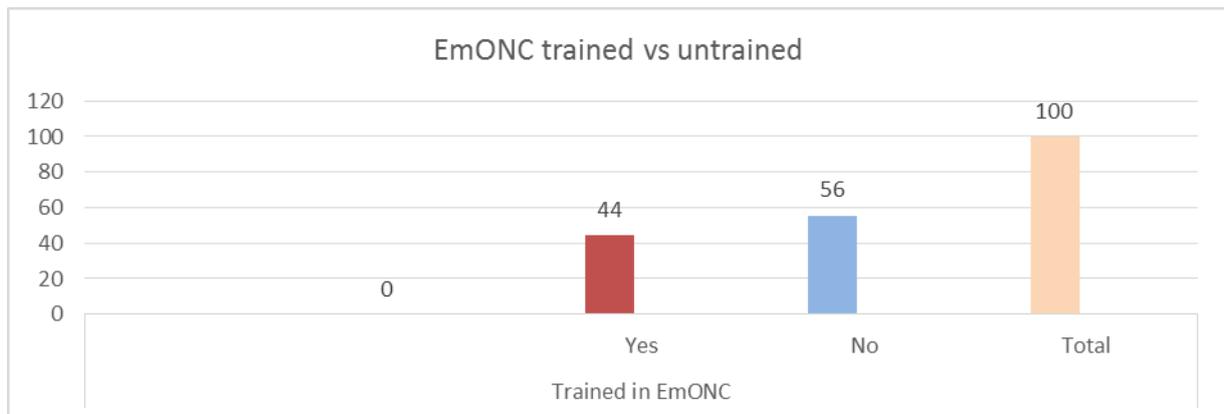


Figure 4.10 shows that less than half (44%) of respondents were trained in EmONC, while 56% were not.

**FIGURE 4.11 RESPONDENTS' RESPONSES ON CASES THAT CAN BE CONFIDENTLY HANDLED (n=8)**

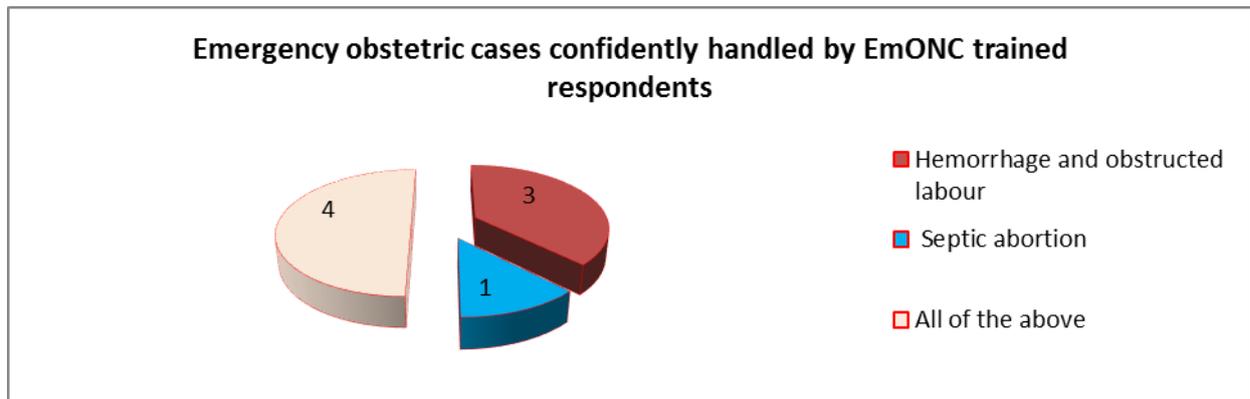


Figure 4.11 shows that Half (50%) of the 8 EmONC trained respondents were able to handle all obstetric emergencies, while 37% could only handle Haemorrhage and obstructed labour confidently.

**FIGURE 4.12 RESPONSES ON BASIC EmONC FUNCTIONS PERFORMED AT THE CENTRE (n=18)**

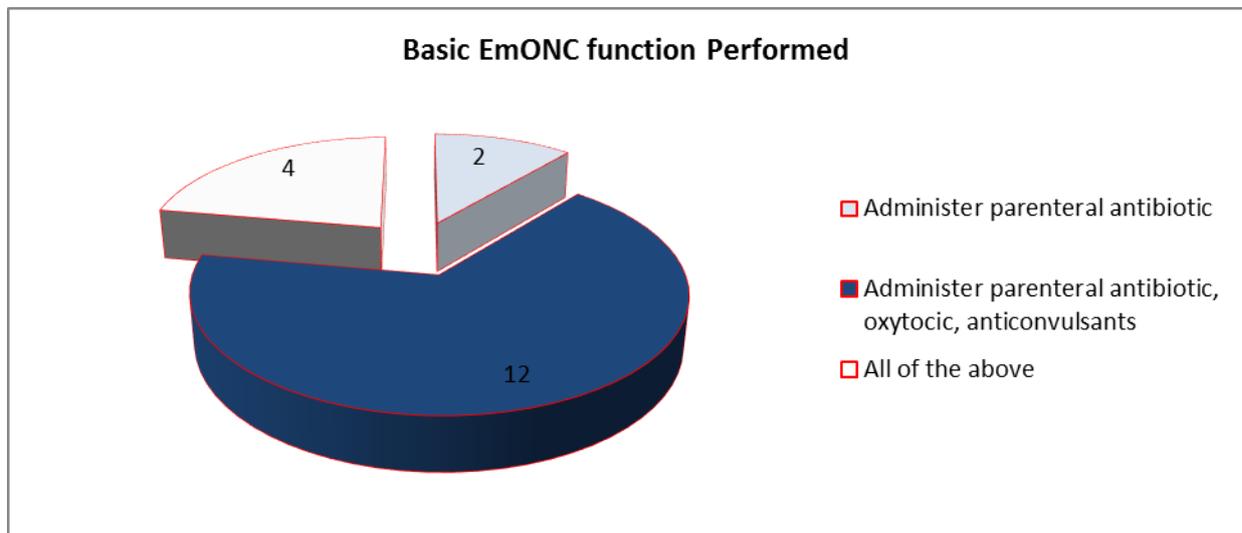


Figure 4.12 shows that more than half (67% ) of respondents' facilities were able to perform the three basic EmONC functions such as administering parenteral antibiotics, oxytocics and anticonvulsants at their facilities, 22% were able to perform all the basic functions and 11% were able to administer parental antibiotics.

**FIGURE 4.13 RESPONSES ON BASIC EmONC FUNCTIONS THAT CAN BE CONFIDENTLY PERFORMED (n=18)**

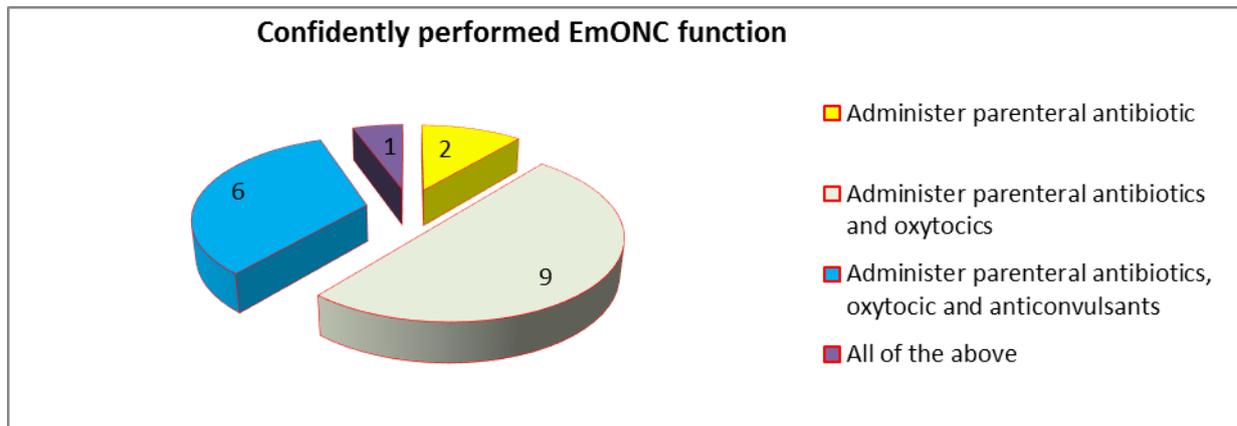


Figure 4.13 shows that half (50%) of the respondents were able to confidently perform two Basic EmONC functions, 33 % were able to administer parenteral antibiotics, oxytocic and anticonvulsants, 11 % were able to administer parental antibiotics. Only (6%) of the respondents were able to confidently perform all the basic EmONC functions.

**FIGURE 4.14 RESPONSES ON ACTION TAKEN BEFORE REFERRAL (n=18)**

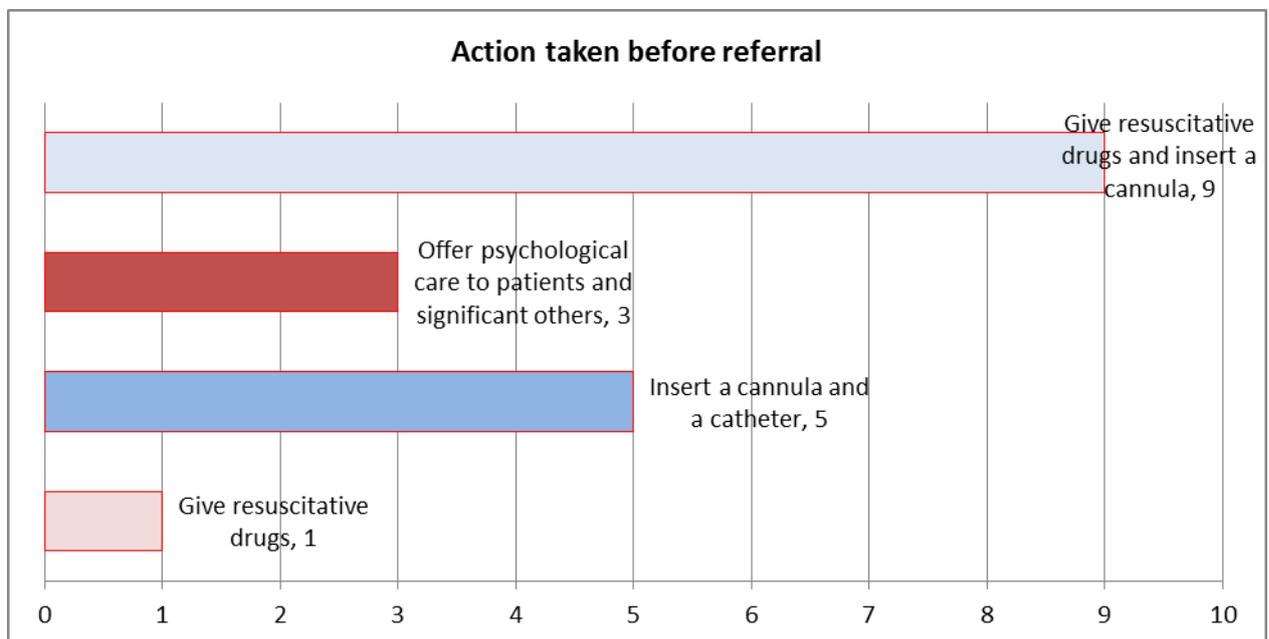


Figure 4.14 shows that half (50%) of the respondents were able to give resuscitative drugs and insert cannula before referral, about 28% were able to insert a cannula and catheterize patient, 16.7% were able to offer psychological care to patients and significant others and 5.6 gave resuscitative drugs.

**FIGURE 4.15 RESPONSES ON WHETHER RESPONDENT INFORMED RECEIVING FACILITY BEFORE REFERRING (n=18)**

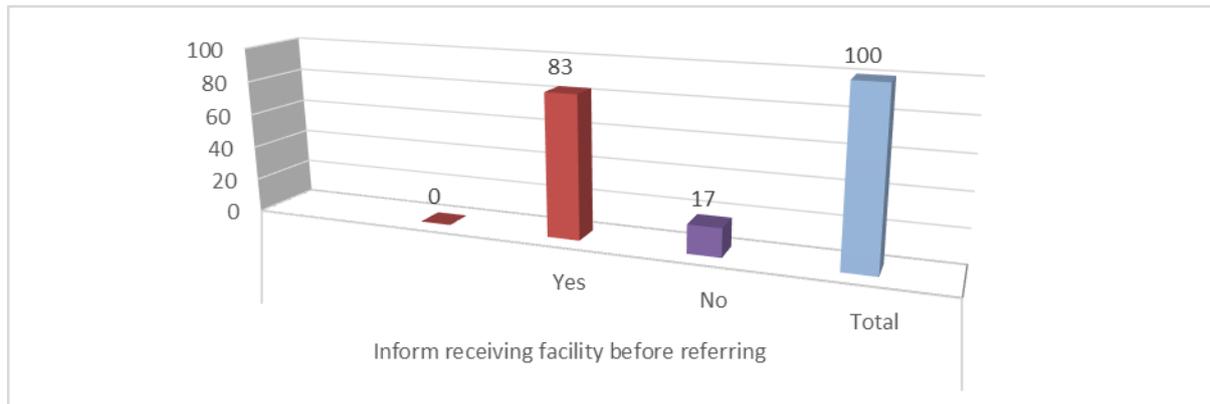


Figure 4.15, shows that more than three quarters (83%) of respondents informed the receiving facility before referring patients, while 17% did not.

**TABLE 4.3 RESPONSES ON WAITING TIME BEFORE THE REFERRED CASE WAS TRANSFERRED (n=15)**

| Waiting time before referred case was transferred | Frequency | Percent |
|---|-----------|---------|
| 30 minutes to 1 Hour                              | 3         | 20      |
| 1 Hour to 2 Hours                                 | 1         | 6.7     |
| 2 Hours to 3 Hours                                | 7         | 46.6    |
| 3 Hours to 4 Hours                                | 1         | 6.7     |
| More than 4 Hours                                 | 3         | 20      |
| Total   | 15        | 100     |

Table 4.3 shows that 46.7% of respondents stated that it took 2 to 3 hours before the referred case was transferred to the next referral level, about 20% stated that it took between 30 minutes to 1 hour, another 20% stated that it took more than 4 hours.

**TABLE 4. 4 RESPONDENTS RESPONSES ON WHETHER RELATIVES OF THE PATIENTS ARE INFORMED BEFORE REFERRAL (n=18)**

| Whether relatives are informed | Frequency | Percent |
|--------------------------------|-----------|---------|
| Yes                            | 18        | 100     |
| No                             | 0         | 0       |
| Total                          | 18        | 100     |

Table 4.4 shows that all (100%) respondents reported informing relatives of the patient before referring.

**FIGURE 4.16 RESPONSES ON WHETHER DOCUMENTATION WAS COMPLETED BEFORE REFERRAL (n=18)**

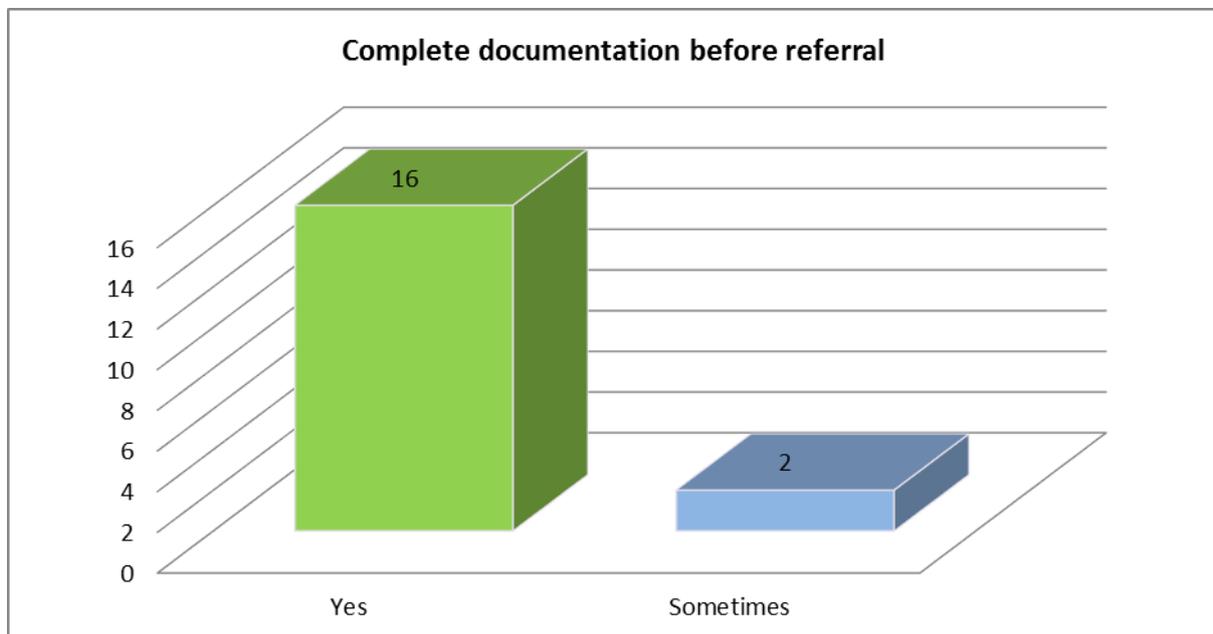


Figure 4.16 illustrates that majority (89%) of the respondents completed the documentation before referral while 11% said sometimes.

**TABLE 4.5 RESPONSES ON WHY RESPONDENTS DID NOT COMPLETE DOCUMENTATION SOMETIMES (n=2)**

| Reasons for non-completion of documentation | Frequency | Percent |
|---|-----------|---------|
| Lack of logistics e.g. referral forms       | 2         | 100     |
| Due to busy schedule                        | 0         | 0       |
| Total                                       | 2         | 100     |

Table 4.5 shows that all (100%) of the two respondents who reported non completion of documentation sometimes before referral attributed it to lack of logistics like referral forms. None of them attributed it to busy schedule.

**FIGURE 4.17 RESPONSES AS TO WHETHER RESPONDENTS ACCOMPANIED REFERRED CASES (n=18)**

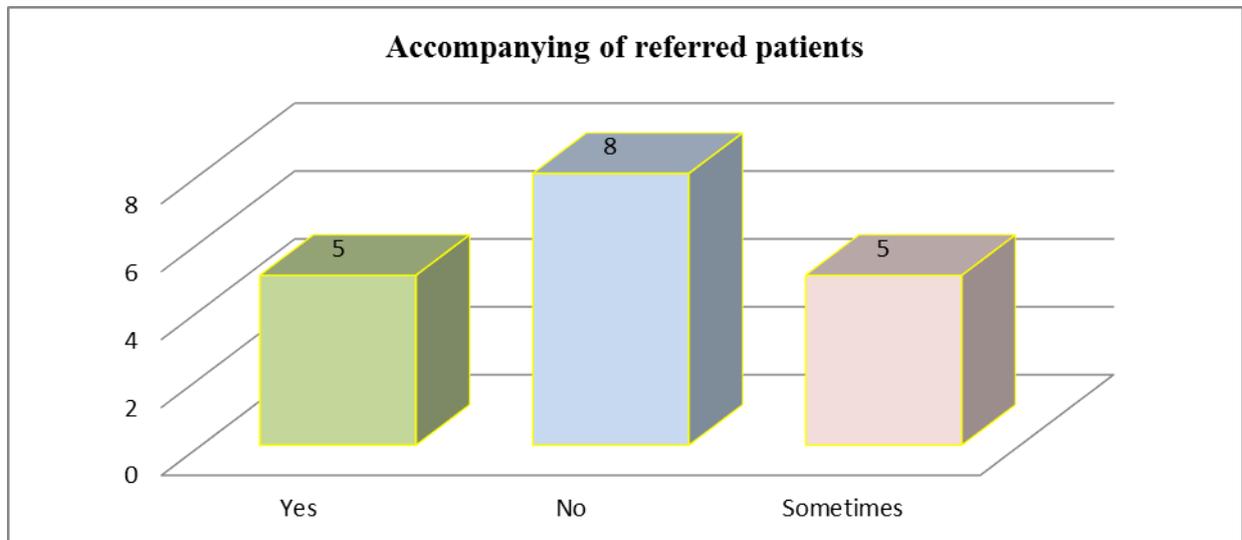


Figure 4.17 above shows that less than half (44%) respondents did not accompany patients during referral while only 28% reported accompanying them and the other 28% reported accompanying them sometimes.

**TABLE 4.6 RESPONDENTS' RESPONSES ON WHY THEY DID NOT ACCOMPANY PATIENTS (n=13)**

| Reason for not accompanying patients         | Frequency | Percent |
|--|-----------|---------|
| Accompanied by nurse from receiving facility | 13        | 100     |
| No transport                                 | 0         | 0       |
| Total  | 13        | 100     |

Table 4.6 shows that all (100%) the respondents who did not accompany patients or sometimes did attributed it to the fact that the ambulance from the receiving facility in most cases come with an accompanying nurse or midwife.

**FIGURE 4.18 RESPONSES ON WHETHER FEEDBACK WAS RECEIVED FROM THE REFERRAL HOSPITAL AFTER REFERRING THE PATIENT (n=18)**

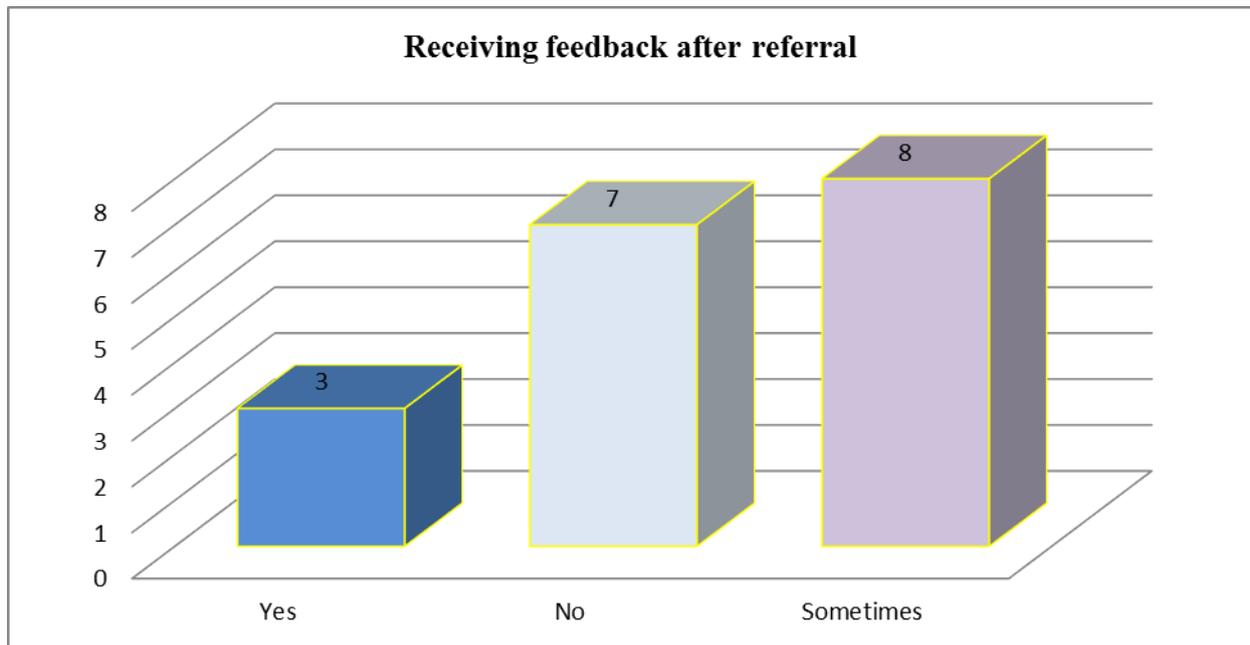


Figure 4.18 above shows that only 17% of the respondents received feedback on the referred cases, while 44% reported receiving feedback sometimes and the other 39% never received at all.

**FIGURE 4.19 SUGGESTIONS ON WHAT CAN BE DONE TO IMPROVE ON THE REFERRAL PROCESS (n=18)**

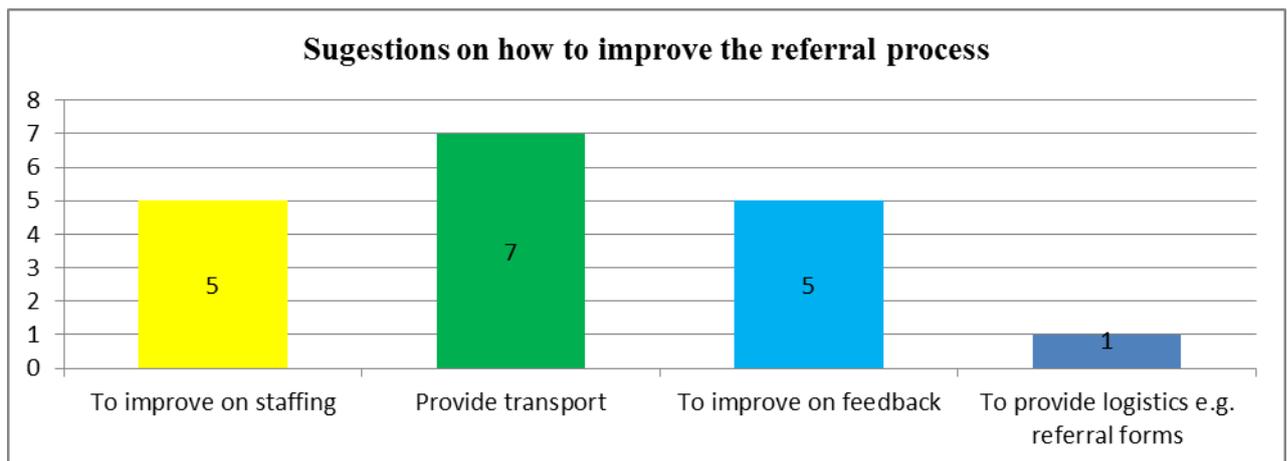


Figure 4.19 shows that (39%) of the respondents believed that providing transport such as an Ambulance at every facility can help in improving the referral process, while 28% reported improving on feedback as the best way to go.

#### 4.3.5 SECTION F: CLINICAL DECISION MAKING PROCESS

Section F presents information on clinical decision making process. The information presented include; respondents' responses on how decisions were reached at to refer patient, how cues were collected, what was considered before referral, action taken when they experienced some hindrances and concludes with suggestions on how to enhance good decision making.

**FIGURE 4.20 RESPONSES ON HOW DECISIONS WERE REACHED AT TO REFER PATIENT (n=18)**

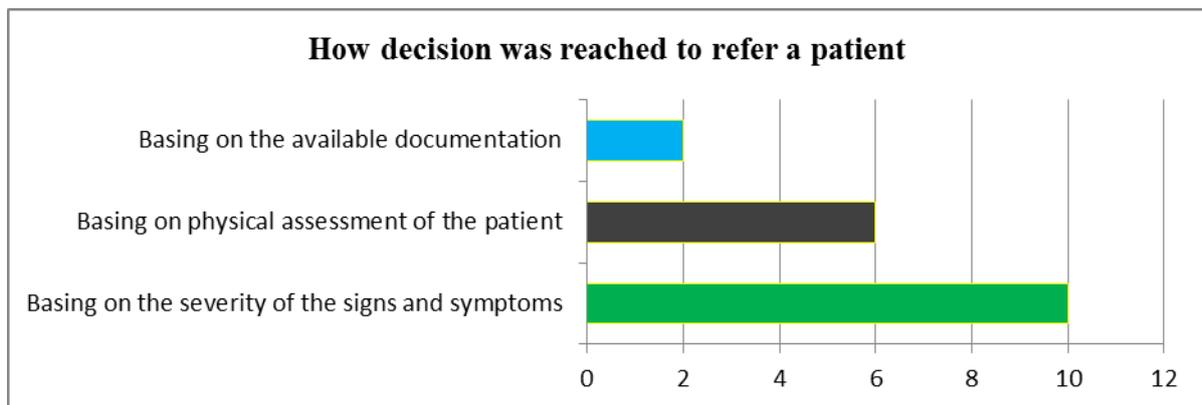


Figure 4.20 above illustrates slightly above half (56%) of the respondents based their decision to refer on the severity of symptoms while 33% based their judgements on physical assessment of the patients.

**FIGURE 4. 21 RESPONDENTS' RESPONSES ON HOW CUES WERE COLLECTED (n=18)**

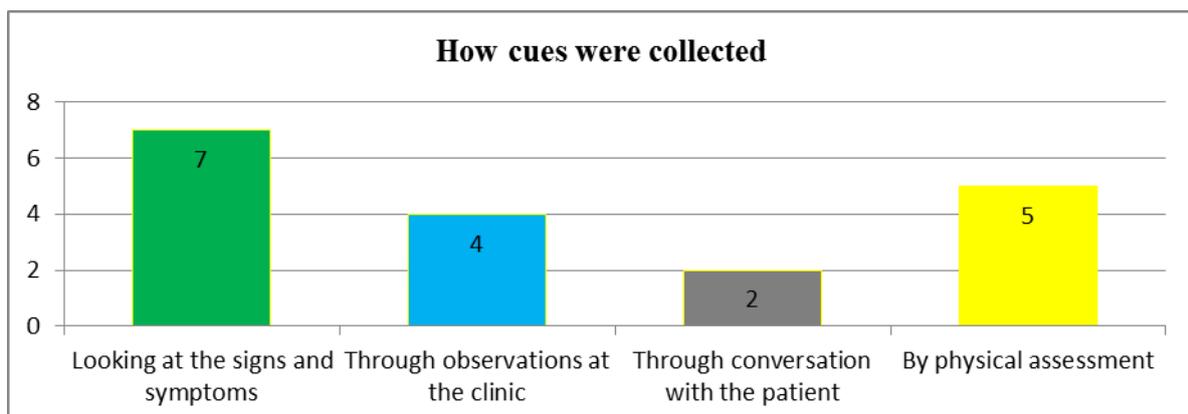
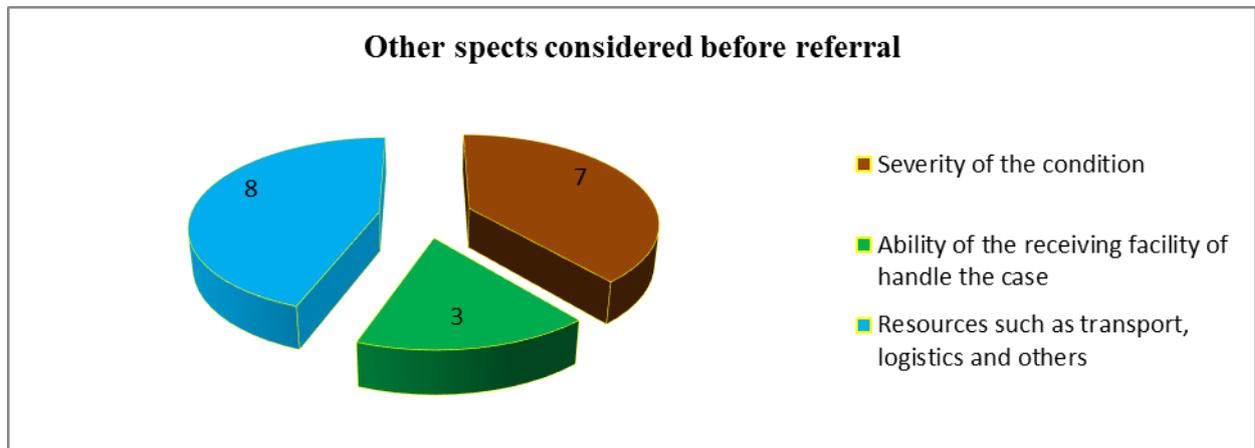


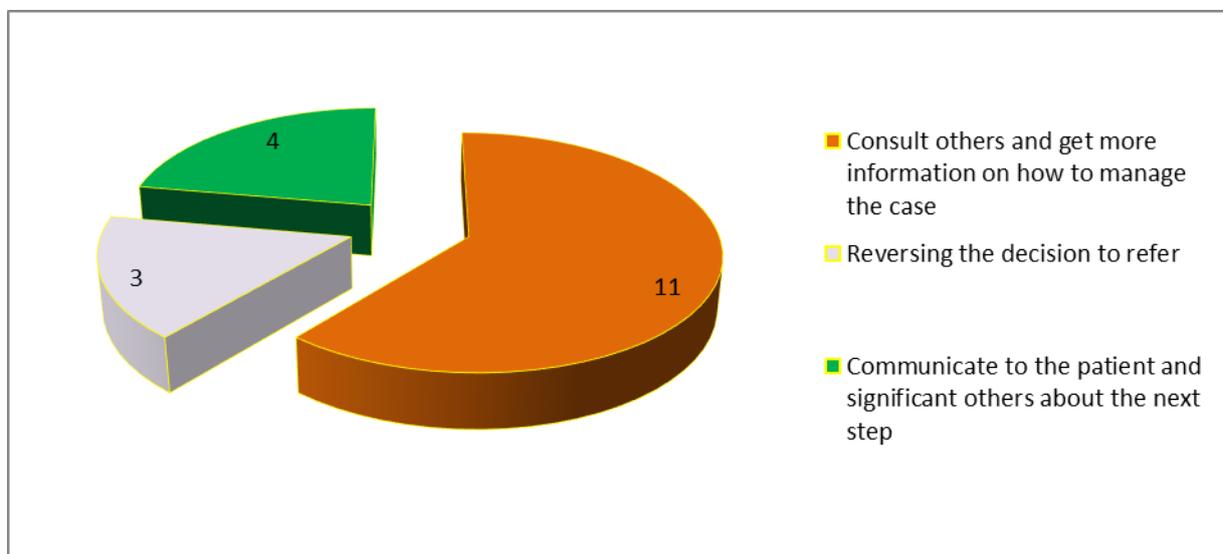
Figure 4.21 shows that 39% of the respondents reported collecting cues through looking at the signs and symptoms, 28% collected cues by conducting physical assessment, 22% collected cues by observation and 11% collected cues through conversation with the patient.

**FIGURE 4.22 RESPONSES ON WHAT OTHER THINGS WERE CONSIDERED BEFORE REFERRAL (n=18)**



As can be seen from figure 4.22 about 44% of respondents reported that they considered resources such as transport, logistics and others before referral, 39% reported to have consider the severity of the condition before referral and about 17% considered the ability of the receiving facility to handle the case.

**FIGURE 4. 23 RESPONSES ON WHAT WAS DONE WHEN A HINDRANCE TO REFER WAS EXPERIENCED (n=18)**



As shown in Figure 4.23 above; More than half (61%) of the respondents reported that they consulted others and got more information on how to manage the case, 22% reported communicating to the patient and significant others about the next step while 17% reversed the decision to refer when hindrances to refer were experienced.

**FIGURE 4. 24 SUGGESTIONS ON HOW TO ENHANCE GOOD DECISION MAKING (n=18)**

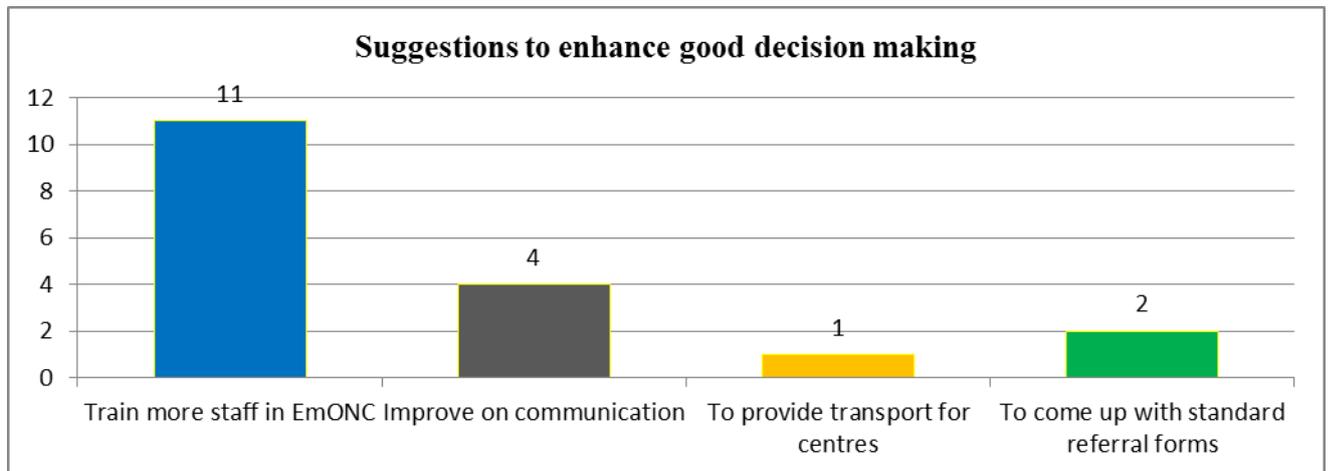


Figure 4. 24 shows that 61% respondents felt the need to train more staff in EmONC to was cardinal in enhancing good decision making, 22% suggested that there was need to improve on communication systems, 11% suggested the need to develop standard referral forms and 6% suggested that health centres should be provided with transport.

#### **4.3.6 SECTION G: HOSPITAL CHECKLISTS' RECORDS ON ENVIRONMENTAL AND ORGANIZATIONAL CONTEXT**

In section G, information on records from the hospital recorded by use of a checklist on Environmental and organizational context of decision making is presented in Table 4.7 on the next page. The information presented include; whether referred patient went with referral letter filled in from the referring facility, whether patient was accompanied by a skilled attendant, whether referred case was well documented in the referral book and whether time of referral was documented on referral form. Other information include; whether pre-referral interventions were documented, whether referral form was completely filled in, whether referred patient came from a facility with an ambulance, whether feedback was given to the referring facility and whether there were records of communication between referring facility and the hospital.

**TABLE 4.7 HOSPITAL RECORDS ON ENVIRONMENTAL AND ORGANIZATIONAL CONTEXT (n=111)**

|  |                  |                |
|--|------------------|----------------|
| <b>Referred case went to the hospital with a filled in referral form</b> | <b>Frequency</b> | <b>Percent</b> |
| Yes  | 105              | 94.6           |
| No   | 6                | 5.4            |
| Total  | 111              | 100            |
| <b>Referred patient accompanied by skilled attendant</b>                 | <b>Frequency</b> | <b>Percent</b> |
| Yes  | 13               | 11.7           |
| No   | 98               | 88.3           |
| Total  | 111              | 100            |
| <b>Referred case documented in the trans-in / referral book</b>          | <b>Frequency</b> | <b>Percent</b> |
| Yes  | 94               | 84.7           |
| No   | 17               | 15.3           |
| Total  | 111              | 100            |
| <b>Time of referral documented</b>                                       | <b>Frequency</b> | <b>Percent</b> |
| Yes  | 45               | 40.5           |
| No   | 66               | 59.5           |
| Total  | 111              | 100            |
| <b>Pre-referral interventions documented</b>                             | <b>Frequency</b> | <b>Percent</b> |
| Yes  | 38               | 34.2           |
| No   | 73               | 65.8           |
| Total  | 111              | 100            |
| <b>Referral forms completely filled in</b>                               | <b>Frequency</b> | <b>Percent</b> |
| Yes  | 34               | 30.6           |
| No   | 77               | 69.4           |
| Total  | 111              | 100            |
| <b>Ambulance available at the facility</b>                               | <b>Frequency</b> | <b>Percent</b> |
| Yes  | 31               | 27.9           |
| No   | 80               | 72.1           |
| Total  | 111              | 100            |
| <b>Feedback given to referring facility</b>                              | <b>Frequency</b> | <b>Percent</b> |
| Yes  | 6                | 5.4            |
| No   | 105              | 94.6           |
| Total  | 111              | 100            |
| <b>Records of communication between referring and receiving facility</b> | <b>Frequency</b> | <b>Percent</b> |
| Yes  | 11               | 9.9            |
| No   | 100              | 90.1           |
| Total  | 111              | 100            |

Table 4. 7 above shows that majority (95%) of the referred cases went to the hospital with a filled in referral form while 5% did not. On whether referred case was accompanied, the table shows that majority (88%) of the referred cases were not accompanied by a skilled attendant, while 12% were accompanied. On the other hand majority (85%) of the referred cases were well documented, while 15% were not. Less than half (41%) of the referred cases had the time of referral well documented on the referral form. Concerning time of referral, most (60%) of the referred cases had no time of referral indicated. The table also shows that most (66%) of the referred cases' pre-referral treatments were not documented, only 34% had pre referral treatments well documented. About (69%) of the referral forms reviewed were not completely filled in, only 31% referrals were well filled in. The table also shows that (72%) of the referred cases were coming from facilities where there was no available transportation, while 28% of the referred cases were referred by one facility with an ambulance. The reviewed records also showed that there was no feedback on 95% of the referred cases, the only indicated feedback was on the 5% cases referred. There was no record of communication between the referring and receiving unit on the majority (90%) of cases referred.

#### **4.3.7 SECTION H: HOSPITAL RECORDS ON FOUNDATIONAL KNOWLEDGE EmONC**

In section H, information from hospital records on foundational knowledge is presented. The information presented include; the type obstetric emergency referred, whether diagnosis from the rural health centre corresponded with the hospital diagnosis and the outcome of the referred obstetric emergencies.

**FIGURE 4.25 RECORDS OF TYPE OF OBSTETRIC EMERGENCIES REFERRED (n=111)**

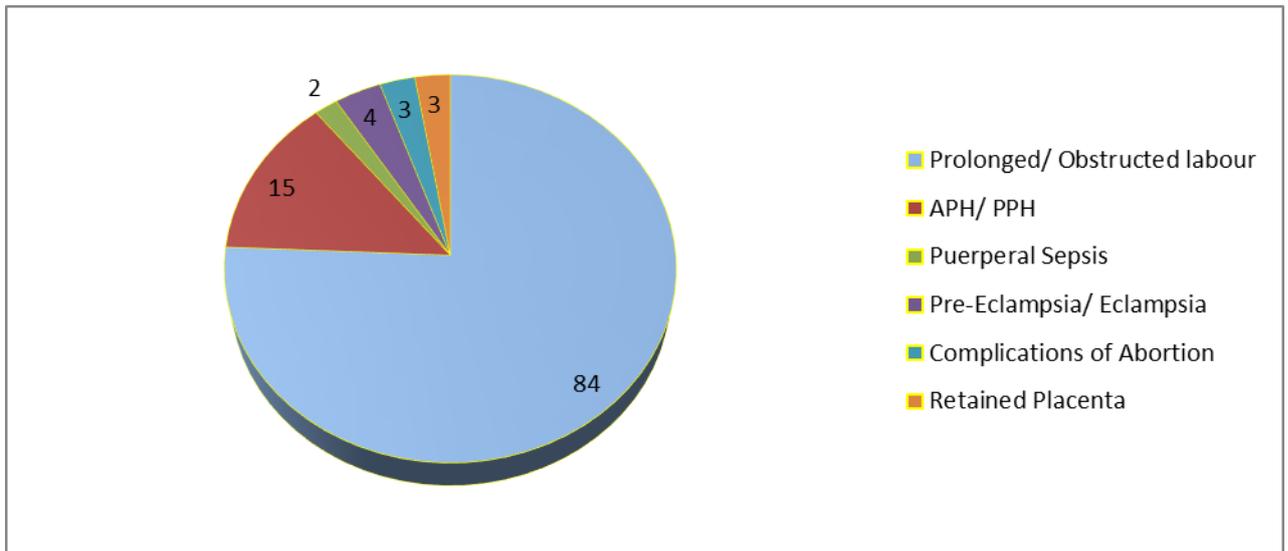
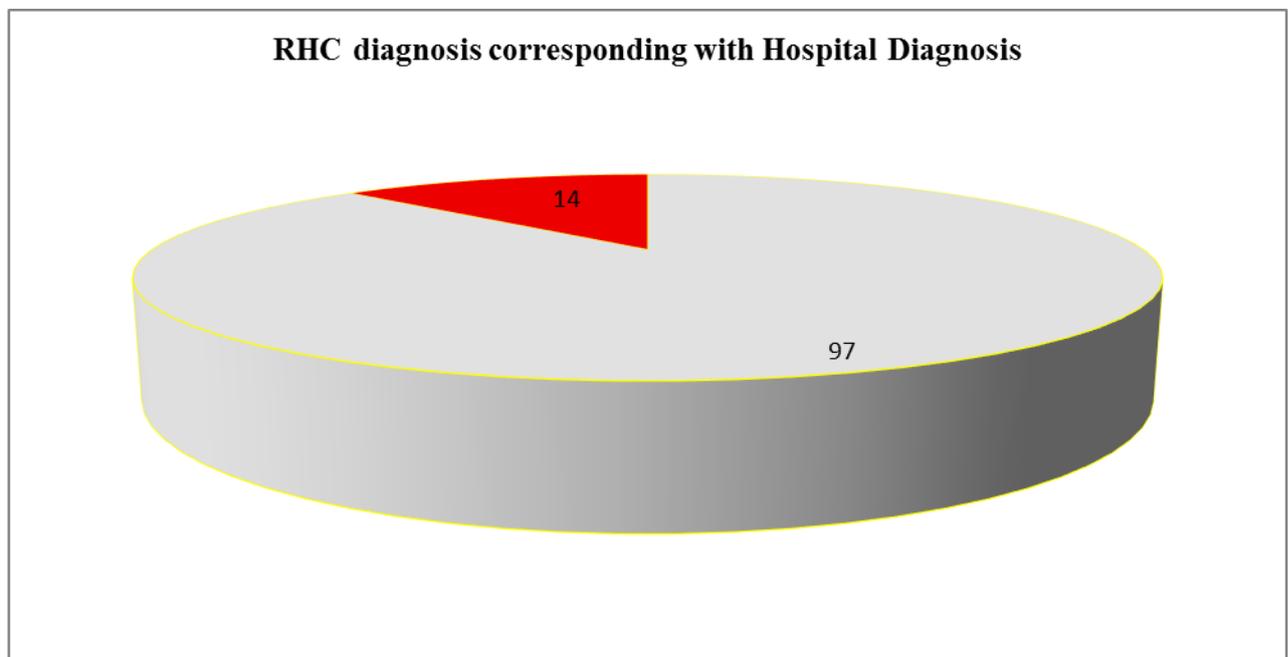


Figure 4.25 shows that slightly above three quarters (76%) of the patients referred had either prolonged labour or obstructed labour followed by (15%) of APH/ PPH cases. Only 2% of cases of Puerperal sepsis were referred

**FIGURE 4.26 RESPONSES ON WHETHER DIAGNOSIS FROM RURAL HEALTH CENTRE CORRESPONDED WITH THE HOSPITAL DIAGNOSIS (n=111)**



The findings in Figure 4:26 show that 87% of the referred cases' diagnoses made by the referring facilities corresponded with those made at the hospital but differed on 13% of the cases referred.

**FIGURE 4.27 RECORDS ON THE OUTCOME OF OBSTETRIC CASES REFERRED (n=111)**

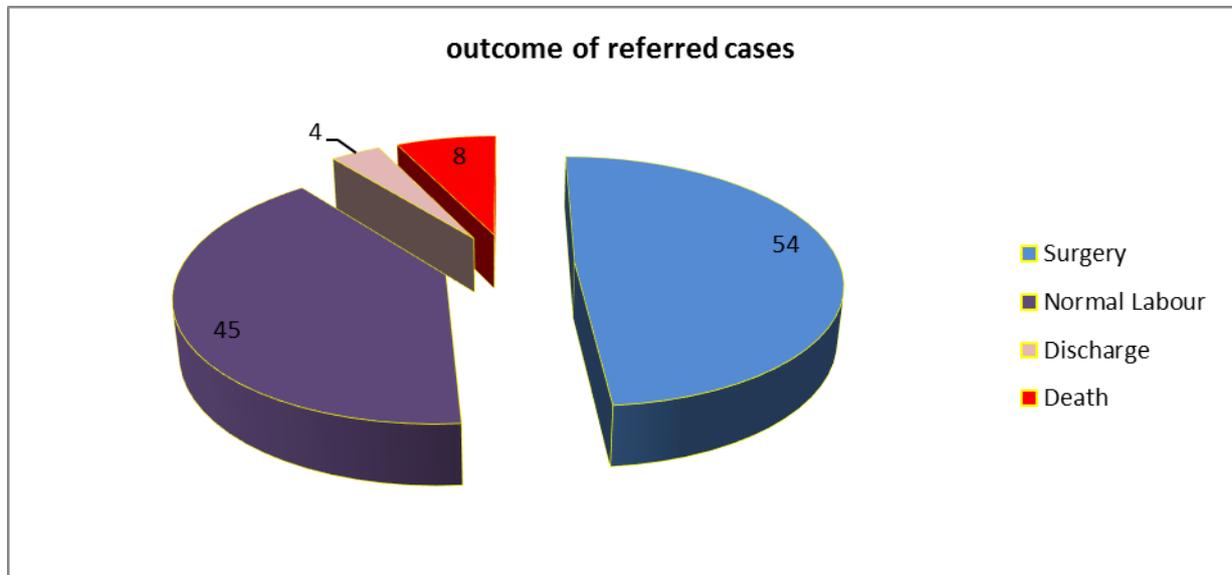


Figure 4.27 on the outcomes of referred obstetric cases, shows that 49% of obstetric emergencies referred ended up in surgery, 40% ended up in normal delivery and 7% ended up in maternal death.

#### **4.3.8 SECTION I: RHC CHECKLIST FINDINGS ON TIMELY REFERRAL**

Section H presents findings on the rural health center on timely referral. The aspects considered include the information on whether danger signs were identified in time through observations and physical examination, whether the district was informed within 30 minutes of identifying the danger signs and whether pre-referral treatments/resuscitation was done within 30 minutes. Other aspects included information on whether referred case documented in the referral book and whether there was delay of less than two hours from the time of informing the hospital to the time patient was picked.

**TABLE 4.8 RHC CHECKLIST FINDINGS ON TIMELY REFERRAL (n=16)**

| <b>Danger signs identified in time</b>   | <b>Frequency</b> | <b>Percent</b> |
|--|------------------|----------------|
| Yes  | 16               | 100            |
| No   | 0                | 0              |
| <b>Total</b>   | <b>16</b>        | <b>100</b>     |
| <b>District informed within 30 minutes of identifying the danger signs</b>                                 | <b>Frequency</b> | <b>Percent</b> |
| Yes  | 13               | 81.2           |
| No   | 3                | 18.8           |
| <b>Total</b>   | <b>16</b>        | <b>100</b>     |
| <b>Pre-referral treatment/ resuscitation was done within 30 minutes</b>                                    | <b>Frequency</b> | <b>Percent</b> |
| Yes  | 15               | 93.8           |
| No   | 1                | 6.2            |
| <b>Total</b>   | <b>16</b>        | <b>100</b>     |
| <b>Referred case documented in the referral book</b>   | <b>Frequency</b> | <b>Percent</b> |
| Yes  | 14               | 87.5           |
| No   | 2                | 12.5           |
| <b>Total</b>   | <b>16</b>        | <b>100</b>     |
| <b>Delay of less than two hours from the time of informing the hospital to the time patient was picked</b> | <b>Frequency</b> | <b>Percent</b> |
| yes  | 5                | 31.2           |
| No   | 11               | 68.8           |
| <b>Total</b>   | <b>16</b>        | <b>100</b>     |

Table 4.8 illustrates that all (100%) of the referring respondents timely identified danger signs through observation and physical examination. Majority (81%) of the respondents were able to inform the district hospital within 30 minutes of identifying the danger signs. On the other hand, majority (94%) of the referring respondents gave pre-referral treatment to referred patients while 6% did not. More than three quarters (88%) of the referring facilities had the referred cases documented in the referral books. Less than half (31%) of the of the referring facility showed records of delay for less than two hours on the referred cases being taken to hospital after being referred, while most (69%) showed delay of more than 3 hours depending on the distance.

#### 4.3.9 SECTION J: RHC CHECKLIST FINDINGS ON ENVIRONMENTAL & ORGANIZATIONAL CONTEXT (n=16)

In section J, information on the rural health centre environmental and organisation context is presented. The data was collected using a checklist. The information presented include; responses on whether partographs were used by the facility, whether infection prevention measures were followed by the health facility and whether parenteral magnesium sulphate, antibiotics and oxytocics were available at all times; and were there was availability of manual removal of placenta and retained products of conception logistics. Other aspects considered were the availability of reliable communication facilities and records of supervisory visit by District Medical Office (DMO).

**FIGURE 4.28 USE OF PARTOGRAPHS BY THE HEALTH FACILITY (n=16)**

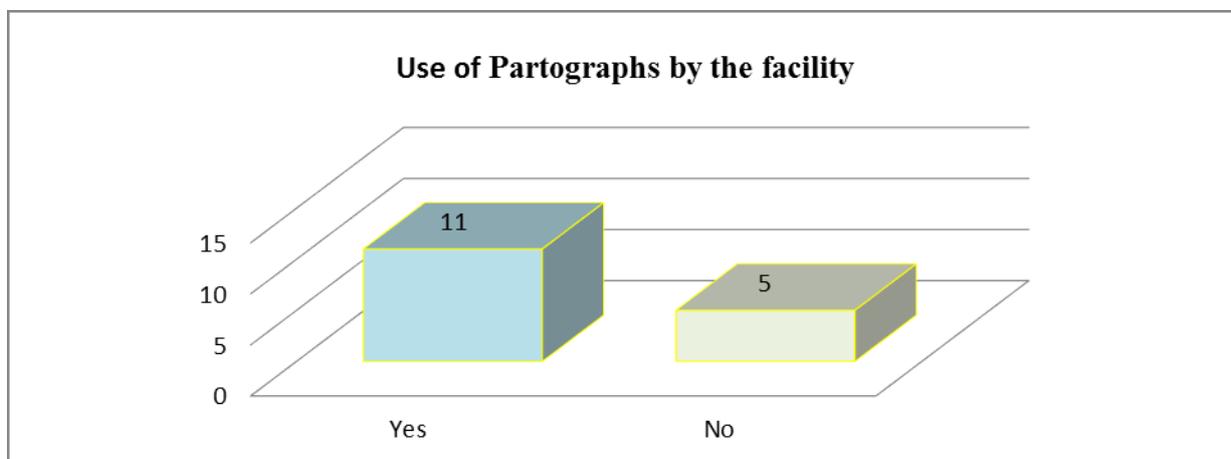
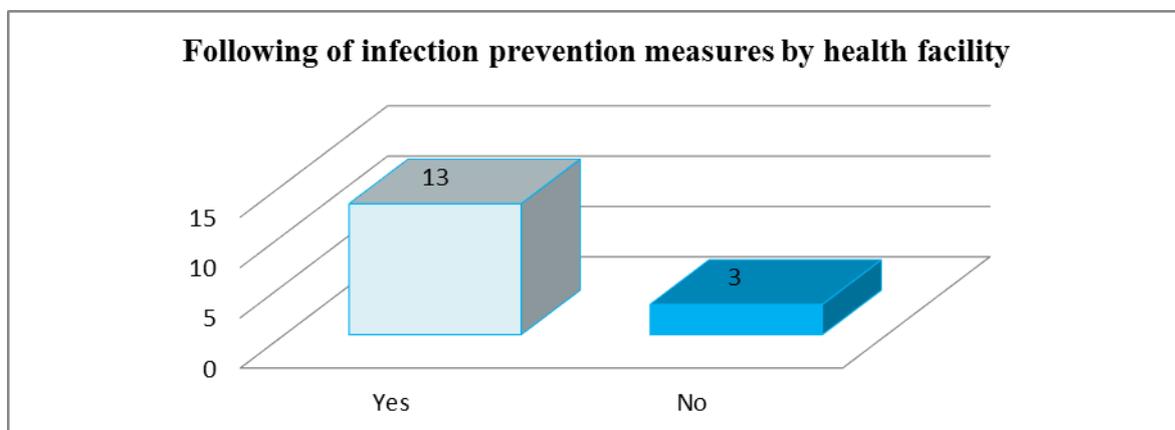


Figure 4.28 above shows that 69%) of the health facilities were using partographs, while 31% were not using them.

**FIGURE 4.29 WHETHER INFECTION PREVENTION MEASURES WERE FOLLOWED BY FACILITY (n=16)**



According to figure 4.29 above, more than three quarters (81%) of the facilities were following infection prevention measures, while 19% were not.

**TABLE 4.9 FINDINGS ON ENVIRONMENTAL AND ORGANIZATIONAL CONTEXT OF DECISION MAKING (n=16)**

| <b>Availability of parenteral magnesium</b>                 | <b>Frequency</b> | <b>Percent</b> |
|---|------------------|----------------|
| Yes   | 12               | 75             |
| No  | 4                | 25             |
| <b>Total</b>  | <b>16</b>        | <b>100</b>     |
| <b>Availability of parenteral antibiotics</b>               | <b>Frequency</b> | <b>Percent</b> |
| Yes   | 16               | 100            |
| No  | 0                | 0              |
| <b>Total</b>  | <b>16</b>        | <b>100</b>     |
| <b>Availability of parenteral oxytocics</b>                 | <b>Frequency</b> | <b>Percent</b> |
| Yes   | 15               | 93.8           |
| No  | 1                | 6.2            |
| <b>Total</b>  | <b>16</b>        | <b>100</b>     |
| <b>Availability of manual removal of placenta logistics</b> | <b>Frequency</b> | <b>Percent</b> |
| Yes   | 5                | 31.2           |
| No  | 11               | 68.8           |
| <b>Total</b>  | <b>16</b>        | <b>100</b>     |
| <b>Availability of manual removal of placenta logistics</b> | <b>Frequency</b> | <b>Percent</b> |
| Yes   | 5                | 31.2           |
| No  | 11               | 68.8           |
| <b>Total</b>  | <b>16</b>        | <b>100</b>     |

As shown by table 4.9, three quarters (75%) of the facilities had parenteral magnesium sulphate in stock, while there was no parenteral magnesium sulphate in 25% of the facilities. There was availability of parenteral antibiotics at all (100%) of the facilities. There was also availability of parenteral oxytocics on majority (94%) of the health facilities. Most (69%) of the facilities had no logistics for removal of retained products of conception, 31% had the logistics.

**FIGURE 4.30 AVAILABILITY OF RELIABLE COMMUNICATION FACILITIES (n=16)**

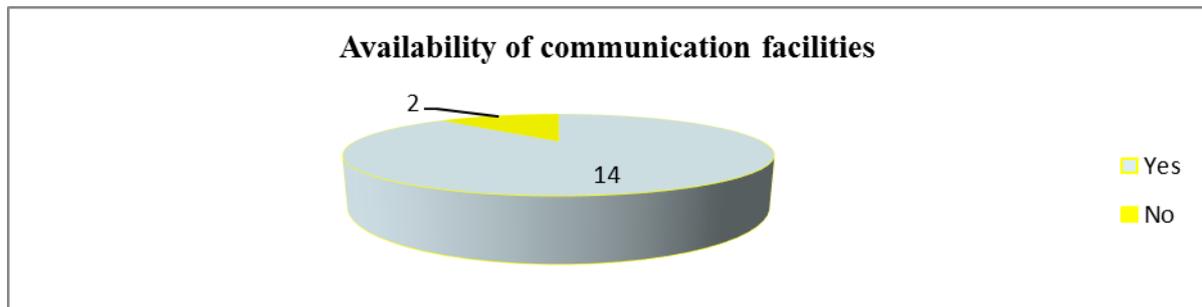


Figure 4.30 shows that communication facilities were available at (88%) of the facilities.

**FIGURE 4.31 AVAILABILITY OF RECORDS OF SUPERVISORY VISIT BY DISTRICT MEDICAL OFFICE (DMO) (n=16)**

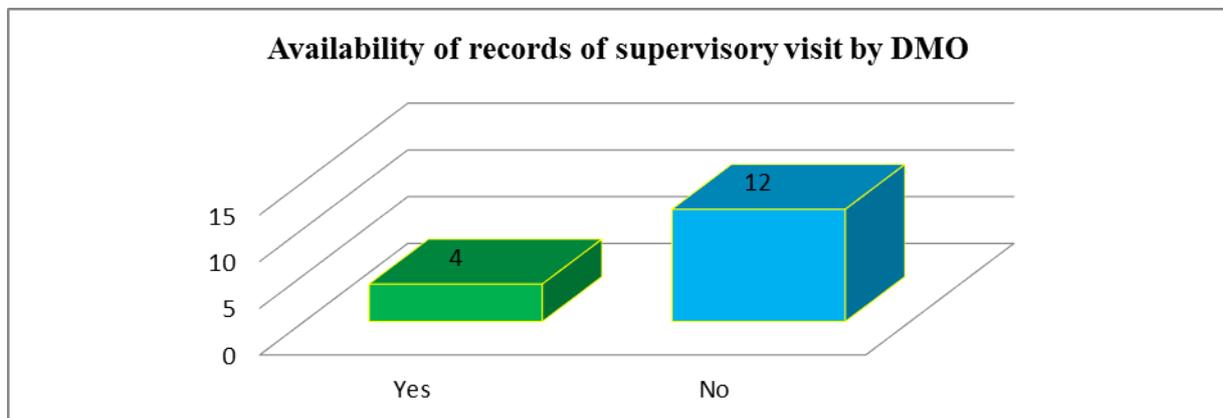


Figure 4.31 shows that there was no record of supervisory visit by DMO at three quarters (75%) of the facilities. Only 25% were visited.

#### **4.3.10 SECTION K RHC CHECKLIST FINDINGS ON FOUNDATIONAL KNOWLEDGE**

Section K presents data on the Foundational Knowledge. Data was collected by use of a checklist. The information presented include date and time of admission, documentation in the admission book, Temperature ,Pulse and Respiration observations (TPR), physical examinations done and documented on referred cases, diagnosis made was well documented by facilities and availability of charts and cards.

**TABLE 4.10 TPR OBSERVATIONS WERE DONE ON ADMISSION OF THE PATIENTS (n=16)**

| TPR observations done on admission of the patients | Frequency | Percent |
|--|-----------|---------|
| Yes  | 16        | 100.0   |
| No   | 0         | 0       |
| Total  | 16        | 100     |

Table 4.10 shows that TPR observations were done at all (100%) the health facility upon admission of the patient.

**FIGURE 4.32 WHETHER PHYSICAL EXAMS WERE DONE AND DOCUMENTED ON REFERRED CASES (n=16)**

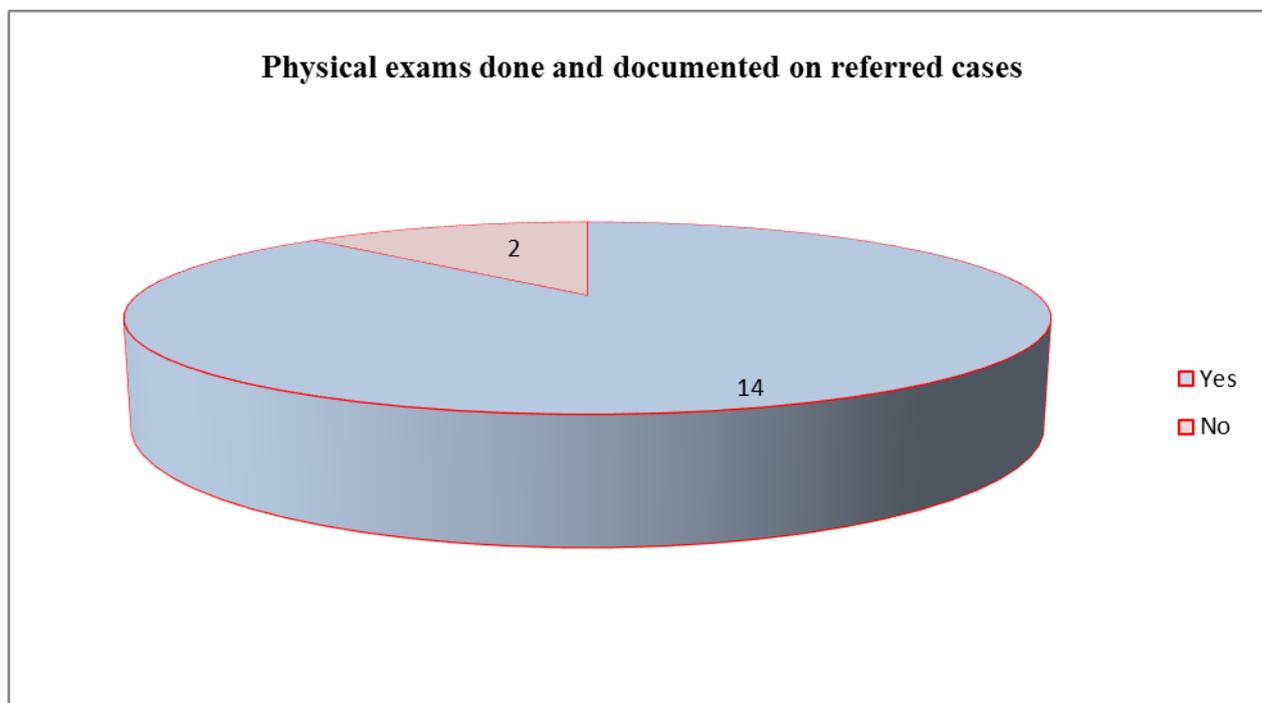


Figure 4.32 illustrates that physical examinations were done and well documented at more than three quarters (88%) of the referring facilities

**FIGURE 4.33 DIAGNOSIS MADE WAS DOCUMENTED BY FACILITIES (n=16)**

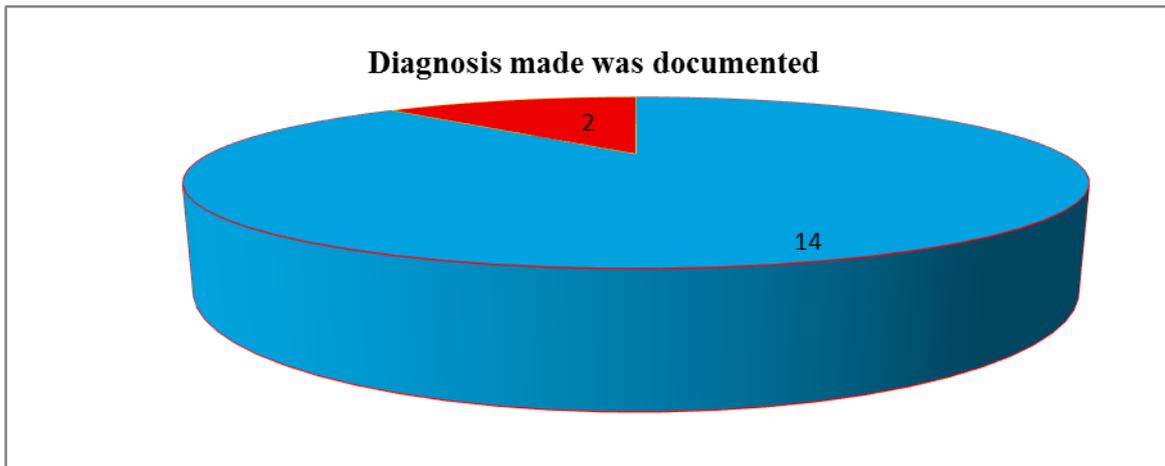


Figure 4.33 shows that diagnoses were made and documented at more than three quarters (88%) of the facilities on the referred cases.

**FIGURE 4.34 AVAILABILITY OF CHARTS AND CARDS (n=16)**

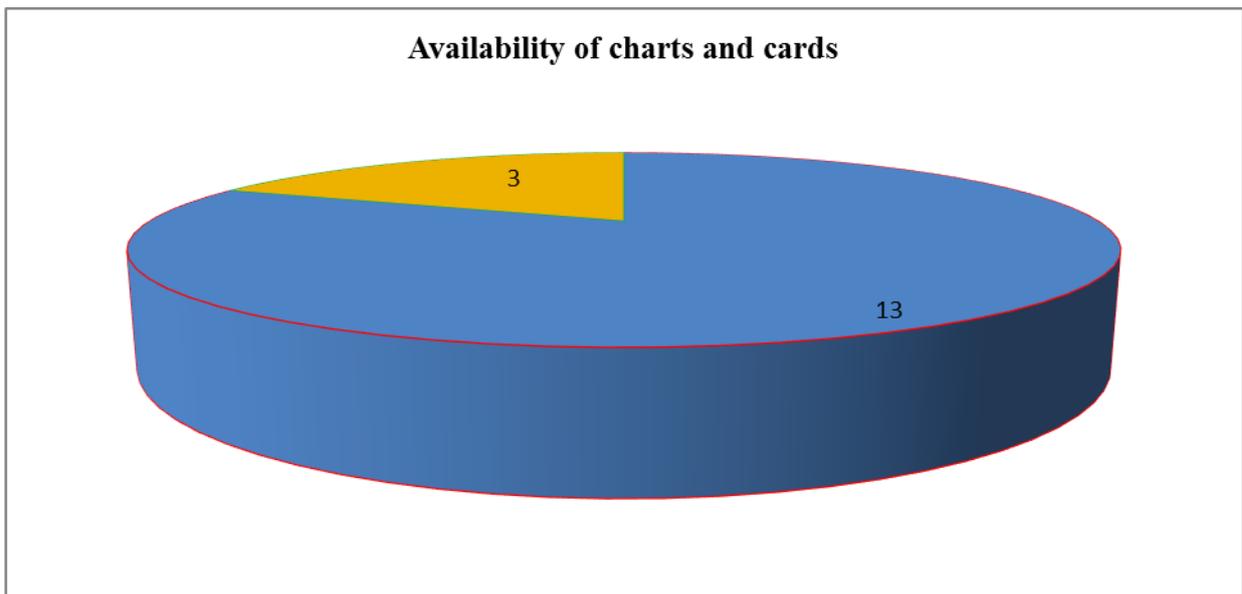


Figure 4.34 shows that more than three quarters (81%) of the health facilities had all the necessary charts and cards available. Only 19% of the facilities had no records.

#### 4.3.11 SECTION L: RELATIONSHIPS BETWEEN STUDY VARIABLES

In section L, the relationship among the dependent and independent variables of the study are presented. These include the relationship between being trained in EmONC and; Timely referral of obstetric emergencies, Environmental and organizational context of decision making, foundational knowledge of nurses on EmONC and decision making processes. On timely referral, the time the decision was made to refer the patient to the next level and the reasons for referring patient were considered. Environmental and organizational context includes information on whether nurses and midwives felt confident to refer, factors making them not to refer patients sometimes, whether case was accompanied, whether pre-referral interventions were given and documented and whether referring facility had transport available. Information on foundational knowledge includes EmONC functions confidently performed by the respondents, action taken before referral, how decision to refer was reached, whether referral forms were completely filled in, whether diagnosis from the referring facility corresponded with the hospital diagnosis and the outcome of the referred cases among other aspects.

**TABLE 4.11 (TIMELY REFERRAL) RESPONDENTS’ TRAINED IN EmONC IN RELATION TO TIME TAKEN TO DECIDE TO REFER**

| Trained in EmONC | Time taken to decide to refer |                   |                    | Total            | P-value |
|------------------|-------------------------------|-------------------|--------------------|------------------|---------|
|                  | 30 minutes to 1 hour          | 1 hour to 2 hours | 2 hours to 3 hours |                  |         |
| Yes              | 8 (100%)                      | 0 (0%)            | 0 (0%)             | 8 (100%)         | 1.000   |
| No               | 8 (80%)                       | 1 (10%)           | 1(10%)             | 10 (100%)        |         |
| <b>Total</b>     | <b>16 (88%)</b>               | <b>1 (6%)</b>     | <b>1 (6%)</b>      | <b>18 (100%)</b> |         |

(Source: Author’s own analysis, 2016)

Fisher’s Exact Test, \*Indicates significant  $p$ -value at  $p < 0.05$ .

Table 4:11 above shows the relationship between being trained in EmONC and time taken to decide to refer a patient to the next level of treatment. Of the 8 respondents who were trained in EmONC, all (100%) were able to decide to refer patients within 30 minutes to 1 hour. On the other hand, majority (80%) of those not trained were also able to refer within 30 to 1 hour. The Fisher’s Exact Test analysis showed no significant relationship between the two variables (P-value 1.000). Therefore the researcher failed to reject the null hypothesis.

**TABLE 4.12 (TIMELY REFERRAL) RESPONDENTS' TRAINED IN EmONC IN RELATION TO REASON FOR REFERRING PATIENT**

| Trained in EmONC | Reason for referral                               |               |  | Total           | P-value      |
|------------------|---|---------------|--|-----------------|--------------|
|                  | Lack of knowledge of condition and its management | For diagnosis | For further management such as surgery |                 |              |
| Yes              | 0 (0%)  | 1 (22%)       | 7 (88%)                                | <b>8 (100%)</b> | <b>0.706</b> |
| No               | 1(10%)  | 0 (0%)        | 9 (90%)                                |                 |              |
| <b>Total</b>     | <b>1 (6%)</b>                                     | <b>1 (6%)</b> | <b>16 (88%)</b>                        |                 |              |

Source: Author's own analysis, 2016)

Fisher's Exact Test, \*Indicates significant  $p$ -value at  $p < 0.05$ .

Table 4.12 above shows that more than three quarters (88%) of the respondents who were trained in EmONC referred patients for further management such as surgery and so did the 90% untrained, while no (0%) of the respondents trained in EmONC referred the patient for lack of knowledge of the condition and its management. This study has shown no statistical significance (P-value=0.706) between being trained in EmONC and the reason for referring patient as shown by the P- value. Therefore, the researcher failed to reject the null hypothesis.

**TABLE 4.13 (TIMELY REFERRAL) RESPONDENTS TRAINED IN EmONC IN RELATION TO WHETHER THEY FELT CONFIDENT TO REFER**

| Trained in EmONC | Felt confident to refer |                | Total            | P-value      |
|------------------|-------------------------|----------------|------------------|--------------|
|                  | Yes                     | No             |                  |              |
| Yes              | 7 (88%)                 | 1 (22%)        | <b>8 (100%)</b>  | <b>0.120</b> |
| No               | 5 (50%)                 | 5 (50%)        |                  |              |
| <b>Total</b>     | <b>12 (67%)</b>         | <b>6 (33%)</b> | <b>18 (100%)</b> |              |

Source: Author's own analysis, (2016)

Fisher's Exact Test, \*Indicates significant  $p$ -value at  $p < 0.05$ .

The findings in table 4.13 shows that more than three quarters (88%) of the respondents trained in EmONC felt confident to refer patients to the next level of management while only 50% of the untrained respondents felt confident to refer patients. However, the Fisher's Exact

Test showed no significant relationship between trained in EmONC and feeling confident to refer. The Fisher's Exact (P- value = 0.120) therefore, the researcher failed to reject the null hypothesis.

**TABLE 4.14 (TIMELY REFERRAL) RESPONDENTS' TRAINED IN EmONC IN RELATION TO FACTORS MAKING THEM NOT TO REFER**

| Trained in EmONC | Factors making someone not to refer |  |  |                              |                  | P-Value      |
|------------------|-------------------------------------|--|--|------------------------------|------------------|--------------|
|                  | Able to manage the case             | Failure to identify danger signs early | Fear of being shouted at by the doctors and nurses at the receiving facility | Refusal by patient or others | Total            |              |
| Yes              |                                     |  |  |                              |                  |              |
| No               | 5 (64%)                             | 1 (12%)                                | 1 (12%)  | 1 (12%)                      | <b>8 (100%)</b>  | <b>0.069</b> |
|                  | 10 (100%)                           | 0 (0%)                                 | 0 (0%)   | 0 (0%)                       | <b>10 (100%)</b> |              |
| Total            | 15 (83%)                            | 1 (6%)                                 | 1 (6%)   | 1 (6%)                       | <b>18 (100%)</b> |              |

Source: Author's own analysis, 2016)

Fisher's Exact Test, \*Indicates significant  $p$ -value at  $p < 0.05$ .

Table 4.14 shows that most (64%) of respondents trained in EmONC did not refer patients with obstetric emergencies because of they were able to manage the cases. Only 12% said they did not refer patients with obstetric emergencies due to fear of being shouted by the doctors and nurses at the receiving facility. On the other hand, all (100%) of the untrained respondents did not refer patients with obstetric emergencies because they were also able to manage cases. The Fisher's Exact Test was used to test the above relationship and the result was not statistically significance (P-value=0.069). Therefore, the researcher failed to reject the null hypothesis.

**TABLE 4. 15 (FOUNDATIONAL KNOWLEDGE) RESPONDENTS TRAINED IN EmONC IN RELATION TO EmONC FUNCTION CONFIDENTLY HANDLED**

| Trained in EmONC | EmONC function confidently performed |   |   |                                 | Total           | P-value      |
|------------------|--------------------------------------|---|---|---------------------------------|-----------------|--------------|
|                  | Administer parenteral antibiotic     | Administer parenteral antibiotics and oxytocics | Administer parenteral antibiotics, oxytocic and anticonvulsants | All the 6 basic EmONC functions |                 |              |
| Yes              | 0 (0%)                               | 3 (37%)   | 4 (50%)   | 1 (13%)                         | <b>8 (100%)</b> | <b>0.260</b> |
| No               | 2 (20%)                              | 6 (60%)   | 2 (20%)   | 0 (0%)                          |                 |              |
| <b>Total</b>     | <b>2 (11%)</b>                       | <b>9 (50%)</b>                                  | <b>6 (33%)</b>  | <b>1 (6%)</b>                   |                 |              |

Source: Author's own analysis, 2016)

Fisher's Exact Test, \*Indicates significant  $p$ -value at  $p < 0.05$ .

Table 4.15 shows that half (50%) of the respondents trained in EmONC reported that they were able to perform 3 basic functions of EmONC, while only 13% were able to perform all the 6 basic functions. On the other hand, most (60%) of the untrained respondents were able to perform only two basic EmONC functions. The Fisher's Exact Test result was not statistically significance ( $P$ -value=0.260). Therefore, the researcher failed to reject the null hypothesis.

**TABLE 4.16 (FOUNDATIONAL KNOWLEDGE) TRAINED IN EmONC IN RELATION TO WHAT WAS DONE BEFORE REFERRAL**

| Trained in EmONC | What was done before referral |                                 |   |   | Total           | P-value      |
|------------------|-------------------------------|---------------------------------|---|---|-----------------|--------------|
|                  | Give resuscitative drugs      | Insert a cannula and a catheter | Offer psychological care to patients and significant others | Give resuscitative drugs and insert a cannula |                 |              |
| Yes              | 1 (13%)                       | 2 (26%)                         | 0 (0%)  | 5 (61%)                                       | <b>8 (100%)</b> | <b>0.352</b> |
| No               | 0 (0%)                        | 3 (30%)                         | 3 (30%)   | 4 (40%)                                       |                 |              |
| <b>Total</b>     | <b>1 (6%)</b>                 | <b>5 (28%)</b>                  | <b>3 (16%)</b>  | <b>9 (50%)</b>                                |                 |              |

Source: Author's own analysis, 2016)

Fisher's Exact Test, \*Indicates significant  $p$ -value at  $p < 0.05$ .

Table 4.16 above indicates that most (61%) of the respondents trained in EmONC were able to give resuscitative drugs and insert cannula before referral. On the other hand only 40% of the untrained were able to give resuscitative drugs and insert cannula. The Fisher's Exact Test result was not statistically significant (P-value=0.352). Therefore, the researcher failed to reject the null hypothesis.

**TABLE 4.17 (DECISION MAKING PROCESS) RESPONDENTS' TRAINED IN EmONC IN RELATION TO HOW DECISION WAS REACHED TO REFER PATIENT**

| Trained in EmONC | How decision was reached to refer patient        |  |                                       | Total            | P- value     |
|------------------|--|--|---------------------------------------|------------------|--------------|
|                  | Basing on the severity of the signs and symptoms | Basing on physical assessment of the patient | Basing on the available documentation |                  |              |
| Yes              |  |  |                                       |                  | <b>0.164</b> |
| No               | 3 (38%)  | 3 (38%)                                      | 2 (24%)                               | <b>8 (100%)</b>  |              |
|                  | 7 (70%)  | 3 (30%)                                      | 0 (0%)                                | <b>10 (100%)</b> |              |
| Total            | 10 (56%)   | 6 (33%)                                      | 2 (11%)                               | <b>18 (100%)</b> |              |

Source: Author's own analysis, 2016)

Fisher's Exact Test, \*Indicates significant *p*-value at  $p < 0.05$ .

Table 4.17 shows that less than half (38%) of the respondents trained in EmONC based their decision to refer on severity of the signs and symptoms another 38% based their decisions on physical assessment. On the other hand, almost three quarters 70% of the untrained also based their decision to refer on severity of the condition. The Fisher's Exact Test result was not statistically significant (P-value=0.164). Therefore, the researcher failed to reject the null hypothesis.

**TABLE 4.18 (DECISION MAKING PROCESS) TRAINED IN EmONC IN RELATION TO HOW CUES WERE COLLECTED**

| Trained in EmONC | How cues were collected           |                                    |                                       |                        | Total            | P-value      |
|------------------|-----------------------------------|------------------------------------|---------------------------------------|------------------------|------------------|--------------|
|                  | Looking at the signs and symptoms | Through observations at the clinic | Through conversation with the patient | By physical assessment |                  |              |
| Yes              | 4 (50%)                           | 1 (12.5%)                          | 1 (12.5%)                             | 2 (25%)                | <b>8 (100%)</b>  | <b>0.904</b> |
| No               | 3 (30%)                           | 3 (30%)                            | 1 (10%)                               | 3 (30%)                | <b>10 (100%)</b> |              |

| Trained in EmONC | How cues were collected           |                                    |                                       |                        | Total            | P-value      |
|------------------|-----------------------------------|------------------------------------|---------------------------------------|------------------------|------------------|--------------|
|                  | Looking at the signs and symptoms | Through observations at the clinic | Through conversation with the patient | By physical assessment |                  |              |
| Yes              | 4 (50%)                           | 1 (12.5%)                          | 1 (12.5%)                             | 2 (25%)                | <b>8 (100%)</b>  | <b>0.904</b> |
| No               | 3 (30%)                           | 3 (30%)                            | 1 (10%)                               | 3 (30%)                | <b>10 (100%)</b> |              |
| <b>Total</b>     | 7 (39%)                           | 4 (22%)                            | 2 (11%)                               | 5 (28%)                | <b>18 (100%)</b> |              |

Fisher's Exact Test, \*Indicates significant  $p$ -value at  $p < 0.05$ .

Table 4.18 above shows that half (50%) of the respondents trained in EmONC reported that they collected cues through looking at the signs and symptoms while a quarter (25%) reported that they collected them through physical assessment. The findings also showed that slightly above a quarter (30%) of the untrained collected cues through looking at the signs and symptoms and another (30%) by physical assessment. The Fisher's Exact Test result was not statistically significance (P-value=0.904). Therefore, the researcher failed to reject the null hypothesis.

**TABLE 4.19 (DECISION MAKING PROCESS) TRAINED IN EmONC IN RELATION TO WHAT OTHER ASPECTS WERE CONSIDERED BEFORE REFERRAL**

| Trained in EmONC | Other Aspects that were considered before referral |  |   | Total            | P-value      |
|------------------|--|--|---|------------------|--------------|
|                  | Severity of the condition                          | Ability of the facility to handle the case | Resources such as transport, logistics and others |                  |              |
| Yes              | 3 (38%)  | 2 (24%)                                    | 3 (38%)   | <b>8 (100%)</b>  | <b>0.832</b> |
| No               | 4 (40%)  | 1 (10%)                                    | 5 (50%)   | <b>10 (100%)</b> |              |
| <b>Total</b>     | 7 (39%)  | 3 (17%)                                    | 8 (44%)   | <b>18 (100%)</b> |              |

Source: Author's own analysis, 2016)

Fisher's Exact Test, \*Indicates significant  $p$ -value at  $p < 0.05$ .

Table 4.19 shows that about (38%) of the EmONC trained respondents reported that they considered the severity of the condition another 38% consider resources such as transport before referring the patient. On the other hand, half (50%) of the untrained respondents considered resources such as transport before referring.

Nonetheless, Fisher’s Exact Test shows no statistical significance relationship between being trained in EmONC and others things considered before referral (P- value= 0.832). The researcher therefore failed to reject the null hypothesis.

**TABLE 4.20 (DECISION MAKING PROCESS) RESPONDENTS TRAINED IN EmONC IN RELATION TO WHAT WAS DONE WHEN HINDRANCES TO REFER WERE EXPERIENCED**

| Trained in EmONC | What was done when hindrance to refer were experienced            |                                 |   | Total            | P-value      |
|------------------|---|---------------------------------|---|------------------|--------------|
|                  | Consult others and get more information on how to manage the case | Reversing the decision to refer | Communicate to the patient and significant others about the next step |                  |              |
| Yes              | 7 (88%)   | 1 (22%)                         | 0 (0%)  | <b>8 (100%)</b>  | <b>0.087</b> |
| No               | 4 (40%)   | 2 (20%)                         | 4 (40%)   | <b>10 (100%)</b> |              |
| Total            | 11 (61%)  | 3 (17%)                         | 4 (22%)   | <b>18 (100%)</b> |              |

Source: Author’s own analysis, 2016)

Fisher’s Exact Test, \*Indicates significant  $p$ -value at  $p < 0.05$ .

Table 4.20 shows that more than three quarters (88%) of the respondents trained in EmONC consulted others and got information on how to manage the case while less than a quarter (22%) reversed the decision to refer when faced with hindrances. The Fisher’s Exact Test result was not statistically significance (P-value=0.087). Therefore, the researcher failed to reject the null hypothesis.

**TABLE 4.21 (ENVIRONMENTAL AND ORGANIZATIONAL) REFERRED CASE BY EmONC TARINED IN RELATION TO WHETHER REFERRED CASE WENT TO HOSPITAL WITH A REFERRAL LETTER**

| Referred by EmONC Trained | Referred patient went to hospital with a referral letter |         | Total            | P-value      |
|---------------------------|--|---------|------------------|--------------|
|                           | Yes  | No      |                  |              |
| Yes                       | 53 (100%)  | 0 (0%)  | <b>53 (100%)</b> | <b>0.016</b> |
| No                        | 52 (90%)   | 6 (10%) | <b>58 (100%)</b> |              |
| Total                     | 105 (95%)  | 6 (5%)  | <b>111(100%)</b> |              |

Source: Author’s own analysis, 2016)

Pearson’s Chi-Squared Test \*Indicates significant  $p$ -value at  $p < 0.05$ .

Table 4.21 shows that all (100%) the patients referred by EmONC trained nurses and midwives went to hospital with referral forms. On the other hand, 90% of those referred by untrained also went with referral forms.

The Chi-square test indicated a **statistically significant (P-value= 0.016) relationship** between being trained in EmONC and referring patients using a referral letter. Therefore, the null hypothesis is rejected.

**TABLE 4.22 (ENVIROMENAL AND ORGANIZATIONAL) REFERRED CASE BY EmONC TRAINED IN RELATION TO WHETHER REFERRED CASE WAS ACCOMPANIED**

| Referred by EmONC Trained | Referred patient accompanied |          | Total      | P-value |
|---------------------------|------------------------------|----------|------------|---------|
|                           | Yes                          | No       |            |         |
| Yes                       | 8 (15%)                      | 45 (85%) | 53 (100%)  | 0.289   |
| No                        | 5 (9%)                       | 53 (91%) | 58 (100%)  |         |
| <b>Total</b>              | 13 (12%)                     | 98 (88%) | 111 (100%) |         |

Source: Author's own analysis, 2016)

Pearson's Chi-Squared Test, \*Indicates significant  $p$ -value at  $p < 0.05$ .

Table 4.22 shows that majority (85%) of the referred patients by EmONC trained nurses and midwives were not accompanied to the referral hospital by staff and so were those referred by the untrained staff (91%). The Chi-square result was not statistically significance (P-value=0.289). Therefore, the researcher failed to reject the null hypothesis.

**TABLE 4. 23 (FOUNDATIONAL KNOWLEDGE) REFERRED CASE BY EmONC TRAINED IN RELATION TO WHETHER TIME AND DATE OF REFERRAL WAS WELL DOCUMENTED ON REFERRAL FORM**

| Referred by EmONC Trained | Time and date well documented on the referral form |          | Total      | P-value |
|---------------------------|--|----------|------------|---------|
|                           | Yes  | No       |            |         |
| Yes                       | 23 (43%)   | 30 (57%) | 53 (100%)  | 0.569   |
| No                        | 22 (38%)   | 36 (62%) | 58 (100%)  |         |
| <b>Total</b>              | 45 (41%)   | 66 (59%) | 111 (100%) |         |

Source: Author's own analysis, 2016)

Pearson's Chi-Squared Test, \*Indicates significant  $p$ -value at  $p < 0.05$ . Table 4.23 above shows that less than half (43%) of referred obstetric emergency cases by EmONC trained nurses and midwives had time and date well documented on the referral form, while 57% had no documentation of time and date. On the other hand, only 38% of the untrained documented time and date of referral. The Fisher's Exact Test result is not statistically significant ( $P$ -value=0.569). Therefore, the researcher failed to reject the null hypothesis.

**TABLE 4.24 (FOUNDATIONAL KNOWLEDGE) REFERRED CASE BY EmONC TRAINED IN RELATION TO WHETHER PRE-REFERRAL INTERVENTIONS WERE DOCUMENTED ON REFERRAL FORM**

| Referred by EmONC Trained | Pre-referral interventions documented on referral form |          | Total     | P-value |
|---------------------------|--|----------|-----------|---------|
|                           | Yes  | No       |           |         |
| Yes                       | 24 (45%)   | 29 (55%) | 53 (100%) | 0.019   |
| No                        | 14 (24%)   | 44 (76%) | 58 (100%) |         |
| Total                     | 38 (34%)   | 73 (66%) | 111(100%) |         |

Source: Author's own analysis, 2016)

Pearson's Chi-Squared Test, \*Indicates significant  $p$ -value at  $p < 0.05$ .

Table 4.24 shows that less than half (45%) of referred cases by EmONC trained nurses and midwives had pre-referral interventions documented, while only 24% of those referred by untrained nurses and midwives had documentation of pre-referral treatment. The Chi-square test indicated a **statistically significant (P-value= 0.019)** relationship between being trained in EmONC and referring patients with pre-referral interventions indicated on referral form. Therefore, the null hypothesis is rejected.

**TABLE 4.25 (FOUNDATIONAL KNOWLEDGE) REFERRED CASES BY EmONC TRAINED IN RELATION TO WHETHER REFERRAL FORMS WERE COMPLETELY FILLED IN**

| Referred by EmONC Trained | Referral form completely filled in |          | Total      | P- value |
|---------------------------|------------------------------------|----------|------------|----------|
|                           | Yes                                | No       |            |          |
| Yes                       | 18 (34%)                           | 35 (66%) | 53 (100%)  | 0.467    |
| No                        | 16 (28%)                           | 42 (72%) | 58 (100%)  |          |
| Total                     | 34 (31%)                           | 77 (69%) | 111 (100%) |          |

Source: Author's own analysis, 2016)

Pearson's Chi-Squared Test, \*Indicates significant  $p$ -value at  $p < 0.05$ .

Table 4.25 shows that about (66%) of the referred cases by EmONC trained nurses and midwives had gaps in the referral forms, while 34% had their referral forms completely filled in. While 72% referred by the untrained also had gaps. The Chi-square Test result was not statistically significance (P-value=0.467). Therefore, the researcher failed to reject the null hypothesis

**TABLE 4.26 (ENVIRONMENTAL AND ORGANIZATIONAL) REFERRED CASES BY EmONC TRAINED IN RELATION TO WHETHER THE REFERRING FACILITY HAD TRANSPORT READILY AVAILABLE**

| Referred by EmONC Trained | Ambulance always available |          | Total             | P- value     |
|---------------------------|----------------------------|----------|-------------------|--------------|
|                           | Yes                        | No       |                   |              |
| Yes                       | 22 (42%)                   | 31 (58%) | <b>53 (100%)</b>  | <b>0.002</b> |
| No                        | 9 (16%)                    | 49 (84%) | <b>58 (100%)</b>  |              |
| Total                     | 31 (21%)                   | 80 (79%) | <b>111 (100%)</b> |              |

Source: Author's own analysis, 2016)

<sup>a</sup>Pearson's Chi-Squared Test, \*Indicates significant *p*-value at  $p < 0.05$ .

According to table 4.26; Less than half (42%) of the referred cases by EmONC trained came from facilities with Ambulance available, while 58% came from facilities with no Ambulance. On the other hand 16% of those referred by the untrained came from facilities with availability of ambulances. The Chi-square test indicated a **statistically significant (P-value= 0.002)** relationship between number of cases referred by EmONC trained and availability of transport.

**TABLE 4.27 (FOUNDATIONAL KNOWLEDGE) REFERRED CASE BY EmONC TRAINED IN RELATION TO TYPE OF CASE REFERRED**

| Referred by EmONC Trained | Prolonged/ obstructed labour |          | Total             | P-value      |
|---------------------------|------------------------------|----------|-------------------|--------------|
|                           | Yes                          | No       |                   |              |
| Yes                       | 40 (75%)                     | 13 (25%) | <b>53 (100%)</b>  | <b>0.962</b> |
| No                        | 44 (76%)                     | 14 (24%) | <b>58 (100%)</b>  |              |
| Total                     | 84 (76%)                     | 27 (24%) | <b>111 (100%)</b> |              |

Source: Author's own analysis, 2016)

Pearson's Chi-Squared Test, \*Indicates significant *p*-value at  $p < 0.05$ .

Table 4.27 shows that three quarters (75%) of the referred obstetric emergency cases by EmONC trained were prolonged/obstructed labour. On the other hand 76% of the referred cases by those not trained were also prolonged/obstructed labour.

The Chi-square test result was not statistically significance (P-value=0.962). Therefore, the researcher failed to reject the null hypothesis.

**TABLE 4.28 (FOUNDATIONAL KNOWLEDGE) REFERRED CASES BY EmONC TRAINED IN RELATION TO WHETHER THE DIAGNOSIS FROM RHC CORRESPONDED WITH HOSPITAL DIAGNOSIS**

| Referred by EmONC Trained | Diagnosis from rural health center corresponds with hospital diagnosis |          | Total             | P- value     |
|---------------------------|--|----------|-------------------|--------------|
|                           | Yes  | No       |                   |              |
| Yes                       | 46 (88%)   | 7 (12%)  | <b>53 (100%)</b>  | <b>0.857</b> |
| No                        | 51 (88%)   | 7 (12%)  | <b>58 (100%)</b>  |              |
| Total                     | 97 (87%)   | 14 (13%) | <b>111 (100%)</b> |              |

Source: Author's own analysis, 2016)

Pearson's Chi-Squared Test, \*Indicates significant  $p$ -value at  $p < 0.05$ .

Table 4.28 shows that above three quarters (88%) of the obstetric emergence cases referred by EmONC trained nurses and midwives had their diagnoses corresponding with that which was made at the hospital, while 12% had different diagnoses made. On the other hand 88% of emergence obstetric cases referred by the untrained had their diagnosis also corresponding with that which was made at the hospital. The Chi-square test result was not statistically significance (P-value=0.962). Therefore, the researcher failed to reject the null hypothesis.

**TABLE 4.29 (FOUNDATIONAL KNOWLEDGE) REFERRED CASES BY EmONC TRAINED IN RELATION TO THE OUTCOME OF THE CASE**

| Referred by EmONC Trained | Surgery  |          | Total             | P-value      |
|---------------------------|----------|----------|-------------------|--------------|
|                           | Yes      | No       |                   |              |
| Yes                       | 27 (51%) | 26 (49%) | <b>53 (100%)</b>  | <b>0.644</b> |
| No                        | 27 (47%) | 31 (53%) | <b>58 (100%)</b>  |              |
| Total                     | 54 (49%) | 57 (51%) | <b>111 (100%)</b> |              |

Source: Author's own analysis, 2016)

Pearson's Chi-Squared Test, \*Indicates significant  $p$ -value at  $p < 0.05$ .

Table 4.29 shows that slightly above half (51%) of the 53 obstetric emergence cases referred by EmONC trained nurses and midwives ended up in surgery compared to 47% referred by the untrained. The Chi-square test result was not statistically significance (P-value=0.662). Therefore, the researcher failed to reject the null hypothesis.

### 4.30 RECORDS OF REFERRED CASE BY EmONC TRAINED IN RELATION TO OUTCOME

| Referred by EmONC Trained | Death  |           | Total             | P-value      |
|---------------------------|--------|-----------|-------------------|--------------|
|                           | Yes    | No        |                   |              |
| Yes                       | 3 (6%) | 50 (94%)  | <b>53 (100%)</b>  | <b>0.719</b> |
| No                        | 5 (9%) | 53 (91%)  | <b>58 (100%)</b>  |              |
| Total                     | 8 (7%) | 103 (93%) | <b>111 (100%)</b> |              |

Source: Author's own analysis, 2016)

Pearson's Chi-Squared Test, \*Indicates significant  $p$ -value at  $p < 0.05$ .

Table 4.30 shows that 6% of the referred case by EmONC trained nurses and midwives ended up in maternal deaths, while 9% of those referred by untrained also ended up in maternal deaths.

The Chi-Squared result was not statistically significance (P-value=0.719). Therefore, the researcher failed to reject the null hypothesis.

### 4.3. 12 SUMMARY

Section A of the questionnaire looked at the socio-demographic factors and the study findings revealed that most (39%) of the respondents were aged between 41 and 50 years and 39% of the respondents were enrolled nurses. About 33%) had worked for more than 8 years and less than (23%) had worked for less than 2 years in the labour ward. The mean age was 40 while standard deviation on age was .943.

Section B looked at timely referral and the findings revealed that there was no difference between the EmONC trained and the untrained in relation to timely referral of obstetric emergencies basing on the following factors; time taken to decide to refer (P-value=1.000), reasons for referring patient (P-value 0.706) and whether the nurse or midwife felt confident to refer (P-value=0.069). However, the following Environmental and organizational factors considered in section C of the questionnaire and checklist were significantly related to being referred by EmONC trained nurse or midwife or not; Patient referred going to the referral hospital with a referral letter (**P-value= 0.016**), availability of Ambulance at the referring facility (**P-value=0.002**) and documentation of pre-referral treatment on referral form (**P-value=0.019**).

Besides, the study revealed that there was no relationship between being trained in EmONC and the following foundational knowledge factors considered in section D of the questionnaire and hospital checklist; Basic EmONC functions confidently performed (P-value 0.260), what was done before referral (P-value 0.352), whether diagnosis from the referring facility corresponded with the hospital diagnosis (P-value=0.857) and the outcome of an obstetric emergency referred (P-value= 0.644, 0.719).

Furthermore, the study revealed that there was no difference in decision making process between the EmONC trained and untrained basing on the following parameters considered under section E of the questionnaire; how decision was reached at to refer patient (P-value 0.164), how cues were collected (P-value= 0.904), what other things were considered before referral (P-value= 0.832) and what is normally done when a hindrance to refer was experienced (P-value=0.087).

## CHAPTER FIVE

### 5.0 INTRODUCTION

Chapter five (5) provides a discussion on the study findings. The research questions that guided this study were “is there a difference in clinical decision making between nurses and midwives trained in Emergency Obstetric and Neonatal Care (EmONC) and the untrained on referral of obstetric emergencies and is there a relationship between being trained in EmONC and the outcome of an obstetric emergency”. The researcher was prompted to conduct this study because of an increase in the number of maternal deaths among the referred cases following the 2014 Mpika District maternal mortality review. It was discovered that out of the 12 maternal deaths experienced in 2014, 10 were from the referred cases from rural health centres most of which were managed by nurses and midwives (Mpika District HIMS, 2014).

The study discussion is based on analysis of data collected from a sample size of 18 nurses and midwives chosen by census in sixteen (16) purposively selected centres by use of a pre-tested self-administered questionnaire; and a review of 111 hospital referral records from Mpika District Hospital and Chilonga General Hospital by use of a checklist.

### 5.1 DEMOGRAPHIC CHARACTERISTICS OF STUDY SAMPLE

The Demographic characteristics of the respondents which were relevant to the study and essential for interpretation included; age, professional qualification, work experience and duration of working in the labour ward. The respondents were nurses and midwives between 18 years and 55 years and 39% were aged between 41 and 50 years. Thirty nine percent (39%) of respondents were enrolled midwives. This is because Enrolled nurses and midwives are frontline health workers found at the grass root level. About 33% of the nurses and midwives had worked for more than 8 years (**Table 4.1**). According to Radwin (2005), the best care comes from the combination of theoretical, tacit and experiential knowledge. Nurses and midwives who have faced different critical conditions and have worked for many years may gain the competence to handle any situation. In addition, it can be said that having more trained midwives with specific skills and competences and working for more years may have positive impact in decision making.

## 5.2 DISCUSSION OF STUDY VARIABLES

### 5.2.1 TIMELY REFERRAL OF OBSTETRIC EMERGENCIES

Section B of the questionnaire had closed ended questions that aided in determining whether nurses and midwives made timely referrals for obstetric emergencies. The results showed that more than three quarters (88%) of the respondents were able to make the decision to refer within 30 minutes to 1 hour (**Figure 4.4**). However, 47% of the respondents reported that it took about two to three hours before the referred case was taken to hospital (**Table 4.3**). The findings of this study are similar to Maine (1991) who stated that 20% of the delays in the management of pregnancy complications result from type II delay which is difficulties in transportation. The study results have shown that generally, nurses and midwives were able to make timely referrals and even those who made decisions to refer later than one hour related it to lack of available transport. Hence, the findings of this study contradicts with Etuk et al., (1999) who stated that in Africa, maternal deaths are associated with delayed referrals for women from lower level facility, where referral systems are not well equipped to handle emergency obstetric care (Etuk et al., 1999).

The findings further showed that slightly above half (56%) of the respondents' decision to refer were made after identifying the danger signs. This could be due to the fact that the nurses and midwives were trained to identify danger signs during general nursing training and others during EmONC training. Sixty one percent (61%) of the respondents referred patients because of the deteriorating patients' condition. This could be due to the fact that most patients sought medical advice when they are in critical condition. The study showed that only 5% reported referring patients as a result of having a lot of work to do (**Figure 4.2**). This clearly shows that the nurses and midwives are committed to serving women and neonates despite human resource challenges that result in work overload. The other findings were that of the 111 referred cases, there was no feedback on the outcome of the 95% referred cases. This could be attributed to staff shortage or lack of training on EmONC among nurses and midwives and the fact that the receiving facilities could not have attached any importance on the need to provide feedback. The other reason could be that most referring facilities do not make follow-ups on the referred cases. The findings of this study are similar to Kongnyuy et al. (2008) whose findings showed lack of feedback on 98% cases referred in his pre-audit findings.

Besides, documentation of pre referral treatment was done on 66% of the referred cases which could be either as a result of staff shortage or lack of training in EmONC. The other findings were that only (12%) of the referred cases were accompanied by a skilled attendant. As earlier alluded to, this could be attributed to shortage of staff at the health facilities and the fact that the ambulance was in most cases accompanied by a staff from the receiving referral hospital. This finding agrees with finding by Kongnyuy et al., (2008) where only 13.4% referrals were accompanied by a health personnel although the current study findings are less by 1.4%. On transportation, only 28 % of the referred cases came from facilities with ambulance (**Table 4.7**). These findings support earlier findings by Afari et al. (2014) who conducted a study in rural Ghana to identify gaps in referral process of obstetric emergencies where transportation was identified as a problem among other gaps. What can also be appreciated is the fact that the only facility with an ambulance was able to refer 31 out of 111 cases (28%). It can be postulated that if all the sixteen (16) health facilities had available transport, they were going to make more referrals.

### **5.2.2 ENVIRONMENTAL AND ORGANIZATIONAL CONTEXT OF DECISION MAKING**

Section C of the questionnaire had both closed and open-ended questions that aided in determining environmental and organizational contexts of decision making. The findings showed that most (61%) of the respondents' facilities operated 24 hours, while 39% of the respondents reported their facilities did not operate 24 hours (**Figure 4.5**). The above findings agree with the Ministry of Health categorisation of health facilities which is in line with the WHO (2012) explanation which states that 'if a facility cannot provide 24-hour medical care in addition to amenities such as toilets, clean water, and obstetric beds, women could less likely to seek out that facility when they are in labour. Nonetheless, even if such facilities operated 24 hours they were actually met to operate up to 16 hours but the workload and demand by the community make them operate 24 hours.

The findings also showed that 89% of the respondents referred patients for further management such as surgery compared to 5% who referred due to lack of knowledge on the condition and its management (**Figure 4.6**). This finding could be attributed to the EmONC training the respondents received.

However, the findings are different from Tshimanga et al. (1995) where 37% referrals made were for operations. There is need therefore to train the respondents who have no knowledge on management of emergency cases.

The findings further revealed that most (67%) of the respondents felt confident to refer obstetric emergency cases while 33% did not. This can be attributed to the EmONC training that some nurses and midwives underwent which gave them enough skills and confidence to handle different cases. Confidence for those not trained in EmONC could have originated from their work experience as most of them had worked for more than 4 years. The findings of this study are different from Kihlgren et al. (2014) where lack of medical knowledge and uncertainty on how to judge the acute illness or changes influenced Registered nurses' decision making. The findings also showed that majority (83%) of the respondents could not refer patients because of their ability to manage the cases. This can be attributed to the fact that the nursing curricular has enough courses that equip nurses and midwives to manage most of the cases. This is positive on the part of the nurses and midwives as it shows that most of the cases that did not need surgery were confidently managed by the nurses and midwives. Six percent (6%) reported fear of being shouted at by the doctors and nurses at the receiving facility as the main reason why they couldn't refer patients (**Figure 4.6**). This reason for being shouted at the Doctor or receiving midwife could be that some referring nurses fail to complete basic documentations on the patient and other could have not done the basic observations. These findings support WHO 2012, which stated that improvements in the facility infrastructure could encourage women to deliver at the facility; provision of a high standard of care at those facilities could improve outcomes, leading to further increases in their use. This simply means that if these facilities were able to provide advanced services like surgery, nurses and midwives were not going to refer patients.

The findings further shows that approximately, 67% of respondents' facilities were able to perform the three basic EmONC functions such as administering parenteral antibiotics, oxytocics and anticonvulsants at their facilities, 22% were able to perform all the basic functions and 11% were only able to administer parental antibiotics (**Figure 4.12**). These findings are slightly different from Levine et al., (2008) study which revealed that 65 % of the health centres providing delivery care were graded level one as they were able to provide one or two EmONC functions compared to 28% who could provide at least 3 functions and classified as level three.

The other difference with Levine (2008) findings were that in this study, at least 22% were able to perform all the basic functions compared to none in Levine's findings. This can be attributed to the EmONC training that some nurses and midwives underwent.

The findings further showed that 95% of the referred obstetric emergence cases went to the hospital with a filled in referral form while 5% did not (**Table 4. 7**). The respondents should be commended for this gesture. However, what was observed was that some of these referral forms were not the standard referral forms as others were hand written with scanty information. This can affect care given to the patient as proper information is very cardinal in referral of obstetric emergencies. The WHO (2006) states that inter-professional and/or inter-agency communications can contribute to maternal deaths and that there were many cases where the care provided to the women who died was hampered by a lack of cross-disciplinary working. WHO further states that in several cases, crucial clinical information, which may have affected outcome was not passed from general practitioner to the midwifery or obstetric services.

On whether referred obstetric emergence cases were accompanied, the study revealed that 88% of the referred cases were not accompanied by a skilled attendant. This calls for action because the usual practice is that all referred emergencies cases should be accompanied by a health care worker. The explanation given was that the ambulance is accompanied by a nurse from the referral hospital. However, this may compromise care given to the patient as the nurse on the ambulance may be totally new to the patient and may not know where to start from.

The current study showed that 66% of the referred cases' pre-referral treatments were not documented.

There is a standard pre referral treatment that should be administered before each patient is referred to the next level of treatment. Perhaps these nurses and midwives did not give the pre-referral treatment due to Ignorance, hence the need to train them in EmONC.

### **5.2.3 FOUNDATIONAL KNOWLEDGE ON EmONC**

Section D of the questionnaire had both closed and open-ended questions that aided in determining the foundational knowledge of nurses and midwives on EmONC. The results showed that less than half (44%) of respondents were trained in EmONC, while 56% were not (**Figure 4.10**). This could be attributed to the fact that some nurses and midwives who were EmONC trained are based at the hospital and others have retired.

The WHO (2011) states that training deficits exist in medical workforce and recommended that health centre workers need training in all basic EmONC functions. This is because without trained workers, none of the signal functions of routine or emergency care can be performed.

The study revealed that only half (50%) of the EmONC trained respondents were able to confidently handle all obstetric emergencies while 37% of the respondents could only handle haemorrhage and obstructed labour confidently. This could be as a result of lack refresher courses and supervision could also play role in this situation. When the trained nurses and midwives are not supervised, they are likely to forget the learned skill. The study also revealed that 50% of the respondents were able to confidently perform two Basic EmONC functions, 33 % were able to administer parental antibiotics, oxytocic and anticonvulsants, 11 % were able to administer parental antibiotics. Only (6%) of the respondents were able to confidently perform all the basic EmONC functions (**Figure 4.11**). This could also be attributed to lack of EmONC training or in adequate training. The findings of this study support earlier findings by Crofts et al., (2012) whose findings revealed that only 6% of their respondents were able to perform all EmONC functions. This therefore shows that even after undergoing the EmONC training, some nurses and midwives were not able to perform all the basic EmONC functions.

The results also showed that 76% of the referred patients had either prolonged labour or obstructed labour followed by (14%) of Antepartum Haemorrhage /Postpartum Haemorrhage (APH/ PPH) cases. Only 2% cases of Puerperal sepsis were referred (Figure 4.35). This shows that the most common obstetric complications in Mpika are prolonged and obstructed labour. This could be attributed to either use of African syntocinon to speed up labour and delivery or early marriages. Most young girls are married off early and get pregnant before their bodies are mature there by end up with obstructed labour. These findings agrees with the WHO (2007) findings which ranked obstructed labour and Haemorrhage as the leading direct causes of maternal deaths especially in the developing world.

Encouraging enough, the study further revealed that 87% of the diagnosis made on the referred cases by the nurses and midwives corresponded with those made at the hospital (**Figure 4:26**). This could be attributed to EmONC training that the nurses and midwives received and their basic foundation nursing and midwifery knowledge.

The findings of this study differ from Tshimanga et al. (1995) study where 49% of the referred cases were for doctors to establish the diagnosis and out the total referrals made by the nurses only 16% were admitted after being identified as genuine referrals.

Therefore it can be concluded that there is need for reducing the number of referrals made if a secondary or tertiary level of care institution is available and /or if clinic operations are reorganized to make Doctors more accessible to nurses and midwives which is not always a case especially in rural areas like Mpika District where in most cases, the only available health worker at the clinic is a nurse, midwife, Environmental Health Technician (EHT) or none at all.

With regards to the outcomes of referred obstetric cases, 49% of obstetric emergencies referred ended up in surgery, 40% ended up in normal delivery and 7% ended up in maternal death (**Figure 4.27**). These findings highlights the important fact that nurses and midwives were able to make correct diagnoses on majority of the referred cases and that if those referrals were not made, worse outcomes were expected since their facilities had no infrastructure and manpower to conduct operations. The study further revealed that Temperature, Pulse and Respirations (TPR) observations were done at all (100%) the facility upon admission of the patient and physical examinations was done and documented by 88% of the respondents. This is an indication that nurses and midwives had prior knowledge of the basic procedures to do on each and every case referred.

#### **5.2.4 CLINICAL DECISION MAKING PROCESS**

Section E of the questionnaire had both closed and open-ended questions that aided in determining the clinical decision making process of nurses and midwives. The study revealed that slightly above half (56%) of the respondents reported that they based their decision to refer on the severity of symptoms while 33% based their judgements on physical assessment of the patients (**Figure 4.20**). According to Higuchi (2002), nurses and midwives are expected to act in the particular situation and time with the best clinical and scientific knowledge available. Hence, severity of the patient's condition basing on the signs and symptoms can be the best clinical and scientific knowledge available to the nurse or midwife.

The study further revealed that 39% of the respondents collected cues through looking at the signs and symptoms, 28% collected cues by conducting physical assessment, while 22% collected cues by observation and the other 11% reported that they collect cues through conversation with the patient (**Figure 4.21**).

These findings relates well to Purkis (2006) who said the best clinical judgement, that is reasoning across time about the particular patient through changes in the patient's concerns and conditions and/ or the clinician's understanding are also required. He went on to say, the meanings of signs and symptoms are changed by sequencing and history and that the patient's mental status, colour, or pain level may continue to deteriorate or get better. As such, it can be seen from these findings that different means of cue collections were used by the respondents.

The study results showed that 44% of respondents said resources such as transport, logistics and others are considered before referral, 39% said they consider the severity of the condition before referral and about 17% considered the ability of the receiving facility of handle the case (**Figure 4.22**). These findings are similar to Sackett (2000) who revealed that nurses and midwives use their interactions with patients and intuition, drawing on tacit or experiential knowledge to apply the correct knowledge to make the correct decisions to address patient needs. He went on to say 'there is a conflated belief in the nurses' ability to know what is best for the patient because the nurses' and patients' identification of the patients' needs can vary. The findings of this study could mean that if resources such as transport and other logistics are not available, nurses and midwives may be hesitant to refer worse still, if severity of the patients' condition is not properly ascertained, wrong decisions can be made.

The study findings have further revealed that 61% respondents consulted others and got more information on how to manage the case, while, 22% communicated to the patient and significant others about the next step and about 17% reversed the decision to refer (**Figure 4.23**). The findings of this study supports Kihlgren et al. (2014) who identified co-worker competencies and open dialogue in the inner circle as crucial factors for nurses' confidence in decision making when it come s to referrals. The findings are also slightly different from Ghazi et al. (2012) who demonstrated that apprehension about being insulted by physicians, the necessity of protecting their professional integrity in front of patients and inability to persuade their patients lead to an over insistence by midwives on completing deliveries home and reluctance to refer patients to hospital.

### **5.3 RELATIONSHIP AMONG STUDY VARIABLES**

#### **5.3.1 Trained in EmONC and Time taken to refer**

The study results showed that all (100%) respondents trained in EmONC were able to decide to refer patients within 30 minutes to 1 hour and so were the untrained majority (80%) (**Table 4.11**). This showed that there was no significant scientific relationship between being trained in EmONC and deciding when to refer. The study has brought to light the fact that nurses and midwives were able to timely decide when to refer a patient with an obstetric emergency.

#### **5.3.2 Trained in EmONC and Reason for referring patient**

The study findings showed that majority (88%) of the respondents trained in EmONC and 90% of those not trained referred the patient to the next level for the same reason, thus for further management such as operation. Only 22% of the EmONC trained referred for establishment of diagnosis (**Table 4.12**).

The findings of this study are slightly different from Tshimanga et al (1995) where results showed that 49% of the referrals made by registered nurses were for the doctors to establish diagnosis and 37% were for treatment or operation. The results of this study have shown that majority of referrals made by nurses and midwives from rural areas are for the next level of care to take further management such as operations since their facilities could not allow to conduct such operations.

#### **5.3.3 Trained in EmONC and feeling confident to refer**

The study findings revealed that majority (88%) of respondents trained in EmONC felt confident to refer compared to 50% of the untrained (**Table 4.13**). This shows a slight relationship between being trained in EmONC and feeling confident to refer. The findings of this study agrees with Crofts et al. (2012) conclusions that practical, multi-professional, obstetric emergency training increased midwives' knowledge of obstetric emergency management.

#### **5.3.4 Trained in EmONC and Factors making someone not to refer**

The findings of the research showed that most (64%) of the respondents trained in EmONC did not refer patients with obstetric emergencies because they were able to manage the cases.

Other reasons given by the trained were; failure to identify signs early (12%), fear of being shouted at by the receiving nurses and doctors (12%) and refusal by patient or significant others 12% (**Table 4.14**). However, all (100%) the untrained also did not refer because of their ability to manage the cases. The findings of this study confirms Al Hajeri (2010) results that before a decision to refer is made, medical personnel often think of the following: is it necessary to refer the case or it can be managed at the centre? What is the best specialty to manage the case? Among other. Nonetheless, the findings are different from Ghazi et al. (2012) who rated apprehension about being insulted by physicians as a key factor leading to indecisiveness and delay to refer.

### **5.3.6 Trained in EmONC and measures taken before referral**

The study results revealed that about 61% of respondents trained in EmONC were able to give resuscitative drugs and insert a cannula before referral and 40% of the untrained were also able to give resuscitative drugs and insert a cannula. The study findings are slightly above Kongnyuy et al. (2008) initial audit results were 33.3% were able to give adequate resuscitation before referral. This shows that nurses and midwives both trained and untrained in EmONC knew what was supposed to be done before referring an obstetric emergency.

### **5.3.7 Trained in EmONC and how cues were collected**

The results showed that half (50%) of respondents trained in EmONC collected cues through looking at the signs and symptoms, while 25% collected cues through physical examination. On the other hand, 30% of the untrained also collected cues through looking at the signs and symptoms and the corresponding 30% based their decision on Physical examination. This shows that respondents used correct means of collecting cues which could have helped them make timely decisions. According to Purkis (2006), the meanings of signs and symptoms are changed by sequencing and history. The patient's mental status, colour, or pain level may continue to deteriorate or get better. As such when cues are collected through signs and symptoms and physical examination, it may help the nurse or midwife to take on new meanings and institute new treatment.

### **5.3.8 Trained in EmONC and what other aspects were considered before referral**

The study findings revealed that 38% of the EmONC trained respondents considered severity of the condition and the other 38% considered availability of resources such as transport and other logistics. On the other hand, 50% of the untrained respondents considered availability of transport and other logistics as key issues before referring.

This may explain the fact that transport is still one of the key issues considered by both the EmONC trained and untrained since most of the facilities are located many kilometres away from the receiving referral hospitals. The findings agree with Maine (1991) which showed that type II delay results from difficulty in transportation.

### **5.3.9 Trained in EmONC and what was done when a hindrance to refer was experienced**

The study results showed that more than three quarters (88%) of respondents trained in EmONC consulted others and got information on how to manage the case while 22% reversed the decision to refer. On the other hand, only 40% of the untrained consulted others. These findings can mean that despite being trained in EmONC, majority of the nurses and midwives were willing to consult others which may enhance good decision making. However, the untrained were more reluctant to consult as can be seen from the results and this may pose a danger to the patient because of their seemingly un willingness to consult as WHO (2006) findings postulated that lack of inter-professional and/or inter-agency communications can contribute to maternal deaths.

### **5.3.10 Referred case by EmONC trained and going to hospital with a referral letter**

The study results showed that all (100%) of the referred patients by EmONC trained nurses and midwives went to hospital with written referral letters compared to 90% referred by the untrained. This shows that there is a relationship between being referred by EmONC trained and going to hospital with a referral form documenting reasons for referral and other relevant information. Being given a referral letter is important in that it helps the receiving facility to institute measures early and effectively manage the case unlike when a patient is referred with insufficient information which may be verbal or otherwise.

### **5.3.11 Referred case by EmONC trained and accompanying of patient**

The study findings showed that 85% of the patients referred by EmONC trained were not accompanied to the hospital by the referring nurse or midwife and so were the 91% referred by the untrained. The reason advanced was that the ambulance was accompanied by a staff from the referral hospital. However, accompanying a patient by the referring nurse or midwife is cardinal for continuity of care and rapport as most of the patients may be apprehensive when handed over to a total stranger. Besides, in some cases, the nurse or midwife accompanying the ambulance may have limited knowledge on the case compared to the referring nurse or midwife. The findings of this study agree with Afari et al (2014) where accompanying critically ill patients was one of the gaps identified in the referral process.

### **5.3.12. Referred case by EmONC trained and documentation of date and time of referral**

The study results showed that less than half (43%) of the referred cases by EmONC trained and 57% of cases referred by the untrained had no documentation of time and date of referral. Documentation of time and date of referral is very important to avoid type II delays and for future references. Nonetheless documentation of not only time but also care has been found to be one of the common problems among health workers and the reasons advanced such as busy schedule may not hold water. Afari et al. (2014) also identified documentation as one of the gaps in the referral process.

### **5.3.13 Referred case by EmONC trained and documentation of pre-referral treatment**

The study results showed that 45% of referred cases by EmONC trained nurses and midwives had pre-referral interventions documented and only 24% of those referred by the untrained had documentation of pre-referral treatment. This identifies another important gap as shown by Afari et al. (2014) where patients in critical conditions are referred without documenting what was done at the centre before referral. Lack of documentation can lead to poor decision making by the receiving facility and may affect proper management of an obstetric emergency.

### **5.3.14 Referred case by EmONC trained and availability of transport at the facility**

The study results showed that 42% of cases referred by EmONC trained came from a facility with an Ambulance, while 58% came from facilities with no available transport.

On the other hand, 84% of cases referred by the untrained came from facilities with no available transport and only 16% came from a facility with an ambulance.

The results have shown a strong relationship between being referred from a facility with an ambulance and being referred by an EmONC trained nurse or midwife. From these results, it can be postulated that with availability of transport, the EmONC trained was able to make more referrals compared to the untrained as there was only one centre with available transport. Hence, it can be concluded that availability of transport is one of the key issues in the referral process as highlighted by Maine (1991) who stated that type two delay in the management of pregnancy complications results from difficulty in transportation at 20%.

### **5.3.15 Referred case by EmONC trained and diagnosis from RHC corresponding with hospital diagnosis**

The study findings showed that 88% of cases referred by EmONC trained nurses and midwives had their diagnoses corresponding with that which was made at the hospital and so were the 88% cases referred by the untrained. The findings of this study have shown that nurses and midwives whether trained in EmONC or not were able to make right diagnosis on most of the referred cases. Making a proper diagnosis is cardinal in the management of obstetric emergencies as it reduces on unnecessary expenditures.

The findings are different from Tshimanga et al. (1995) study where 49% of the nurses referred patients in order for the doctor to establish the diagnosis.

### **5.3.16 Referred cases by EmONC trained and outcome of cases**

The study results showed that 51% of cases referred by EmONC trained nurses and midwives ended up with surgery compared to 47% referred by the untrained and 6% referred by the EmONC trained ended up in maternal deaths compared to 9% referred by the untrained. The findings have not shown a strong relationship between being trained in EmONC and the outcome of an obstetric emergency and therefore, agree with De Brouwere and Van Lerberghe (2001) who revealed that it is unclear whether or by how much use of skilled attendants may reduce maternal mortality. The study findings have however brought to light that most of referrals made by both the EmONC trained and untrained were genuine referral cases basing on the outcome of such cases.

Basing on the above study findings, it can be said that the two research questions have been answered which were; Is there a difference in clinical decision making between EmONC trained nurses and midwives and non EmONC trained on referral of obstetric emergencies? And is there a relationship between being trained in EmONC and the outcome of an obstetric emergency?

The study results have shown that most of the EmONC trained and untrained nurses and midwives were able to make timely obstetric emergency referrals and that there was not much difference in their foundation knowledge and decision making process apart from the differences observed on the number of cases referred on the only facility with availability of transport and on giving of pre-referral treatment. On the other hand, it has also been established from the study findings that there was no relationship between being trained in EmONC and the outcome of the obstetric emergency as can be seen from the results.

#### **5.4 APPLICATION OF RESEARCH THEORY TO THE STUDY FINDINGS**

The situated clinical decision- making framework by Gillespie and Paterson, (2009) supported this study. The Situated Clinical Decision Making framework incorporates (i) context (ii) foundational knowledge (iii) Decision making processes and (iv) thinking process. The context part of the framework is aimed at establishing as to whether there is evidence that decision making is being influenced by moral or ethical issues, nurse's personal level of capacity for communication, nurse's confidence, nursing care priorities, availability of appropriate resources, lines of communication with the unit and physical layout of the unit. Foundation knowledge looks at establishing as to whether; the nurse's decision making is within the scope of nursing practice, decision making reflect expected competencies, skills and abilities of nurses in the practice, nurses are aware of their strengths, limitations, skills and learning needs relating to the situation and consideration of patients' preferences, support and resources. On the other hand, clinical decision making processes looks at establishing whether cues and their associated significance are recognized and whether cues are collected from multiple sources e.g. observations, conversations, physical assessment, documentation and intuition. .

The three components of the theory i.e. context, foundational knowledge and decision making process were applicable and very helpful in answering the two research questions which were determining as to whether there was a difference in decision making and referral of obstetric emergencies between the EmONC trained and untrained nurses and midwives.

Using this framework, the study was able to establish the fact that there was no difference in decision making between the EmONC trained and untrained in relation to time taken to refer, feeling confident to refer, basic EmONC functions confidently performed, what was done before referral, corresponding of hospital and clinic diagnosis and the outcome of the referred cases. However, using the same parameters of the theory on context, it was established that availability of transport at the referring facility had some impact on the number of cases referred by the EmONC trained and untrained nurses and midwives. It was also established that patients referred by the EmONC trained were going to the referral hospital with letters which indicates personal level capacity for communication and documentation of pre-referral treatment showing good line of communication with the unit and confidence of the referring nurse or midwife.

## **5.5 IMPLICATIONS TO NURSING**

### **5.5.1 Nursing Practice**

The study findings has shown that nurses and midwives were able to refer patients on time despite the fact that in some cases, referred patients were taken to the hospital by an ambulance one (1) to two (2) hours after the decision to refer is made. However, some nurses were not able to refer patients within the recommended time. This calls for regular supervision of and retraining of nurses and midwives in EmONC so that they able to make timely decisions.

There were some gaps identified on documentation of pre-referral treatment, completing of referral letters and sending patients with proper referral letters by some nurses. Documentation is very important in nursing and midwifery practice as any done without documenting may be considered as not done. This therefore calls for consented efforts by nurse managers to ensure that in- house workshops on importance of documentation are conducted and proper supervision is done where nurses and midwives are reminded on the need to document.

The other gaps identified were that majority of the referred cases were not accompanied by the referring nurses and midwives and hence if such an act was accompanied by poor documentation, it may affect the outcome of the referred case. Hence, nurses and midwives should be encouraged to accompany referred cases so that they can go and give proper handovers and the receiving facility and continue with the care during referral.

On the other hand, the referral facilities should be encouraged to give feedback on the referred cases to give confidence to the referring nurse or midwife and also for future references.

The study findings revealed that there were no record of supervisory visit by District Medical office at most (75%) of the facilities. Supervisory visits are important as mentorship and coaching is done by the supervisors in most cases

### **5.5.2 Nursing Administration.**

If nurse managers and administrators can find time to give scheduled visits to nurses and midwives working in rural areas, it can help them to understand better the problems nurses and midwives do experience and find best ways of overcoming them. The study has also shown that availability of transport has an influence on the number of referrals made, as such, nursing administrators should make efforts in ensuring that facilities have minimal means of transport in case of emergencies. Efforts should be made to arrange with local transporters or coming up with Zonal facilities which should be provided with an ambulance for easy communication and transportation of emergency cases. In addition to that nursing administrators should ensure that important logistics such as standard referral letters are provided at each facility so that every patient referred is well documented and referral forms are completed. Allowing nurses and midwives to use improvised referral letters can compromise effective communication and hinder prompt management of the patient.

### **5.5.3 Nursing Education**

The study findings showed average results on most of foundational knowledge questions on issues such as EmONC functions confidently performed were (50%) were able to perform two functions, and 50% respondents were able to administer resuscitative drugs. As such there is need for nurse educators to strengthen the curriculum on EmONC and ensure that students are taught the necessary skills as they are about to leave school to enhance retention of information. On the positive aspect, 83% respondents informed referral hospitals about the referrals and 100% informed relatives of the patients which is quite encouraging as nurses and midwives' good foundation knowledge can go a long way in enhancing good decision making and timely referral. However, despite these positive results, the fact that EmONC training equips health workers with key competencies and skills in Emergence obstetric care cannot be over emphasized.

As such there is need to strengthen training of nurses and midwives in this aspect by strengthening the contents in the curriculum and doing fresher courses for those identified with learning and practical gaps.

#### **5.5.4 Nursing Research**

The study has isolated poor documentation of pre-referral interventions as only 34% of the referred cases had proper documentation and only 34% referral forms were completely filled in and that feedback was not given on 95% of cases referred.

These may be topics of further nursing research to establish reasons for poor documentation not only on referred cases but also in all issues of nursing practice. There is also need for further nursing research on a wider scale to establish the Impact of EmONC training as far as referral of obstetric emergencies and their outcomes are concerned.

#### **5.6 CONCLUSION**

The study attempted to answer the following research questions; Is there a difference in clinical decision making and referral of obstetric emergencies between EmONC trained nurses and midwives and non EmONC trained nurses and midwives in Mpika District, and is there a relationship between being trained in EmONC and the outcome of an obstetric emergency? A descriptive cross sectional study was used whose study unit comprised of nurses and midwives between 18 and 55 years working in 16 selected rural health centers.

The results showed that nurses and midwives were able to make the right and prompt decisions as far as referral of obstetric emergencies are concerned and that most of them have adequate knowledge and skills on the management of such cases. However, there are still some nurses and midwives who are still unable to make timely and prompt decisions to refer obstetric emergencies. The study also revealed that there was no difference in the outcome of obstetric emergency referred by the EmONC trained and the untrained nurses and midwives.

The significant findings of the study were that being referred by an EmONC trained nurse or midwife was significantly related to patient going to hospital with referral letter (**P-value= 0.016**). Documentation of pre-referral treatment was also related to being referred by an EmONC trained (**P-value =0.019**). The other significant results related to availability of transport at the referring facility (**P- value=0.002**).

Since availability of transport has been isolated as one of the key issues influencing referral, there is urgent need to look at the best way of ensuring that there is availability of transport and establishment of Zonal facilities who can help in both referral and management of obstetric emergencies. There is need therefore for continued EmONC training for nurses and midwives and provision of logistics in order to enhance clinical decision making of obstetric emergencies by nurses and midwives.

## **5.7 RECOMMENDATIONS**

Basing on the research findings, the researcher would therefore recommend the following to relevant authorities and institutions:

### **5.7.1 Nurses and Midwives**

1. Nurses and midwives working in collaboration with nursing administrators should ensure that there is an improvement in documentation of nursing care and use of proper referral records.
2. Nurses and midwives should also endeavor to accompany referred patients to enhance proper communication and handover
3. Nurses and midwives are also encouraged to make follow ups on the referred cases and ensure that feedback is received from the referral hospitals for proper documentation and future references.
4. Further research should be conducted on the same topic using a much larger sample to enable generalization of findings.

### **5.7.2 Health Centres**

1. Availability of logistics is important for effective management of obstetric emergencies, as such health centres in charges should be encouraged to make necessary arrangement with relevant offices and departments to be supplied with all the needed logistics for Basic EmONC.
2. There should be deliberate policy to document time when communication is made to the hospital and time taken for the patients to be taken so as to assist in isolating the sources of delay in the management of obstetric emergencies.

### **5.7.3 District Medical Office**

1. There is need to make timely supportive supervisory visits to the health centres and offer mentorship in all aspects of patient management especially referrals.
2. There is need to identify knowledge gaps in nurses and midwives working in rural health centre and take them for refresher courses especially for important courses in EmONC.

### **5.8 Study Limitations**

The study was intended to involve all nurses working in the 16 rural health centres of Mpika district, however, during data collection, it was discovered that 2 nurses had gone to school and one had retired so the sample size was reduced.

The study had a small target population as there were few nurses and midwives available in the rural facilities despite everyone found during data collection being involved in the study.

The study is also limited by use of non-probability sampling method to select the sample.

The study used multiple data sources to collect data and statistical procedures have been employed.

### **5.9 Strength of the study**

The study was conducted within the set time frame and all the study questions were answered.

There was total cooperation from both the participants and respective offices where permission was sought.

The study used multiple data sources to collect data and statistical procedures were employed.

### **5.10 Dissemination and Utilization of Findings**

The results of the study will be presented at the postgraduate seminar week in June. The results will also be presented to management at Muchinga Provincial Medical Office, Mpika District Medical Office and Chilonga general hospital. The results will be published in any recognized journal such as the *Zambian Medical Journal*. In addition, bound copies of the study will be submitted to the Department of Nursing Sciences, UNZA -Medical Library, Main Library and ERES Converge IRB. The researcher will also present this report during clinical meetings at any given forum to inform the midwives and other health care providers in Mpika District.

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## **APPENDICES**

### **APPENDIX I: INFORMATION SHEET**

#### **TITLE OF STUDY:- CLINICAL DECISION MAKING AND REFERRAL OF OBSTETRIC EMERGENCIES: A CASE OF EmONC TRAINED AND UNTRAINED NURSES AND MIDWIVES IN MPIKA DISTRICT, ZAMBIA**

My name is Bwalya Pearson, a student of Masters in Nursing Sciences and Midwifery at The University of Zambia. I am kindly requesting for your participation in the research study mentioned above. This study can assist in finding solutions to enhancing nurses and midwives' clinical decision making and help in preventing maternal deaths.

The participation in this study is voluntary. There is no monetary gain in participating in this study. If you are not interested in participating in the study you are free to withdraw without any consequences. Even after you have joined the study, you are free to withdraw as you wish and that will not affect your work or your relationship with me.

If you are willing to participate in the study, you will be asked to sign consent and agreement.

Please ask where you are not clear for clarification.

#### **PURPOSE OF THE STUDY**

To identify gaps in the clinical decision making and referral of obstetric emergencies among nurses and midwives trained in EmONC and the untrained in Mpika District.

#### **RISKS AND DISCOMFORTS**

There are no risks involved in participating in this study. There is no bodily harm or discomfort in participating in this study.

#### **BENEFITS**

There is no direct benefit to you by participating in this study but the information which will be obtained will help the policy makers to device some mechanisms and policy on improving nurses and midwives clinical decision making and proper management of obstetric emergencies hence preventing maternal deaths.

#### **CONFIDENTIALITY**

Your research records and any information you will give will be confidential to the extent permitted by law. You will be identified by a number. Your personal information will not be released without your written permission except when required by law.

**If you choose to participate in this study please sign the informed consent below**

## **APPENDIX II: VOLUNTARY CONSENT FORM**

### **DECLARATION**

I have read (or have been explained to) and understood the nature of the research in which I have been requested to participate as explained in the information sheet. I have had the opportunity to ask questions about the research and have been answered to my satisfaction.

I therefore agree to participate.

Participant's signature: ..... Consent date: .....

Researcher conducting voluntary consent (Print): .....

Signature of researcher: ..... Date: .....

### **PERSONS TO CONTACT FOR PROBLEMS OR QUESTIONS**

1. Mr. Pearson Bwalya, University of Zambia. Department of Nursing Sciences. P.O. Box 50110, Lusaka. Cell: 0978787108.
2. Dr. L. Mwape, University of Zambia, Department of Nursing sciences. P.O. Box 50110, Lusaka. Cell: 0979 093 045.
3. The Chairperson, ERES COVERAGE, IRE, 33 Joseph Mwila road, Rhodes Park. 0955155633/4.

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**APPENDIX III: QUESTIONNAIRE**

**TOPIC: CLINICAL DECISION MAKING AND REFERRAL OF OBSTETRIC EMERGENCIES: ACCASE OF EmONC TRAINED AND UNTRAINED NURSES AND MIDWIVES IN MPIKA DISTRICT**

Questionnaire number \_\_\_\_\_

Hospital/ Clinic: \_\_\_\_\_

Date: \_\_\_\_\_

**INSTRUCTIONS TO THE RESPONDENT**

1. Do not write your name on the questionnaire
2. tick (✓) against the most appropriate answer (s) in the box provided
3. For responses without alternatives, write the responses in the spaces provided
4. Answer all questions
5. Information given will be considered confidential

**SECTION A: DEMOGRAPHIC DATA**

FOR  
OFFICIAL  
USE ONLY

1. How old are you?

- 1) 20 – 30 years
- 2) 31 – 40 years
- 3) 41 -50 years
- 4) 51 and above

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2. What is your professional qualification

- 1) Enrolled Nurse
- 2) Enrolled Midwife
- 3) Registered Nurse
- 4) Registered Midwife

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3. How long have you been working as a nurse or midwife

- 1) Less than 2 years
- 2) 2 years to 4 years
- 3) 5 years to 7 years
- 4) More than 8 years

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4. How long have you been working in MCH/ labour ward

- 1) Less than 2 years
- 2) 2 years to 4 years
- 3) 5 years to 7 years
- 4) More than 8 years

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**SECTION B: TIMELY REFERRAL OF OBSTETRIC EMERGENCIES**

5. Have you ever referred a patient with an Obstetric emergency?

- 1) Yes
- 2) No

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6. If yes, which of the following case have you ever referred?

- 1) Haemorrhage
- 2) Puerperal sepsis
- 3) Obstructed labour
- 4) Eclampsia
- 5) Septic abortion

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7. What made you refer the patient with the above condition?

- 1) Patients condition was deteriorating
- 2) Had no logistics or resources to use
- 3) Had limited knowledge about the condition
- 4) Had a lot of work

Others (specify) \_\_\_\_\_

8. Approximately how many patients with obstetric emergencies did you refer in 2014?

- 1) 0-1
- 2) 2-3
- 3) 4-5
- 4) More than 6

9. When you have a patient with an obstetric complication when do you decide to refer her to a referral hospital?

- 1) Immediately the patient is admitted
- 2) After identifying the danger signs
- 3) After the condition of the patient begins to deteriorate
- 4) When patient/ relatives request to be referred

Others (specify) -----

10. Approximately, how long does it take you to decide to refer a patient with an obstetric emergency?

- 1) 30 minutes to 1 hour
- 2) 1 hour to 2 hours
- 3) 2 hours to 3 hours
- 4) 3 hours to 4 hours

**SECTION C: ENVIRONMENTAL AND ORGANIZATIONAL CONTEXT OF DECISION MAKING**

11. Does your facility Operate 24 hours?
- 1) Yes
- 2) No
12. Why do you refer patients with an obstetric emergency
- 1) Lack of knowledge of the condition and its management
- 2) Lack of co-worker to consult
- 3) For diagnosis
- 4) For further management e.g. operation
13. Do you feel confident to handle any obstetric emergency
- 1) yes
- 2) No
14. What are some of the factors which make you sometimes decide not refer the patient with an obstetric emergency?
- 1) Ability to manage the case
- 2) Failure to identify danger signs early
- 3) Fear of being shouted at by the doctors and nurses at the receiving facility
- 4) Refusal by patient or significant others
15. What do you think can be done to improve referral of obstetric emergencies?
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**SECTION D: FOUNDATION KNOWLEDGE ON EmONC**

16. Have you ever heard of EmONC

1) Yes

2) No



17. Are you trained in EmONC

1) Yes

2) No



18. If yes to question 17 above, tick on any of five obstetric emergencies that you know and can handle without difficulties

1) Haemorrhage

2) Puerperal sepsis

3) Obstructed labour

4) Eclampsia

5) Septic abortion



19. Which of the 6 functions for basic EmONC is performed at your centre?

1) Administer parenteral antibiotic

2) Administer parenteral Oxytocic

3) Administer parenteral Anticonvulsants

4) Perform manual removal of the placenta

5) Perform removal of retained products

6) Perform assisted vagina delivery



20. Of the six functions in question 19 above, which ones can you confidently perform?

1) Administer parenteral antibiotic

2) administer parenteral Oxytocic

3) Administer parenteral Anticonvulsants

4) Perform manual removal of the placenta

5) Perform removal of the retained products

6) Perform assisted delivery

21. For most of the patients with obstetric emergencies referred what did you do before referring them?

- 1) Give resuscitative drugs
- 2) Insert a cannula and catheter
- 3) Inform relatives
- 4) Offer psychological care to patient and significant others
- 5) nothing

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22. Do you always inform the receiving facility when referring patients with an obstetric emergency?

- 1) Yes
- 2) No

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23. If yes, approximately how long does it take for the patient to be taken to the referral hospital after informing them?

- 1) 30 minutes to 1 hour
- 2) 1 hour to 2 hours
- 3) 2 hours to 3 hours
- 4) 3 hours to 4 hours
- 5) More than 4 hours

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24. Before referring the patient with an obstetric emergency, do you always inform the relatives or significant others about the referral?

- 1) Yes
- 2) No

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25. When referring the patient, do you complete all the necessary documentation?

- 1) Yes
- 2) No
- 3) Sometimes

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26. If the answer is No or sometimes to question 24, why Specify -----

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27. Do you accompany patients referred with an obstetric emergency

|              |                          |                          |
|--------------|--------------------------|--------------------------|
| 1) Yes       | <input type="checkbox"/> | <input type="checkbox"/> |
| 2) No        | <input type="checkbox"/> |                          |
| 3) Sometimes | <input type="checkbox"/> |                          |

28. If the answer is NO or sometimes why (specify) -----  
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29. After the patient has been referred, do you get feedback from the receiving facility?

|              |                          |                          |
|--------------|--------------------------|--------------------------|
| 1) Yes       | <input type="checkbox"/> | <input type="checkbox"/> |
| 2) No        | <input type="checkbox"/> |                          |
| 3) Sometimes | <input type="checkbox"/> |                          |

30. What do you think can be done to improve the referral process  
Specify -----  
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**SECTION E: CLINICAL DECISION MAKING PROCESS**

31. How do you come up with the decision to refer the patient with an obstetric Emergency?

|   |                          |                          |
|---|--------------------------|--------------------------|
| (a) Basing on the severity signs and symptoms | <input type="checkbox"/> | <input type="checkbox"/> |
| (b) Basing on history taking from the patient | <input type="checkbox"/> |                          |
| (c) Basing physical assessment of the patient | <input type="checkbox"/> |                          |
| (d) Basing on the available documentations    | <input type="checkbox"/> |                          |

32. How do you collect cues on the patient with an obstetric emergency for you to decide when to refer her?

|   |                          |                          |
|---|--------------------------|--------------------------|
| (a) Looking at the signs and symptoms     | <input type="checkbox"/> | <input type="checkbox"/> |
| (b) Through observations at the clinic    | <input type="checkbox"/> |                          |
| (c) Through conversation with the patient | <input type="checkbox"/> |                          |
| (d) By physical assessment                | <input type="checkbox"/> |                          |
| (e) By intuition                          | <input type="checkbox"/> |                          |

33. Before referring a woman with an obstetric emergency what other things do you consider?

- (a) Severity of the condition
- (b) Concerns from the patient and significant others
- (c) Ability of the receiving facility to handle the case
- (d) Resources such as transport, logistics and others
- (e) Input from other members of staff through consultation

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34. If you experience any hindrances in the process of referring the woman With an obstetric emergency, what do you normally do?

- (a) Consult others and get more information on how to manage the case
- (b) Reversing the decision to refer
- (c) Helplessly watch the condition as it deteriorate
- (d) Communicate to the patient and significant others about the next step

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35. What do you think can be done to enhance good decision making concerning referral of women with obstetric emergencies?

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**END OF INTERVIEW THANK YOU FOR YOUR CO-OPERATION**

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**DECISION MAKING AND REFERRAL OF OBSTETRIC EMERGENCIES: A CASE OF EmONC TRAINED AND UNTRAINED NURSES AND MIDWIVES IN MPIKA DISTRICT**

**Checklist No:**

**Referring unit code:**

**Referring nurse/midwife code:**

| No  | Checklist item   | Response<br>(encircle appropriate response) |    | Comment |
|-----|--|---|----|---------|
|     | <b>PART A: ENVIRONMENTAL AND ORGANIZATIONAL CONTEXT</b>  |   |    |         |
| 1.  | Referred patient came with referral letter filled by the referring facility                            | Yes   | No |         |
| 2.  | Documentation indicating whether referred patient was accompanied by the a skilled attendant available | yes   | No |         |
| 3   | Referred case well documented in the admission/ trans –in book   | Yes   | No |         |
| 4.  | Time and date of referral well documented on referral form   | Yes   | No |         |
| 6.  | Pre-referral interventions well documented on referral form  | Yes   | No |         |
| 7.  | Referral form completely filled in   | Yes   | No |         |
| 8   | Ambulance available at all times   | Yes   | No |         |
| 9   | Feedback to the referring centre given   | Yes   | No |         |
| 10  | Record of communication between health centre staff and district hospital available                    | Yes   | No |         |
| 8   | <b>PART B: FOUNDATION KNOWLEDGE</b>  | ✓ <b>TICK</b>                               |    |         |
|     | Documentation on the referred case show:   | Yes   | No |         |
| (a) | Prolonged labour/obstructed labour   |   |    |         |
| (b) | Antepartum Haemorrhage/ PPH  |   |    |         |
| (c) | Puerperal sepsis   |   |    |         |
| (d) | Pre-eclampsia/ Eclampsia   |   |    |         |
| (e) | Complications of abortion  |   |    |         |
| (f) | Retained placenta  |   |    |         |
| 9   | Diagnosis from the rural health centre corresponds with hospital diagnosis                             |   |    |         |
| 10  | <b>Outcome of the case</b>   |   |    |         |
| (a) | Surgery  |   |    |         |
| (b) | Normal delivery  |   |    |         |
| (c) | Discharge  |   |    |         |
| (d) | Death  |   |    |         |

**Sign:**-----

**Date:** -----

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**CLINICAL DECISION MAKING AND REFERRAL OF OBSTETRIC EMERGENCIES: A CASE OF EmONC TRAINED AND UNTRAINED NURSES AND MIDWIVES IN MPIKA DISTRICT**

**Checklist No:**

**RHC code:**

**Nurse/midwife code:**

|     | Checklist item  | Response                          |    | Comment |
|-----|---|-----------------------------------|----|---------|
|     | <b>PART A: Timely referral of obstetric emergencies</b>   | Encircle the appropriate response |    |         |
| 1.  | Danger signs identified in time through observations and physical examinations  | Yes                               | No |         |
| 2.  | District informed within 30 minutes of identifying the danger signs (check record if any)   | Yes                               | No |         |
| 3.  | Pre-referral treatment/ resuscitation done within 30 minutes  | Yes                               | No |         |
| 4.  | Record of details of the referred case well documented in the admission book or referral book   | Yes                               | No |         |
| 5.  | A delay of less than 2 hours from the time an ambulance was called to the time the ambulance took the patient (depending on distance to the health centre). | Yes                               | No |         |
|     |   |                                   |    |         |
|     | <b>PART B: Environmental and organizational context</b>   |                                   |    |         |
| 1.  | Labour ward- using partographs  | Yes                               | No |         |
| 2.  | Infection measures available  | Yes                               | No |         |
| 3.  | Parenteral magnesium sulphate available   | Yes                               | No |         |
| 4.  | Parenteral antibiotics available  | Yes                               | No |         |
| 5.  | Parenteral oxytocics available  | Yes                               | No |         |
| 6.  | Manual removal of the placenta logistics available  | Yes                               | No |         |
| 7.  | Removal of retained products of conception logistics available  | Yes                               | No |         |
| 8.  | Reliable communication e.g. phone, radio message  | Yes                               | No |         |
|     | Record of supervisory visit by DCMO on EmONC available  |                                   |    |         |
|     | <b>PART C: Foundational knowledge</b>   |                                   |    |         |
| 9.  | Time of admission and date well documented in the admission book  | Yes                               | No |         |
| 10. | TPR observations done on admission  | Yes                               | No |         |
| 11. | Physical examination done and findings well documented on referred case   | Yes                               | No |         |
| 12. | Diagnosis made and well documented on charts and in admission book  | Yes                               | No |         |
| 13. | Record keeping, registers, cards, labour charts and handover reports available  | Yes                               | No |         |

DATE: \_\_\_\_\_

SIGNATURE \_\_\_\_\_



**THE UNIVERSITY OF ZAMBIA  
SCHOOL OF MEDICINE  
DEPARTMENT OF NURSING SCIENCES**

Telephone: 252641  
Telegrams: UNZA, LUSAKA  
Telex: UNZALU ZA44370  
Fax: + 260-1-250753  
E-mail: [pbn@coppernet.zm](mailto:pbn@coppernet.zm)

P. O. Box 50110  
Lusaka  
Zambia

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14<sup>th</sup> October, 2015

The District Community Mother and Child Medical Officer,  
Mpika DCMO,  
Mpika.

UFS: The Head  
Department of Nursing Sciences  
P.O Box 50110  
**LUSAKA**

Dear Sir / Madam,

**RE: PERMISSION TO COLLECT RESEARCH DATA ON; CLINICAL DECISION MAKING AND REFERRAL OF OBSTETRIC EMERGENCIES; A OF EmONC TRAINED AND UNTRAINED NURSES AND MIDWIVES IN MPIKA DISTRICT**

I am a Master of Science in nursing and midwifery student at the University of Zambia, Department of Nursing sciences. In partial fulfillment for the award of this Degree, I am required to carry out a research project.

The purpose of this research is to identify gaps in the clinical decision making and referral of obstetric emergencies among nurses and midwives trained in EmONC and the untrained. It is hoped that the findings of this study will be utilized by policy makers to design strategies to enhance decision making processes regarding obstetric emergencies by nurses and midwives in Mpika district. This will help to reduce maternal deaths.

I am therefore requesting for permission to conduct my study in the District at 16 Rural Health Centres within the district. I intend to interview nurses and midwives working in the 16 selected centres and review referral forms and records at Mpika District hospital for obstetric emergencies referred from the 16 centres in 2014. I hope to conduct my data collection between 9<sup>th</sup> November and 8<sup>th</sup> January, 2016. Attached is the Ethical approval letter, checklists and questionnaire

Your favourable consideration of this request will be highly appreciated  
Yours faithfully,

Bwalya Pearson



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P. O. Box 50110  
Lusaka  
Zambia

---

14<sup>th</sup> October, 2015.

The Provincial Medical Officer,  
Muchinga Provincial Medical Office,  
Chinsali.

UFS: The Head  
Department of Nursing Sciences  
P.O Box 50110  
**LUSAKA**

Dear Sir / Madam,

**RE: PERMISSION TO COLLECT RESEARCH DATA ON; CLINICAL DECISION MAKING AND REFERRAL OF OBSTETRIC EMERGENCIES; A CASE OF EmONC TRAINED AND UNTRAINED NURSES AND MIDWIVES IN MPIKA DISTRICT**

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The purpose of this research is to identify gaps in the clinical decision making and referral of obstetric emergencies among nurses and midwives trained in EmONC and the untrained. It is hoped that the findings of this study will be utilized by policy makers to design strategies to enhance decision making processes regarding obstetric emergencies by nurses and midwives in Mpika district. This will help to reduce maternal deaths.

I am therefore requesting for permission to conduct my study in Mpika district at 16 Rural Health Centres within the district. I intend to interview nurses and midwives working in the 16 selected centres and review referral forms and records of obstetric emergencies complications referred from the 16 centres in 2014 at Mpika District hospital and Chilonga General Hospital respectively. I hope to conduct my data collection between 9<sup>th</sup> November, 2015 and 8<sup>th</sup> January, 2016. Attached is the Ethical approval letter, checklists and questionnaire

Your favourable consideration of this request will be highly appreciated

Yours faithfully,

Bwalya Pearson.



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Lusaka  
Zambia

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14<sup>th</sup> October, 2015.

The Medical Superintendent  
Chilonga General Hospital,  
Mpika.

UFS: The Head  
Department of Nursing Sciences  
P.O Box 50110  
**LUSAKA**

Dear Sir / Madam,

**RE: PERMISSION TO COLLECT RESEARCH DATA ON; CLINICAL DECISION MAKING AND REFERRAL OF OBSTETRIC EMERGENCIES; A CASE OF EmONC TRAINED AND UNTRAINED NURSES AND MIDWIVES IN MPIKA DISTRICT**

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The purpose of this research is to identify gaps in the clinical decision making and referral of obstetric emergencies among nurses and midwives trained in EmONC and the untrained. It is hoped that the findings of this study will be utilized by policy makers to design strategies to enhance decision making processes regarding obstetric emergencies by nurses and midwives in Mpika district. This will help to reduce maternal deaths.

I am therefore requesting for permission to review referral forms and records at Chilonga General Hospital for obstetric emergencies referred from the selected 16 centres in 2014. I hope to conduct my data collection between 9<sup>th</sup> November and 8<sup>th</sup> January, 2015.

Your favourable consideration of this request will be highly appreciated. Attached is the ethical approval letter and checklist

Yours faithfully,

Bwalya Pearson