DETERMINANTS OF ADHERENCE TO MINISTRY OF HEALTH'S NATIONAL GUIDELINES ON MANAGEMENT OF SEVERE PRE-ECLAMPSIA AMONG NURSES WORKING AT KENYATTA NATIONAL HOSPITAL, KENYA

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DECLARATION AND APPROVAL

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This thesis is my original work and has not been presented for a degree in any other University or for any other award.

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DEDICATION

I dedicate this thesis to my beloved family, whose boundless love, understanding, and encouragement have been the driving force behind my academic endeavors.

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Working on this project has been an immensely rewarding experience, contributing to both my academic and personal growth. I would like to express my sincere gratitude to the individuals whose support and efforts have been invaluable throughout this journey.

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ABSTRACT

This study examined the determinants of adherence to national guidelines in the management of severe preeclampsia at Kenyatta National Hospital. A cross-sectional study design was employed, with a total sample of 147 participants selected through systematic random sampling. Key informant interviews were conducted with five nursing officers in charge. Data collection tools included questionnaires for midwives and an interview guide for nursing officers. Quantitative data were analyzed using descriptive statistics such as means, frequencies, and percentages, as well as inferential statistics, including the Chi-square test. Qualitative data underwent thematic analysis and were presented narratively. The findings indicated that socio-demographic factors, particularly age, had a significant association with adherence to the management guidelines. Training, knowledge of guideline use, perceived necessity and ease of use, as well as confidence in applying the guidelines, were also significantly associated with adherence. Institutional factors, including workload and access to guideline copies, demonstrated a significant influence on adherence. However, no significant association was found between adherence and medicine stockouts or equipment availability. The study recommends the implementation of targeted training programs for younger and less experienced nurses, emphasizing the practical application of severe preeclampsia management guidelines, alongside mandatory refresher courses. Regular assessments of nurses' knowledge on these guidelines should be conducted to provide individualized feedback. Additionally, mentorship programs and peer support groups should be established to facilitate experience-sharing and address misconceptions regarding guideline adherence. To address staff shortages, workload redistribution strategies should be explored. Furthermore, a robust system for monitoring and managing medication stocks should be developed to ensure consistent availability of essential drugs, such as magnesium sulfate and antihypertensives.

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LIST OF ABBREVIATIONS AND ACRONYMS

ABCs	**:**	Airway, Breathing, Circulation
ANC	**:**	Antenatal Care
ASHP	**:**	American Society of Health-System Pharmacists
DHS	**:**	Demographic and Health Survey
HDP	**:**	Hypertensive Disorders of Pregnancy
HELLP	**:**	Hemolytic Elevated Liver Enzymes and Low Platelet Count
HIV	**:**	Human Immunodeficiency Virus
ICU	**:**	Intensive Care Unit
IM	**:**	Intramuscula
KI	:	key Informant
KNH	**:**	Kenyatta National Hospital
MDG	**:**	Millennium Development Goals
MMR	**:**	Maternal Mortality Rate
MoH	**:**	Ministry of Health
NACOSTI	**:**	National Commission for Science, Technology and Innovation
PE/E	**:**	Pre-eclampsia and Eclampsia
PE	**:**	Pre-eclampsia
SDGs	**:**	Sustainable Developmental Goals
SPSS	**:**	Statistical Package for Social Science
USA	**:**	United States of America
WHO	**:**	World Health Organization
WUC	**:**	Women's Urgent Care

CHAPTER ONE

INTRODUCTION

1.1 Background of the Study

Globally the prevalence rate of preeclampsia stands at 4.6% while the prevalence rate of eclampsia stands at 0.3% (Machano & Joho, 2020). Preeclampsia, characterized by hypertension and proteinuria, may affect a previously normotensive woman after 20 weeks of pregnancy. Severe preeclampsia is diagnosed when a patient displays certain specific symptoms. These symptoms include consistently high blood pressure readings (160/110 mmHg), hepatic or renal failure, a platelet count below 100,000/mm3, the presence of syndrome, cerebral or visual disturbances, persistent severe epigastric pain, and pulmonary edema. These indicators help healthcare providers identify cases of severe preeclampsia, which require immediate attention and intervention (Melese *et al*., 2019). In contrast, eclampsia is a critical obstetric emergency that occurs when a woman who has previously experienced preeclampsia develops new-onset grand mal seizures during pregnancy or shortly after giving birth. This condition poses significant risks to both the mother and the baby and necessitates urgent medical attention.

Preeclampsia is the presence of either proteinuria (excessive protein in the urine) or end-organ dysfunction occurring after 20 weeks of pregnancy in a woman who before had normal blood pressure levels (American College of Obstetricians and Gynecologists [ACOG], 2020). This definition serves as a guideline for healthcare professionals in diagnosing and managing cases of preeclampsia. These diagnostic criteria and definitions are essential in identifying and categorizing the severity of hypertensive disorders during pregnancy. By recognizing the specific symptoms associated with severe preeclampsia and eclampsia, healthcare providers can take appropriate measures to protect the health and well-being of both the pregnant woman and her baby. Regular prenatal check-ups, blood pressure monitoring, and prompt medical

interventions are crucial in managing these conditions and reducing the potential complications they may pose. Further, the severe spectrum of hypertension is considered as severe hypertension and end-organ damage (Reddy & Jim, 2019).

Severe cases of preeclampsia and eclampsia are linked to between 50,000 and 100,000 maternal fatalities and significant fetal and neonatal morbidity and mortality per year worldwide (Ngwenya, 2019). When preeclampsia and eclampsia get too severe, the mother and fetus risk organ failure, loss of consciousness, and death. Research conducted in the United States of America (USA) shows that high blood pressure during pregnancy significantly contributes to mother and fetal death (Garovic *et al*., 2022).

The impact of severe preeclampsia and eclampsia on maternal and perinatal outcomes highlights the importance of prioritizing comprehensive healthcare services and interventions to address these conditions and improve overall maternal health. By focusing on the well-being of pregnant women, their newborns, and the postpartum period, healthcare systems can work towards reducing the incidence and consequences of severe preeclampsia and eclampsia, ultimately contributing to better maternal and perinatal health outcomes worldwide (WHO, 2019).

The World Health Organization (WHO) reports that the prevalence of preeclampsia is 2.8 times greater in underdeveloped countries than in industrialized ones. This is especially true in Sub-Saharan Africa. Both in industrialized (0.5-1.8% risk) and poor nations (+15% risk) countries, eclampsia is linked to higher risk of maternal mortality. Similarly, Masai (2020) reported that the preeclampsia prevalence in Ethiopia is about 5%, whereas in Nigeria it varies from 2% to 16.7%. Preeclampsia and eclampsia are among the top five primary causes of maternal and infant death in Sub-Saharan African nations. The study was conducted by Meazaw *et al*. (2020). In 2015, Sub-Saharan Africa accounted for approximately 66% of global maternal deaths, as revealed by the findings. The World Health Organization (WHO) has identified

hypertensive disorders of pregnancy (HDP) as the prominent cause of maternal mortality in several African contexts. This highlights the significant impact of HDP on maternal health outcomes in the region and emphasizes the urgent need for targeted interventions and improved healthcare services to address this critical issue. By prioritizing the prevention, detection, and effective management of HDP, healthcare systems can make substantial strides in reducing maternal fatalities and promoting better maternal health in African countries. One-sixteenth of all maternal deaths in Sub-Saharan Africa may be attributed to HDP, which are multisystem illness (Gemechu *et al*., 2020).

There has been a problem with maternal mortality in Kenya for at least the last two decades. UNFPA Kenya (2023) reports a rate of 355 deaths per 100,000 live births, translating to about 5,000 women dying annually from pregnancy and childbirth complications. World Bank (2023) indicates a modeled estimate of 414 deaths per 100,000 live births. Pregnant women might die from both immediate and secondary complications during labor and delivery. Several direct causes include maternal hemorrhage, sepsis, preeclampsia, eclampsia, obstructed labor, and abortion. According to Oikonomou *et al*. (2020) there is a high maternal death and morbidity rate due to severe preeclampsia. Furthermore, preeclampsia and eclampsia may lead to renal and hepatic failure, microvascular damage, brain and hematologic derangements, and even death if not well handled (Oikonomou *et al*., 2020).

According to research published in 2020 by Ndwiga *et al*. HDP is the third highest cause of maternal mortality in Kenya. Pre-eclampsia is thought to affect between 5.6% and 6.5% of pregnant women in Kenya, with more excellent rates in rural regions (Ndwiga *et al*., 2020). According to Ndwiga *et al*. (2020), there is a growing focus on early identification and therapy of HDPs, such as pre-eclampsia, since they are a primary cause of maternal and neonatal death and morbidity. Still, the distinctions between women who develop PE before and after 34 weeks of gestation are little understood in low and middle-income countries. Although several

risk factors have been linked to pre-eclampsia/eclampsia, these links are not well-established in the Kenyan community (Logan *et al*., 2020).

In order to ensure that all healthcare providers are using the same standards while treating patients with pre-eclampsia and eclampsia, the Kenyan Ministry of Health (MoH) modified guidelines from WHO for treating these disorders. Not only in Kenya, but many countries adapted the guidelines with the aim of reducing morbidity and mortality from this condition. However, their target is not achieved due to lack of adherence to the guidelines by healthcare professionals (Confidence, Wanyenze & Groves, 2022).

In a research conducted by Confidence *et al*. (2022) in Kenya, it was observed that healthcare workers did not consistently adhere to the recommended guidelines for managing severe pre-eclampsia and eclampsia. The study highlighted instances where the care provided deviated from the established standards outlined in the guidelines. There was sub-optimal adherence to the guidelines of preeclampsia management. In Kenya, results of a retrospective study on the use of the guideline for severe pre-eclampsia management reported that overall adherence to the guideline by nurses was poor at 31.8% although this study was done in Pumwani maternity hospital which is found in Nairobi city of Kenya (Muchiri *et al*., 2021).

1.2 Statement of the Problem

Every three minutes, a pregnant woman dies globally due to preeclampsia and eclampsia. According to estimates, 14% of all maternal deaths can be attributed to this syndrome (OMS, 2020). The hypertensive diseases of pregnancy known as eclampsia and severe pre-eclampsia are among the topmost five causes of direct maternal mortality (Muchiri *et al*., 2021).

Confidence *et al*. (2022) conducted a study in Uganda, which noted that many healthcare providers were not following the MoH (Ministry of Health) standards for the management of severe pre-eclampsia and eclampsia. The study found that some healthcare providers did not

regularly measure blood pressure, there was inconsistent use of urine dipsticks, incomplete documentation was observed, and many lacked confidence in using magnesium sulfate to manage severe pre-eclampsia and eclampsia. The reasons behind these practices were not known.

Kenya Demographic Health Survey done in 2014 found that the maternal mortality rate in Kenya was 362. This was a decrease from the 2008 rate of 520.1 per 100,000 live births, but it was still above the national health policy goal of 150. In Kenyatta National Hospital, 251 cases of eclampsia and 1036 cases of severe preeclampsia have been reported in the year 2021, among these cases, 54 (21.5%) deaths related to eclampsia and 62 (6%) deaths related to severe preeclampsia have been reported as per the maternity ward/maternity Intensive Care Unit (ICU) admission registers 2021 as shown on the table 1. Although Kenya has national standards for the treatment of preeclampsia and eclampsia, their adherence had not been evaluated (Muchiri *et al*, 2021).

Table 1: Outcomes of HDPs

Condition	**Preeclampsia**	**Eclampsia**
Cases	1036	251
Death reported	62	54
Percentage of death reported	6%	21.5%

Source: KNH Maternity ward/maternity ICU admission registers (2021)

With the above outcomes, the researcher was interested in exploring the determinants of adherence to Ministry of Health national guidelines sin the management of severe preeclampsia and eclampsia in the maternity unit which will aid in the management of the patients with this condition.

1.3 Broad objective

To assess the determinants of adherence to Ministry of Health national guidelines in the management of severe preeclampsia among the Nurses working at Kenyatta National Hospital.

1.3.1 Specific Objectives

1. To determine socio-demographic characteristics influencing adherence to the Ministry of Health guidelines in the management of severe preeclampsia among the Nurses working at KNH.
2. To determine the level of knowledge on adherence to the Ministry of Health guidelines in the management of severe preeclampsia among nurses working at KNH.
3. To assess the perception on adherence to the Ministry of Health guidelines in the management of severe preeclampsia among nurses working at KNH.
4. To establish institutional related factors influencing adherence to the Ministry of Health guidelines in the management of severe preeclampsia among nurses working at KNH.

1.4 Research Questions

1. What are the socio-demographic characteristics influencing the adherence to the Ministry of Health guidelines in the management of severe preeclampsia among the Nurses working at KNH?
2. What is the influence of the level of knowledge on adherence to the Ministry of Health guidelines in the management of severe preeclampsia among nurses working at KNH?
3. What is the influence of perception on adherence to the Ministry of Health guidelines in the management of severe preeclampsia among nurses working at KNH?
4. What are the institutional-related factors influencing adherence to the Ministry of Health guidelines in the management of severe preeclampsia among nurses working at KNH?

1.5 Justification of the Study

Severe preeclampsia is a serious and potentially life-threatening pregnancy complication for both the mother and the unborn child (Chang, Seow, & Chen, 2023). In Kenya, the burden of preeclampsia and eclampsia is significant but remains underexplored in the literature. Maternal morbidity from preeclampsia and eclampsia has been found to be substantial, with an unpublished hospital study at a national referral facility in Kenya reporting that 4.5% of patients required admission to the critical care unit due to complications arising from these conditions. Adherence to established national guidelines for managing severe preeclampsia is crucial for ensuring optimal patient outcomes. However, factors influencing non-adherence among healthcare providers remain insufficiently studied. Understanding the determinants of non-adherence can help identify areas for improvement in healthcare delivery, ultimately leading to better maternal and neonatal care.

Furthermore, this study aims to bridge existing knowledge gaps regarding adherence to severe preeclampsia management guidelines in Kenya. While national guidelines exist, little empirical data has been published on the extent of their implementation at Kenyatta National Hospital (KNH). This study will provide valuable insights into the factors influencing non-adherence and contribute to the existing body of knowledge in maternal healthcare.

From a policy perspective, the study aligns with Kenya's national priorities in maternal health. It will provide evidence-based recommendations that can inform decision-making at both KNH and the Ministry of Health (MoH). The findings can be utilized to strengthen maternal healthcare policies, particularly those outlined in the Kenya Health Sector Strategic and Investment Plan (KHSSIP) and the Kenya Reproductive, Maternal, Newborn, Child, and Adolescent Health (RMNCAH) Policy. Addressing guideline adherence gaps aligns with the country's goal of reducing maternal mortality and improving the quality of obstetric care.

At the global level, this study contributes to international maternal health priorities, particularly Sustainable Development Goal (SDG) 3, which seeks to reduce the global maternal mortality ratio to less than 70 per 100,000 live births by 2030. Ensuring adherence to best practices in preeclampsia management is crucial for achieving this target. Additionally, the study supports Kenya's commitment to Vision 2030, which emphasizes improved healthcare service delivery as a key pillar for national development.

Beyond improving patient outcomes, adherence to national guidelines enhances healthcare system efficiency by optimizing the use of resources. Non-adherence can lead to unnecessary interventions, increased healthcare costs, and medical errors. By identifying and addressing factors contributing to non-adherence, this study will inform targeted interventions such as capacity-building programs, training initiatives, and policy adjustments that enhance patient safety and resource utilization.

1.6 Significance of the Study

Through this study, the hospital may aim to reduce the death related to preeclampsia and eclampsia since the determinants leading to increased mortality rates will have been known. This may aid the hospital in the formulation of policies in the department to curb the facility-related determinants leading to MMR related to preeclampsia and eclampsia. At the same time, the hospital may record fewer MMR related to preeclampsia and eclampsia and thereby attempting to achieve the sustainable developmental goals (SDGs). Additionally, the study examined the determinants of adherence to the Ministry of Health guidelines in the management of severe preeclampsia in the maternity unit in view of addressing them. This may form a baseline in dealing with women who present in the department with either preeclampsia or eclampsia and in due course, death related to the same may be averted. The burden of costs related to either prolonged admission due to Severe preeclampsia and eclampsia for the patients

may be reduced since there maybe policies governing the management of the same which may aid in early detection and treatment to avert the admissions or lessen the length of time of admission in the wards. This may also help in decongesting the wards with mothers who are admitted with preeclampsia or eclampsia giving room to admission of other cases since there will be prompt treatment of the same.

The conclusion of this research can add onto the already existing body of literature on the issue while also providing a platform for more research to be undertaken within the discipline on various aspects of the subject. The findings of the study help to give recommendations to MOH in policy making on pregnancy induced hypertension either in the implementation, refining or formulation of new policies.

1.7 Study Limitations

The study may have been affected by self-reporting which is quite subject to many sociocultural and contextual dynamics. This limitation was overcome by the use of trained research assistants who helped in explaining the content of the questionnaires to the clients.

The study was carried out in the maternity unit, KNH and as such, it is known that only nurses working in maternity unit in the hospital participated in the study. The results, therefore, cannot be generalized to all nurses working in maternity unit in other hospital, rather to the study area. Thus, there is a need that studies to be conducted in other hospitals on the same topic.

Another potential limitation of the study could have been non-participation by certain respondents due to factors such as limited information or skepticism. It is possible for individuals to provide inaccurate or deceitful information. In order to mitigate this issue, the researcher elucidated the rationale for conducting the study as being only of an academic nature, employing a straightforward language in order to establish confidence and obtain consent from the majority of participants.

1.8 Delimitation of the Study

The proposed study was conducted in a facility-based context. However, it is recommended that future research endeavors repeat this study in community settings to enhance the generalizability of the findings. This study was delimited in regard to study participants and location of study being midwives working at the Kenyatta National Hospital only.

1.9 Assumptions

Data was obtained through self-reporting by nurses. It was assumed that the respondents were rational in their responses.

1.10 Operational Definition of Key Terms

Pre-eclampsia: a high blood pressure occurring after 20 weeks of pregnancy which can affect many body organs of a pregnant woman like liver, kidney and brain and if left untreated can affect the unborn baby.

Eclampsia: is one of the most severe consequences of preeclampsia. Extremely rarely, high blood pressure may cause seizures during pregnancy; this is a hazardous condition. Episodic gazing lowered alertness, and convulsions are all symptoms of seizures, which are moments of abnormal brain activity (violent shaking).

Midwife: Any healthcare giver trained in midwifery who gives care to mothers and newborns around childbirth.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This section entails the; empirical literature, theoretical framework, conceptual framework, and summary of the literature. The empirical review of the literature is done as per the study objectives; socio-demographic characteristics in the adherence to the MoH guidelines in severe preeclampsia management, influence of nurses knowledge on adherence to the Ministry of Health guidelines in severe preeclampsia management, perception towards the use of Ministry of Health guidelines in the management of severe preeclampsia, and institutional related factors associated with staff adherence to Ministry of Health guidelines in the management of severe preeclampsia.

2.2 Empirical Literature

2.2.1 Socio-Demographic Characteristics Influencing adherence to the Ministry of Health Guidelines on preeclampsia management

In Rwanda, Fred Muhairwe (2020) in his study among nurses on knowledge and practices of preeclampsia and eclampsia management showed that the study participants fell into the middle-aged category, with an average age of 35 ± 7.7 years. More than 75% of the participants were below the age of 40, indicating that they have an anticipated additional 20 years of work ahead of them as nurses, contributing their services in the field. In Nigeria, similar age characteristics were reported where nurses working in maternity had an average age of 35.45±7.622 (Olaoye *et al*., 2019).

A study conducted among nurse professionals in Nigeria revealed that a significant number of nurses experience feelings of dissatisfaction and discontentment within their marriages because

their profession is demanding and more so difficult due to shifting duties, many hours of duty and poor payment-making them less motivated to work (Olaniyan *et al*., 2023).

According to a study done in Nigeria by Olaide *et al*. (2018) level of education is an important factor to be considered by when employing health workers like nurses as well as clinicians and counsellors.

According to Fred Muhairwe (2020) research in Rwanda found that, despite the appearance of middle age, more than three-quarters of the population had served as nurses for more than two years. It is generally accepted that a nurse with two to three years of experience is qualified to practice up to the boundaries of their education and that nurses with ten years of experience are specialists in their field (Olaoye *et al*., 2019).

2.2.2 Influence of Knowledge on adherence to the Ministry of Health Guidelines in Severe Preeclampsia Management

Educational preparation contributes to a significant role in determining the level of awareness that midwives have on the treatment of preeclampsia. When compared to enrolled midwives, it was discovered that registered midwives had a greater likelihood of being familiar with the Ministry of Health criteria for the care of PE (Angelina *et al*., 2020). The same study revealed that poorer adherence to the Ministry of Health requirements was connected with differences in the knowledge and abilities held by midwives who had received different types of training. It was suggested that the policymakers and trainers of the midwives consider the efficacy of the certificate nurse training as compared with that of the registered midwives (Angelina *et al*., 2020).

A study by Angelina *et al*., (2020) revealed that the majority of the midwives had worked in the maternity unit for less than five years meaning that good working experience is not retained in the unit. It was shown that most of the nurses in Nigeria knew that $MgSo_4$ was the drug of choice in combating and treating PE/E. A number of studies have demonstrated that midwives

lack knowledge on monitoring of fetal heart rate when diastolic blood pressure is >110 mmHg in a pregnant woman. A study by Confidence *et al*. (2022) showed that 86.1% of midwives were monitoring the fetal heart rate. But a study by Garovic *et al*. (2022) found that only 2.7% were monitoring fetal heart rate when the diastolic blood pressure is >110 mmHg. The study mentioned that this could be probably either nurse lacked knowledge about the recommendations by the guidelines on monitoring of fetal heart rate when diastolic blood pressure is >110 mmHg.

Most of nurses lack this knowledge. This is evidenced in two studies done by Confidence *et al*. (2022) where 70.8% of nurses were not following the criteria of urine deep stick as recommended and Garovic *et al*. (2022) found that 81.8% of nurses were not following the recommendations. Yet, in the same research, nurses' awareness of when to order a complete blood count, and kidney, and liver function tests was up to 98% in accordance with the guidelines' recommendations. These 81.8% were better than those found by Muchiri and colleagues at Pumwani Hospital (Muchiri *et al*., 2021).

Garovic *et al*. (2022) noted that certain healthcare professionals are lacking in their knowledge of PE/E management, namely the appropriate dosage and administration of MgSO4. Respondents also expressed a lack of faith in MgSO4 or a perceived fear of its toxicity, which limits its use, particularly among physicians working in dispensaries and health facilities. The findings of their investigation coincided with those of another study done in Kenya that found gaps in the availability of parenteral anticonvulsant medication (Ndwiga & Warren, 2018). In addition, it was discovered that midwives are familiar about an advised medicine that controls convulsions with a high percentage after receiving training on the subject, which indicates that they stick to the Ministry of Health's requirements (El Rheem & Mousa, 2018). This finding was consistent with the findings of other studies, which demonstrated that this was the case. This was because new people were brought on board who were aware of the recent adjustments

that were made in the treatment of preeclampsia, which resulted in reduced adherence to protocol (Olaoye *et al*., 2019). The hurdles that prevent people from using MgSO4, as viewed by the experts, reveal that a lack of understanding in the calculation of its dosage inhibits people's ability to adhere to the MoH standards (Arnet *et al*., 2018).

Olaoye *et al*. (2019) discovered that a significant proportion of the participants demonstrated a good understanding of the guidelines. This was controversial to other studies which showed that only some participants were knowledgeable of the WHO management practices on PE/E. The difference was associated with unavailability of information and education among the midwives. It was noted that WHO recommends the use of Methyldopa, Nifedipine, and Hydralazine nevertheless, few of the midwives were aware of the correct standard drugs. With the lack of knowledge on the WHO guidelines in dealing with PE/E, there would be less adherence on their management.

2.2.3 Influence of Perception on adherence to the Ministry of Health Guidelines in Severe Preeclampsia Management

Attitude refers to the way one feels about something, or a particular feeling or opinion. In the management of severe preeclampsia, the healthcare worker's use of national guidelines largely determines the quality of the care given. According to Garovic *et al*. (2022), having a positive attitude towards national guidelines for the management of preeclampsia has been associated with the appropriate utilization of these guidelines, which in turn contributes to the implementation of effective medical practices. As a result, patients with severe preeclampsia experience improved maternal outcomes.

According to the health belief model, an individual's perception of personal vulnerability to a health hazard is a necessary prerequisite to taking any steps toward mitigating that threat or adopting a healthier lifestyle. Attitude and practices of midwives towards national guidelines have a great influence on the health outcomes of the clients they serve (Potter & Perry, 2018). Health workers may perceive guidelines as a tool to enhance their clinical practice, while others

may view them as an added burden or as restrictive to their clinical judgment. It is essential to understand nurses' perceptions towards the use of Ministry of Health guidelines in severe preeclampsia management to promote their acceptance and adherence. Personal factors can as well influence the attitude of someone towards something. For instance, the level of education and experience that one has can influence him/her to use national guidelines in the management of certain conditions.

Theodorou *et al*. (2018) conducted a study on physicians' adherence to the European guidelines for hypertension management and their perceptions regarding the same. The study revealed that around 60% of patients received appropriate advice for adopting lifestyle changes. The study also found a high degree of inappropriate use of antihypertensive drugs.

In a study conducted by Seyoum *et al*. (2021), the researchers examined the perceived benefits and limitations of healthcare providers regarding the complete adherence to antenatal care guidelines in Ethiopia's public health facilities. The qualitative study was conducted using a semi-structured interview guide. The study revealed that reducing the workload of healthcare providers, promoting safe motherhood, and improving the service delivery process were perceived benefits of adhering to the ANC (Antenatal Care) guideline. However, healthcare providers' attitudes were identified as a hindrance to their complete adherence to the guideline.

In 2019, a study was conducted by Lim, Ahn, and Son to examine the correlation between hospital nurses' perceptions of patient safety management and their adherence to standard precautions. The researchers aimed to evaluate how nurses' perceptions of patient safety management influenced their adherence to established guidelines for infection control and prevention. The study revealed that, even after accounting for various influencing factors, participants' perceptions of patient safety management were found to have a significant impact on their adherence to standard precautions. The findings suggest that nurses who perceive a strong commitment to patient safety within their healthcare organization are more likely to

adhere to the recommended standard precautions. This implies that a positive perception of patient safety management contributes to a higher level of compliance with infection control protocols among nurses. By emphasizing the importance of patient safety and fostering a supportive environment, healthcare institutions can potentially enhance nurses' adherence to standard precautions, leading to improved infection prevention practices and ultimately better patient outcomes.

In Uganda, a study conducted at St. Francis Hospital showed that when healthcare workers properly used the national guidelines there was no medical malpractices and this transited to improved maternal outcomes among patients with severe preeclampsia (Garovic *et al*., 2022). According to Muchiri *et al*. (2021) national guideline on the management of preeclampsia is key in preventing poor maternal outcomes. In their study, they further reported that the attainment of care is reliant on nurses' practice and proper use of national guidelines on the management of preeclampsia. Similarly, in Ghana Browne *et al*, (2019) reported that good practice of the guideline on management of preeclampsia helps nurses to correctly manage women with severe preeclampsia using evidence-based care, thus enabling them detect the problem early and ultimately contributing to better maternal outcomes. In the study, participants were well versed in taking history and examining (67.8%) and the poorly done activity was investigations (13.9%).

2.2.4 Institutional-related Factors as Determinants for Adherence to MoH Guidelines

According to Carceres, Torres & Lopez (2021) staff workload is one of the most important factors influencing the quality of the healthcare service provided. With more workload inadequate and poor clinical guideline implementation can be common. This can be so because the health worker will not have adequate time to adhere to guideline protocol when serving the patient as he/she is required to serve more waiting patients. A study done in Ghana by Browne *et al*. (2019) concurs with the above statement, by reporting that more health workers at the

workplace allow more time for their patients and thus making them able to adhere to the guideline in place. Adoyi *et al*. (2019) conducted a research in Nigeria and found that health professionals there cited a lack of time as the biggest barrier to following guidelines. Healthcare providers reportedly did not have enough time to induce labor in accordance with standards for the delivery of patients with severe preeclampsia.

Drug shortages are significant problems that affect both public health and the provision of medical care. According to the American Society of Health-System Pharmacists (ASHP), patient care is impacted when prescribers are forced to switch to an alternate agent due to a medication shortage. Reasons for drug shortages include consolidation among pharmaceutical companies, consolidation of pharmaceutical facilities, difficulties in maintaining high manufacturing quality, and poor profit margins for generic medications (Patel *et al*., 2020). Shortages have been linked to treatment delays, lack of therapy when indicated, medication errors, and even patient deaths. This is because shortages have the potential to impair patient care in the adherence to the MoH standards in a variety of ways. In a survey of hospitals conducted in 2010, 89% of the responding hospitals mentioned that they had experienced medicine shortages, which may have resulted in a medication safety issue or a mistake in patient care (Patel *et al*., 2020).

Although the World Health Organization (WHO) suggests using MgSO4 in the treatment of preeclampsia and eclampsia, the midwives either did not have any of the prescribed medicine or had an insufficient amount of it to treat eclampsia patients. The treatment of preeclampsia and eclampsia was complicated by recurrent drug shortages and a lack of key antihypertensive medications. The inadequate uptake or usage of magnesium sulfate (MgSO4) in sub-Saharan Africa has been linked to a number of different issues. These factors include an inadequate supply, which leads to health facilities not having any MgSO4 available for patients. Because

MgSO4 was not readily available, it was difficult to adhere to the Ministry of Health's instructions for the management of PE/E. (Fafa *et al*., 2018).

According to a study by Eddy *et al*. (2022), one of the barriers to the use of MgSO4 (magnesium sulfate) for medical purposes is the limited availability of this medication in certain healthcare facilities. Furthermore, even in facilities where MgSO4 is available, there is often a low level of stock, which poses additional challenges to its utilization. The study also highlights that the inconsistent availability of MgSO4 is not limited to individual healthcare facilities but extends to many low- and middle-income countries at various levels, including country, regional, and district levels. This suggests that the issue of facility-level stock-outs may reflect a broader systemic problem of unavailability of MgSO4 within the healthcare system. These findings indicate a need for interventions and strategies to address the lack of availability and stock-outs of MgSO4, particularly in low-resource settings, in order to ensure its effective use for medical purposes (Eddy *et al*., 2022).

2.3 Theoretical Literature

2.3.1 Theoretical Framework: Jean Watson Transpersonal Caring Theory

Experiencing Preeclampsia can be overwhelming. Patients experiencing preeclampsia experience physical, emotional, and psychosocial changes. They become so vulnerable to these changes that they may end up depressed. The patients necessitate assistance in acclimating to these alterations and novel obligations. Midwives possess a unique advantage in offering their specialized expertise to patients, thereby facilitating the process of transitioning towards adaptation and acceptance.

The facilitation of this transitional process can be expertly guided by Jean Watson's renowned theory of transpersonal caring, a paradigm that places utmost importance on the provision of family and patient-centered care. The theory focuses on health promotion and treatment of

diseases and is thus concerned with health promotion, illness prevention, caring for the sick, and restoration of health. Its major concepts are nursing, health, environment, and human being which all interact to promote the health of an individual. The three elements are transpersonal caring relationship, curative factors, and caring occasion /moment.

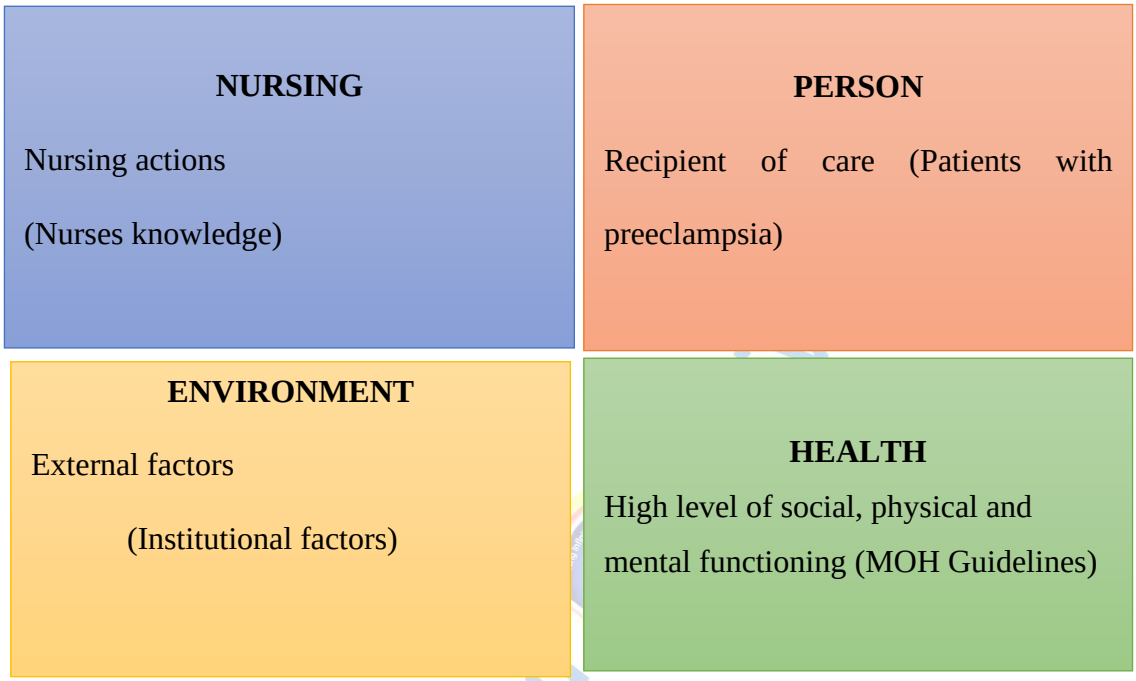

Figure 1: Theoretical Framework for Transpersonal Caring Theory

Watson also had ten curative factors which are all essential to the caring human nature and experience that nurses are supposed to apply with their patients when caring for their needs (Watson, 2012). The cultivation of humanistic and altruistic value systems, the instillation of faith and hope, the cultivation of self-awareness and interpersonal trust, the promotion of emotional expression, the reliance on problem-solving to guide decision-making, the encouragement of teaching and learning, the creation of an accepting environment, and the release of existential and phenomenological forces are all examples. It's the philosophical basis for the science of caring that has three elements, followed by the other seven (Watson, 2012). This theory can be used in caring to improve interpersonal relationships between the patient

and the nurse and emphasis on humanistic aspects of nursing which combine scientific knowledge and nursing practice.

This theory applies in this study given the three elements above in knowledge application, attitude, and practice of caring for the patients. The elements and concepts of Watson's theory will be applicable in the objectives understudy and literature reviewed above.

2.4 Conceptual Framework

The conceptual framework presents a diagrammatic presentation of the relationship between the study variables. Social-demographic characteristics, knowledge factors, perception and institutional related factors are the independent variables while adherence to MoH guidelines on management of severe preeclampsia is the dependent.

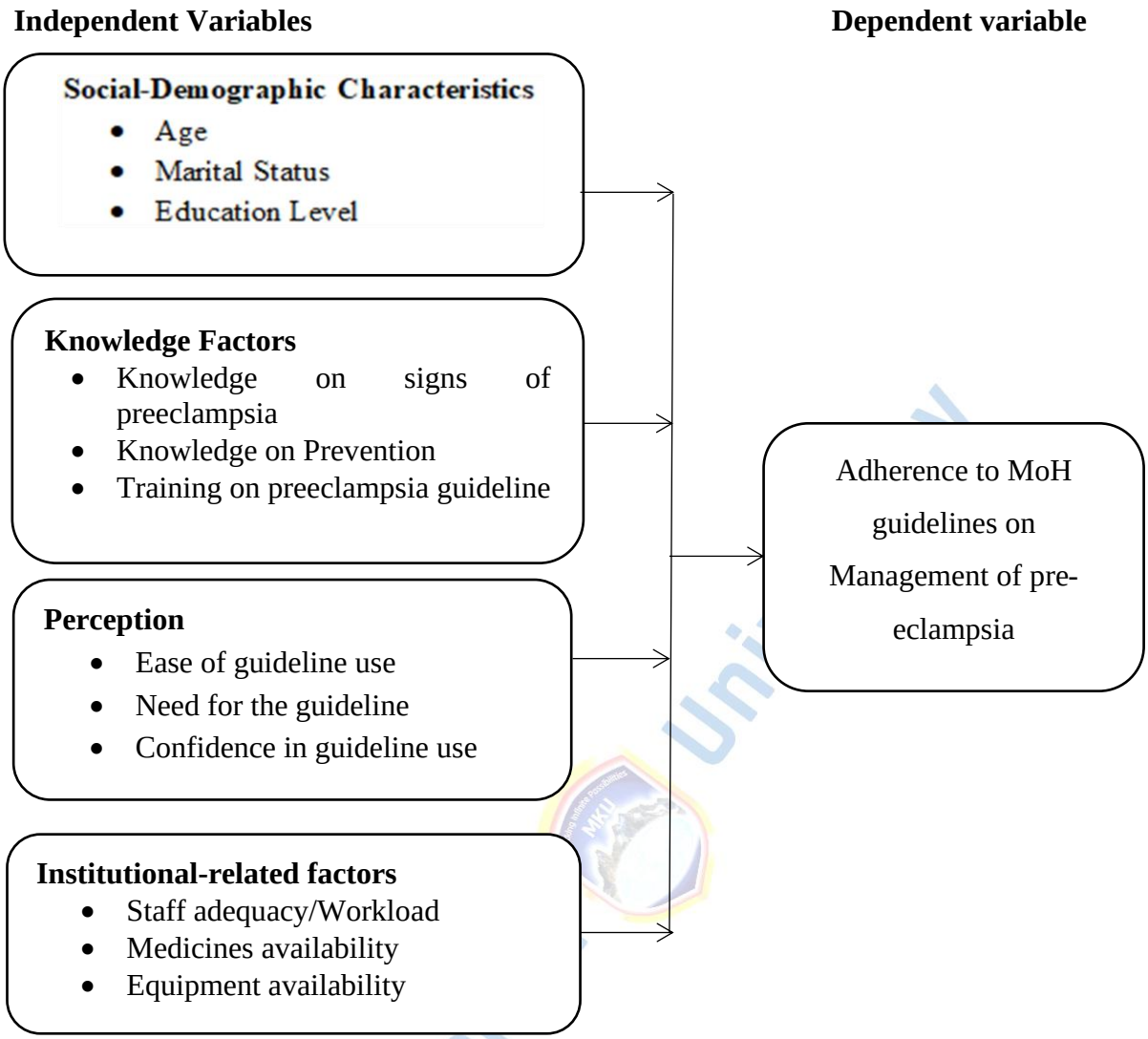

Figure 2: Conceptual Framework

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

The chapter describes the study methodologies that was used in this particular study and include; the design used in research, the area where the study was conducted, who were the population of interest, the methods used to sample and the number of those who participated, instruments that were used to collect data, how they were piloted, the technique used to collect data as well as the ethical considerations.

3.2 Study Design

The study adopted a descriptive cross-sectional study design since data was collected from a sample at one specific point in time and over a relatively short period. The design enabled the study capture a "snapshot" of the population's characteristics or conditions at that moment. The study was done at Kenyatta National Hospital. Cross-sectional design was chosen since it enabled the researcher analyze associations or relationships between different variables such as level of knowledge and adherence. Cross-sectional studies have the capability to simultaneously gather both quantitative and qualitative data, facilitating their integration within the study. By using qualitative methods, potential limitations related to the exclusive reliance on quantitative methods can be mitigated. The design exhibits efficacy in establishing a connection between quantitative and qualitative data outcomes.

3.3 Study Area

The research was conducted at Kenyatta National Hospital. Kenyatta National Hospital is located in Kenya's Nairobi West District of Nairobi County in the area to the immediate west of Upper Hill in Nairobi along Hospital Road. It is around three to four kilometers from the

city's central business district. It is the only hospital in East or Central Africa that comes close to its size and scope as a teaching and referral facility. KNH was founded in 1901 with a capacity of 40 beds, and in 1987 it became a State Corporation with a Board of Management. It is now the premier referral facility in Kenya's health care system. Kenyatta National Hospital employs over 6,000 people and has space for 1800 patients. Approximately 45.7 hectares of land are included in its scope. The hospital is home to the Medical School of the University of Nairobi and various government organizations. The Hospital has different departments including maternity unit which houses 156 beds with 161 midwives working in maternity unit (antenatal, postnatal, labour wards and ICU).

The study was conducted in the maternity unit. The maternity unit receives mother's antenatal, ready for delivery or with other prevailing conditions which need to be managed in the unit. Among them are mothers' pre-eclampsia. With the increase in the number of such cases in the unit, the researcher chose to understand the adherence to the MoH guidelines in management of severe preeclampsia among midwives in the maternity unit.

3.4 Study Population

The study population was all midwives working in the maternity unit at the time of the study. The study also included nursing officers in charge of each of unit in the maternity department. Currently, there are 5 units which include 3 antenatal/postnatal wards, labour ward and a maternity Critical Care Unit. Hence 5 nursing officers in charge were included where by key informant interviews were done and questionnaires distributed to the midwives for the quantitative data collection.

3.5 Recruitment Strategy

a) All nurses working in the maternity unit at Kenyatta National Hospital.

b) Both trained and untrained nurses in the management of preeclampsia as per the Ministry of Health (MoH) guidelines.

c) All midwives who provided informed consent to participate in the research.

3.5.2 Exclusion Criteria

a) Nurses who were on leave during the study period.

b) Nurses who declined to provide informed consent to participate in the study.

3.6 Sample Size Determination

Using Cochran formula, the sample size was determined and adjustments carried out accordingly for populations less than 10,000 according to Cochran (1977).

$$\text{n} = \frac{Z^2 p(1-p)}{d^2}$$

Where:

n = Sample size when population exceed 10, 000].

Z Is confidence interval at 95% which is 1.962.

P is the accessible population which is 50% (0.5)

q Is the population with the desired attributes (q= 1-p) hence is 1- 0.5= 0.5 or 50%.

d Is the level of precision or statistical significance which is set at 0.05

$$n = \frac{(1.962)^2(0.5)(0.5)}{(0.05)^2}$$

n =384

Formular adjustment since the sample size is less than 10, 000

$$n\mathbf{f} = \frac{n}{1+(n/N)}$$

n= is the calculated sample size = 384

$n\mathbf{f}$ = is ideal sample size (population <10 000).

N is the estimate of population size = 236 nurses in the maternity unit

$$n\mathbf{f} = \frac{384}{1+(384/236)}$$

$n\mathbf{f}$= 147 Midwives

147 nurses were sampled for the study.

3.7 Sampling Method

A systematic sampling method was used to select the 147 nurses from the population of 236 nurses at intervals of selecting a sample from a larger population at regular intervals. To do this, the

Sampling interval (K) was calculated by dividing the population size by the desired sample size:

K = Population size / Sample size

K = 236 / 147 ≈ 1.61

This was rounded up to 2, to mean that every 2nd element in the population was selected.

A random starting point was selected by choosing a random number between 1 and K. This random number determines where to start in the population. Then, every 2nd element was selected from the population until the desired sample size of 147 is reached. Rounding up to 2 increases the spacing between selected samples, which may provide a more systematic and evenly spread sample across the population.

The study participants were invited to participate in the research in-person during regular shift changeovers. The researcher introduced herself and informed the potential participants of the study. If the participant agreed to participate, they were asked to sign the informed consent form. The questionnaires were then issued to the participants. Census sampling was utilized

for the key informants. All 5 nursing officers in charge of the 5 units (3 antenatal/postnatal wards, labour ward and a maternity Critical Care Unit) were interviewed. In the same way, after explaining the study's goals to the nurses one at a time during the shift changeovers, the researcher got their informed permission and secured a separate room where the nurses were interviewed in private. The recruitment and informed consent procedures took place in a two-week window at a time convenient for the participants, which included off-duty hours and accommodated different shift schedules.

3.8 Data Collection Tool

The study used structured questionnaires for the midwives and interview guide for the nursing officers in charge.

3.8.1 Questionnaires for Midwives

In order to obtain a range of responses from the midwives, questionnaires were utilized in this study. Data for the research was gathered via a self-administered, structured questionnaire (Appendix III) that included open-ended and closed-ended questions tailored to the study's unique aims. The entire data collection period was 14 days.

3.8.2 Interview Schedule for Nursing Officer in Charge

The utilization of face-to-face discussions was advantageous in the process of verifying data obtained through questionnaires, as it allows the researcher to observe and interpret both verbal and non-verbal forms of communication exhibited by the participants. Interview schedules: Key Informant Interview Guides (Appendix IV) were arranged for the nursing officers in charge. This method facilitates in-person communication, enabling the researcher to examine and analyze the nonverbal cues exhibited by the participants. Section A of these schedules needed the participants to provide personal information. Section B collected the participant's views in qualitative form on the influence of socio-demographic characteristics, level of

knowledge, perception and institutional-related factors on adherence to the Ministry of Health guidelines in the management of severe preeclampsia among nurses at KNH.

3.9 Pretesting of Research Instruments

Conducting a pretest study of the research tools was essential in order to strategically organize and validate the instruments for a large-scale investigation, as well as to determine the likelihood of obtaining the anticipated results. The study involved participants from Pumwani Maternity Hospital, maternity unit, owing to the similarities with KNH. This choice was made in order to ensure objectivity in the research (Mugenda & Mugenda, 2003). The utilization of piloting research tools served the purpose of assessing and addressing issues related to vagueness, readability, misconceptions, and ambiguities. Additionally, it enables researchers to identify any omissions, improper components, or redundancies within the research tool (Malmqvist *et al*., 2019).

A pilot study was conducted on a subset of the sample, comprising 10% of the total sample size, to assess the credibility, reliability, validity, and dependability of the research tools. The adherence of the study participants to responding consistently to the questions posed by the instruments determined the level of quality, and any required modifications were implemented accordingly. Ensuring the validity of the research instruments was crucial in the study.

3.9.1 Testing Validity of Instruments

Validity refers to the extent to which instruments possess the ability to accurately measure the specific constructs they were intended to assess. Consistency in outcomes should be observed on every occasion. The tools utilized in any investigation can be authenticated through this process. In order to confirm the tools' authenticity, the researcher had professionals and professors review them and provide input. That is, the researcher used the knowledge of

professionals and professors to evaluate the equipment and provide comments to guarantee reliability and accuracy.

3.9.2 Testing Reliability of Instruments

The study employed a test-retest methodology, with a one-week interval between the administration of the tests. The same subjects were involved in both test sessions. The Cronbach's coefficient alpha was employed to assess the magnitude of the correlation between the two tests. Instruments with a correlation coefficient of 0.7 and above are considered to have high dependability and are deemed highly suitable for use. Reliability refers to the degree of effectiveness exhibited by a data collection instrument or tool. The concept of reliability pertains to the ability of an instrument to accurately quantify a particular phenomenon consistently and dependably. In order to enhance the reliability of the questionnaire, the researcher employed strategies to mitigate vagueness in language, opting for precise and appropriate terminology while adhering to acceptable spelling conventions. This approach aims to facilitate comprehension and minimize the occurrence of odd remarks that could potentially undermine the questionnaire's reliability. The researcher also refrained from utilizing intricate directives and terminology that could potentially perplex the participants. Prior to releasing the questionnaires to the participants, the researcher sought review, necessary editing, corrections, and approval from the supervisor.

3.9.3 Establishing Dependability of Qualitative Instruments

The researcher assessed the reliability of the interview schedules by engaging in comprehensive interviews with the nursing officers responsible for the different units within the maternity department. Hartono *et al*. (2023) propose that a substantial level of reliability is anticipated in the non-numerical data instruments. The individuals selected for the pilot study were included in the final sample for the study.

3.9.4 Establishing Credibility of Qualitative Research Instruments

Credibility refers to the degree to which the findings accurately reflect the experiences and perspectives of the participants. Therefore, it is imperative that reliable sources possess a high level of trustworthiness in order to provide evidence that may be deemed credible and verifiable. According to O'Keefe (2016), readers form a conclusion on the writer's credibility. The significance lies in the fact that individuals often base their response to an indisputable message not on the message's content, but rather on their perception of the communicator. Triangulation was used to cross-verify the findings and establish credibility by corroborating findings from different angles.

3.10 Data Collection Procedures (MKU 1722, NACOSTI/P/23/25462, KNH-UON P512/06/2023)

To secure entry to the hospital, the researcher followed a series of steps. Firstly, the researcher acquired a letter from Mount Kenya University and gain approval from the university's Ethical Review Committee and the UON-KNH Ethics and Research Committee. These documents acted as an initial introduction when approaching the hospital. To adhere to legal mandates, the researcher then obtained a permit from the National Commission for Science, Technology, and Innovation. Following this, they prepared a self-introduction letter addressed to the hospital.

Participating in the research included filling out a self-administered questionnaire and following an interview guide. After explaining the study's goals to the respondents selected through systematic sampling in order to get their informed permission, they were provided specific instructions on how to complete the surveys.

Upon arrival at the hospital, the researcher adhered to the established protocol by visiting the relevant offices to introduce themselves and complete the necessary formalities, such as signing the visitors' book. The researcher adhered to the established protocol by introducing herself

using a self-introduction letter. Additionally, she presented her research subject to the administrative body. The process involved the selection of participants and the completion of consent documents. The initial visit involved administering questionnaires to the midwives. Upon entering a designated space, the coordinator established a rapport with the nursing officer's supervisors, so ensuring the confidentiality of their conversation. Subsequently, the participants proceeded to affix their signatures on the informed consent documents before engaging in the completion of the survey questionnaires. Subsequently, questionnaires were distributed and collected immediately where possible, so ensuring a high response rate. The subsequent visit involved retrieving the completed questionnaires for cases in which it was not feasible to complete them immediately.

3.11 Data Cleaning

This included locating and fixing mistakes, as well as decreasing the likelihood of occurring in the first place because of incorrect data input. The gathered information was double-checked for accuracy before being coded and entered into a computer using a password known only to the investigator.

3.12 Data Analysis Procedures

The data collected was quantitative and qualitative. The qualitative data was edited, coded, entered, and cleaned. The findings of this data processing were designed to provide the researcher with information that allowed them to draw conclusions and make judgments. The data was analyzed in alignment with the research objectives to offer insights into the research inquiries. The analysis of the quantitative data involved the use of descriptive statistics, specifically measures such as the mean, frequencies, and percentages. These results were presented in tables. Additionally, inferential statistics, such as the Chi-square test, were utilized

to evaluate the associations between the determinants and adherence to the guideline. The qualitative data underwent rigorous scrutiny and thematic analysis. It was presented in a narrative format that aligns with the study's objectives and research questions. This approach supplemented the statistical data received from the questionnaires. Every objective was broken down into its own subtopic, and the resulting data was examined and interpreted according to those topics. The analysis of the data was structured in such a way that the answers to the research questions were provided in sequential order. Adherence or non-adherence to the guidelines was assessed by analyzing the collected data to determine the level of adherence/non-adherence to the guidelines. Adherence levels were quantified as percentages. The quantitative and qualitative data was combined and interpreted in order to reveal more insights on the population characteristics.

3.13 Ethical Considerations (MKU 1722, NACOSTI/P/23/25462, KNH-UON P512/06/2023)

Research ethics serve as a framework that provides guidance for researchers in conducting their studies. They assist the individual in carrying out the research in a standardized manner, while also ensuring the protection of the participants' rights. The researcher prioritized the examination of ethical considerations that was taken into account before, during, and subsequent to the data gathering process. The researcher adhered to ethical norms including access to study sites, obtaining informed consent, ensuring privacy, maintaining anonymity and secrecy, upholding professional demeanor and decorum, appropriately storing data, and avoiding plagiarism.

3.13.1 Access to Sites

The researcher visited Kenyatta National Hospital to first seek permission from the facility administration. To enable this, permission letters from the Ethical approval to conduct the study

was sought-after from the UoN/KNH Ethics committee and permission to carry out the study from the unit management, this letter was used in the various units as proof of authorization. The permit from NACOSTI was also availed.

3.13.2 Informed Consent

The concept of informed consent arises from the fundamental principle of participant autonomy, which grants individuals the right to make independent decisions. The act of obtaining consent allows participants to exercise their autonomy in decision-making, so assigning some responsibility to the respondent in the event of any potential challenges that may arise during the study (Malmqvist *et al.*, 2019). In accordance with Eaton (2020) research, the concept of informed consent ensures that participants possess comprehensive knowledge regarding the potential dangers associated with their involvement in the study, as well as any related concerns. In this study, the researcher ensured that individuals who agree to participate in the study are fully aware of the research objectives. The participants were afforded the autonomy to exercise their agency in deciding whether to participate in or decline involvement in the study.

3.13.3 Confidentiality and Privacy

Valuing and upholding privacy is a fundamental principle in conducting ethical research involving human respondents and participants (Eaton, 2020). The obtained data was securely maintained in a computer system, with the implementation of a password-based security mechanism. This measure ensures that unauthorized individuals are unable to access the data without explicit permission from the researcher. The responses of the participants were organized in a manner that guarantees the anonymity of individual respondents' scores within the grouped data. Furthermore, participants were guaranteed that any data they supply remain confidential and would not be disclosed or shared with any third party. The data was solely utilized for research purposes. Confidentiality ensures that the disclosure of the source of

gathered data is permissible only when the researcher has obtained the participant's consent (Eaton, 2020).

3.13.4 Anonymity

In the context of research, it is imperative to uphold the participants' entitlement to confidentiality. The researcher implemented measures to maintain participant anonymity in the questionnaires and interview guides, so ensuring the utmost confidentiality and safeguarding the integrity of the study process. During face to face interviews the researcher promised the interviewees' privacy by ensuring the information given was treated confidentially, based on the fact they cannot hide their identity because the face was visible.

3.13.5 Decorum

The researcher presented herself in a smart appearance having the standard behavior before, during, after and throughout the study process while interacting with the participants in the units where the study was carried out.

3.13.6 Storage of Data

To ensure the utmost security, the data obtained from the participants was securely stored and protected to prevent unauthorized access. The investigator refrained from disclosing any collected material to any individual or entity, regardless of the circumstances. The questionnaires, interview schedules, and CDs utilized in this study were securely stored and safeguarded during the entirety of the data processing phase and beyond. The collected data was conserved in both physical and digital formats.

3.13.7 Plagiarism Report

Before presentation and defense of the proposal, the work was uploaded onto TURNITIN software to ensure that the resulting percentage index does not exceed 15%. If the percentage exceeds the threshold, the proposal document would undergo a reediting process and be

returned to the program until it reaches or falls below 15%. This ensures work is free from plagiarism.

3.13 Study Results Dissemination Plan

The abstract of the research findings will be submitted to the Mount Kenya University Ethics and Research Committee (MKU-ERC). The research outcomes will be presented to and shared with the School of Nursing at Mount Kenya University. The final research report, including the full findings and recommendations, will be made available at the Mount Kenya University library. This ensures that the research remains accessible to the university community for future reference, academic purposes, and student research. The research study will be prepared for publication in a reputable peer-reviewed journal related to nursing, healthcare, or the specific research topic. The submission will undergo the peer-review process to ensure the quality and validity of the findings.

CHAPTER FOUR

RESEARCH FINDINGS AND DISCUSSIONS

4.0 Introduction

The chapter covers the analysis of the data obtained from the field through the methods described in the previous chapter. The findings are presented and discussions are made based on each of the study objectives.

4.1 Response Rate

From the sampled population, 128 nurses responded to the questionnaires and 5 nurses in charges were successfully interviewed. This was a total response rate of 87.1. The response rate was highly encouraging indicating strong engagement, a representative sample, reliable data, and validity of the study's conclusions. It strengthens the study's overall credibility and the implications of its findings.

4.2 Socio-Demographic Characteristics of the Respondents

The study obtained demographic information from the respondents. The sex and age distribution are presented in figures while the education qualification, marital status and period of services are presented in a table.

Distribution by sex

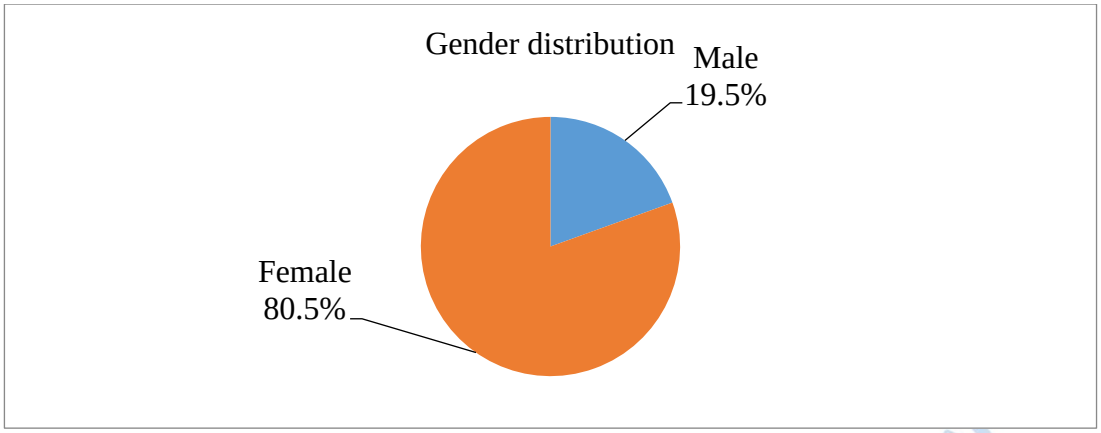

Figure 3: Distribution by sex

From the outputs, the majority of the respondents were female (80.5%).

Distribution by age

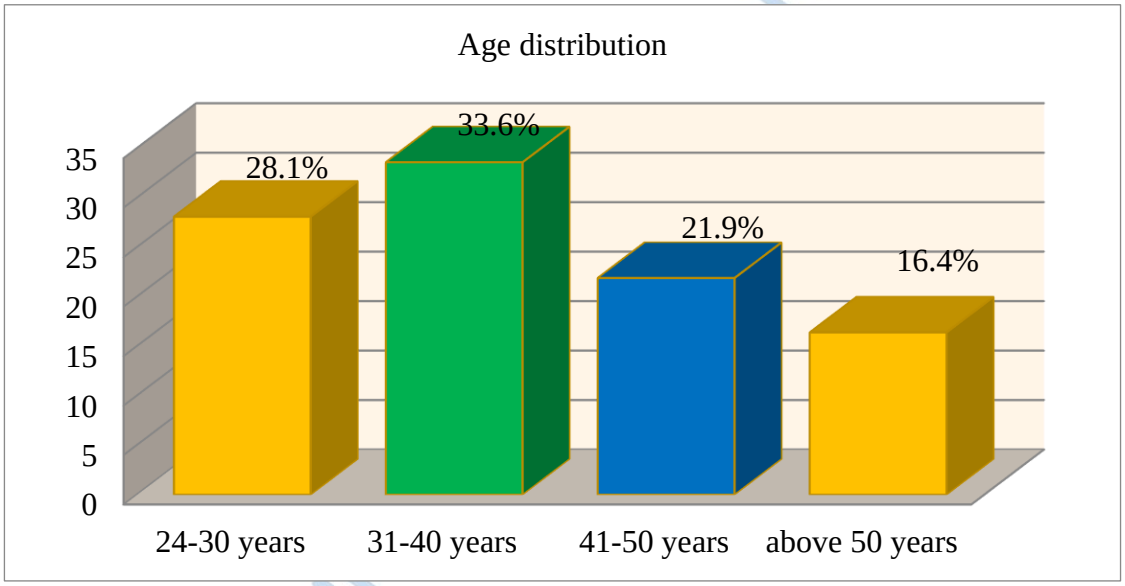

Figure 4: Distribution by age

From the outputs, the most common age group was 31-40 years old (33.6%) followed by 24-30 years (28.1%), 41-50 years (21.9%) and the least was above 50 years (16.4%). This breakdown provides valuable insights into the age distribution of the surveyed or analyzed population, highlighting the prevalence of younger age groups, particularly those between 18-30 years and 31-40 years old.

Table 2: Socio-Demographic Characteristics

Characteristics	Category	Frequency	Percentage
Highest Education Qualification	Basic Diploma	82	64.1
	Higher Diploma	12	9.4
	Degree	31	24.2
	Masters' degree	3	2.3
Marital Status	Single	35	27.3
	Married	87	68
	Widowed	6	4.7
Period Of Service	1-5 years	34	26.6
	6-10 years	40	31.3
	More than 10 years	54	42.2

Source: Field Data (2023)

Table 2 summarizes some of the demographic information of the respondents. From the outputs, the most common highest education qualification was Basic Diploma (64.1%). In addition, the most common marital status was married (68.0%) and the most common period of service was more than 10 years (42.2%).

Table 3: Demographic information for the Interviewees

Characteristics	Category	Frequency	Percentage
Sex	Male	2	40
	Female	3	60
Highest Education Qualification	Degree	5	100
Period of Service	6-10 years	2	40
	More than 10 years	3	60
Trained	Yes	5	100

Source: Field Data (2023)

From the demographics of nursing officers in charge, over half were female and all had degrees. In addition, 60% had more than 10 years of experience. More so 100% were trained on preeclampsia.

4.2.1 Qualitative findings of Nurses' Experience

The study sought the view of the interviewees, the Nurses' socio-demographic characteristics that influence the utilization of the Ministry of Health guidelines in the management of severe

preeclampsia. The respondents stated that experience increases with age and Nurses with more experience are more likely to be familiar with and confident in using the guidelines. They may also be more likely to have received training on the guidelines. For instance, a nurse stated;

> *''Experienced nurses, especially those who have dealt with severe preeclampsia cases over the years, may have a better grasp of the practical aspects of the guidelines. Their experience can enhance their confidence and ability to implement the guidelines under varied clinical circumstances'' (KI2).*

4.1.2 Education and qualifications of Nurses' Experience

They also stated that Nurses with higher levels of education and qualifications are more likely to be aware of the guidelines and to understand their importance. They may also be more likely to be able to critically evaluate and apply the guidelines in their practice. A key interviewee stated;

> ''Nurses with more advanced education or specialized training in obstetrics and gynecology are likely to have a deeper understanding of the guidelines and their importance. This knowledge enables them to apply the guidelines more effectively in clinical practice'' (KI1).

Table 4: Chi-Square Tests between Age and Adherence with MoH national guidelines

	Value	df	*p*-value
Pearson Chi-Square	14.576[a]	3	.002
Likelihood Ratio	19.218	3	.000
Linear-by-Linear Association	5.414	1	.020
N of Valid Cases	128		

a. 2 cells (25.0%) have expected count less than 5. The minimum expected count is 3.45.

Source: Field Data (2023)

The Pearson Chi-Square value is 14.576 with 3 degrees of freedom and a *p*-value (Asymptotic Significance) of .002. The *p*-value of .002 is less than the conventional alpha level of 0.05, which means that there is a statistically significant association between age and adherence to the national guidelines in the management of severe preeclampsia among nurses.

Table 5: Chi-Square Tests Marital status and Adherence with MoH national guidelines

	Value	df	*p*-value
Pearson Chi-Square	1.236[a]	2	.539
Likelihood Ratio	2.208	2	.332
Linear-by-Linear Association	.324	1	.569
N of Valid Cases	128		

a. 1 cells (16.7%) have expected count less than 5. The minimum expected count is .98.

Source: Field Data (2023)

Pearson Chi-Square value is 1.236 with 2 degrees of freedom and a *p*-value (Asymptotic Significance) of .539. This test's *p*-value is .539, which is much higher than the conventional alpha level of 0.05. This means that there was no statistically significant association between marital status and adherence to the national guidelines in the management of severe preeclampsia among the study group.

Table 6: Chi-Square Tests between education and Adherence with MoH national guidelines

	Value	df	*p*-value
Pearson Chi-Square	5.806[a]	3	.121
Likelihood Ratio	8.241	3	.041
Linear-by-Linear Association	3.845	1	.050
N of Valid Cases	128		

a. 3 cells (37.5%) have expected count less than 5. The minimum expected count is .49.

Source: Field Data (2023)

Pearson Chi-Square value is 5.906 with 3 degrees of freedom and a *p*-value (Asymptotic Significance) of .121. This test's *p*-value is .121, which is much higher than the conventional alpha level of 0.05. This means that there was no statistically significant association between education and adherence to the national guidelines in the management of severe preeclampsia among the study group.

4.3 Nurses Knowledge on Ministry of Health Guidelines in Severe Preeclampsia Management

Table 7 shows the frequency and percentage of respondents who have been trained on MOH guidelines on management of preeclampsia, have the knowledge on the management of severe preeclampsia as provided for by Ministry of Health, and their level of knowledge on the management of severe preeclampsia as provided for by Ministry of Health.

Table 7: Training on MOH guidelines on management of preeclampsia and the level of knowledge

		Frequency	Percentage
Trained on MOH guidelines on management of preeclampsia	Yes	80	62.5
	No	48	37.5
Have the knowledge on the management of severe preeclampsia as provided for by Ministry of Health	Yes	110	85.9
	No	18	14.1
Knowledge on the management of severe preeclampsia as provided for by Ministry of Health	Low	6	4.7
	Moderate	61	47.7
	High	61	47.7
	Total	128	100

Source: Field Data (2023)

The findings showed that 62.5% of the respondents had been trained on MOH guidelines on management of preeclampsia. More so, 85.9% of respondents indicated to have the knowledge on the management of severe preeclampsia as provided for by the Ministry of Health. In a further assessed on the knowledge, 47.7% of respondents indicated to have a moderate level of knowledge on the management of severe preeclampsia as provided for by the Ministry of Health and an equivalent 47.7% of respondents indicated to have a high level of knowledge on the management of severe preeclampsia as provided for by Ministry of Health.

The respondents were further required to rate their levels of agreement with statements assessing their knowledge on the management of severe preeclampsia.

Table 8: Statements assessing their knowledge on the management of severe preeclampsia

	SD	D	N	A	SA	Mean	Std.dev
Magnesium sulphate is the anticonvulsants used in eclamptic fits	11.7	2.3	2.3	9.4	74.2	4.32	1.35
Magnesium sulphate dosage recommended by the WHO guidelines is 4 grams administered intravenously and 10 grams administered intramuscularly	11.7	11.7	4.7	11.7	60.2	3.97	1.48
Proteinuria is always a sign of preeclampsia	14.8	12.5	11.7	12.5	48.4	3.67	1.53
Magnesium sulphate is more effective in the prevention and treatment of severe eclampsia	9.4	14.8	4.7	22.7	48.4	3.86	1.40
Diazepam is the recommended anticonvulsant to use in eclamptic fits	19.5	17.2	21.1	11.7	30.5	3.16	1.51
Delivery of fetus is key in management of Pre-eclampsia	7	7	2.3	17.2	66.4	4.29	1.24
The onset of Preeclampsia has a warning	14.1	4.7	4.7	14.8	61.7	4.05	1.46

Source: Field Data (2023)

The statement that Magnesium sulphate is the anticonvulsants used in eclamptic fits had a mean of 4.32, Std.dev of 1.35. This showed a high agreement (74.2% strongly agree), indicating strong knowledge that magnesium sulfate is used as an anticonvulsant in eclamptic fits. However, a significant level of disagreement or variance in opinions was observed.

The mean of 3.97 indicated a general agreement that Magnesium sulphate dosage recommended by the WHO guidelines is 4 grams administered intravenously and 10 grams administered intramuscularly. The relatively higher standard deviation (1.48) suggests more variability in the responses, indicating that some respondents are either not sure about the specific dosage or disagree with the statement.

The mean of 3.67 shows that there was a general agreement with the statement that Proteinuria is always a sign of preeclampsia. However, the high standard deviation of 1.53 reflected a divided opinion or uncertainty about the role of proteinuria in diagnosing preeclampsia.

The respondents agreed that Magnesium sulphate is more effective in the prevention and treatment of severe eclampsia (Mean=3.86), indicating that many respondents recognize the effectiveness of magnesium sulphate in managing severe eclampsia. However, the high Std. dev of 1.40 shows a variance in the respondents' opinions.

The respondents were neutral on the statements that Diazepam is the recommended anticonvulsant to use in eclamptic fits (Mean= 3.16, Std.dev: 1.51). Lower agreement and a higher level of disagreement (36.7% Disagree or Strongly Disagree), suggesting that many respondents correctly understand that diazepam is not the recommended first-line anticonvulsant in eclampsia (magnesium sulphate is).

With a mean of 4.29, the respondents strongly agreed that delivery of fetus is key in management of Pre-eclampsia. The high level of agreement indicated strong knowledge among respondents that delivering the fetus is a critical part of managing pre-eclampsia. The respondents also agreed that the onset of Preeclampsia has a warning as shown by a mean of 4.05, suggesting that many respondents believe there are warning signs for the onset of preeclampsia. The high Std.dev of 1.46 illustrates that the respondents had a high variation in the opinions.

4.3.1 Qualitative findings

The interviewees described the nurses' level of knowledge on the Ministry of Health guidelines in severe preeclampsia management as moderate to good knowledge.

For instance, Key interviewee 3 stated;

> ''The level of knowledge among nurses about these guidelines tends to vary significantly. While some nurses demonstrate a thorough understanding and are adept at applying these guidelines in clinical practice, others may have a more basic awareness, necessitating further education and training'' (KI3).

They further stated that increasing the nurses' knowledge about the guidelines will lead to better adherence. It implies that the current level of knowledge might be insufficient for optimal application of the guidelines, and further education or training could enhance compliance.

Table 9: Chi-Square Tests between being trained and Adherence with MoH national guidelines

	Value	df	*p*-value
Pearson Chi-Square	4.136[a]	1	.042
Likelihood Ratio	4.007	1	.045
Linear-by-Linear Association	4.103	1	.043
N of Valid Cases	128		

Source: Field Data (2023)

The Pearson Chi-Square value is 4.136 with 1 degree of freedom and a *p*-value (Asymptotic Significance) of .042. The test's *p*-value is .042, which is slightly less than the conventional alpha level of 0.05 suggesting a statistical significance between training and adherence to the national guidelines in the management of severe preeclampsia.

Table 10: Chi-Square Tests between Knowledge on Management and Adherence with MoH national guidelines

	Value	df	*p*-value
Pearson Chi-Square	17.235[a]	1	.000
Continuity Correction	14.503	1	.000
Likelihood Ratio	13.497	1	.000
Fisher's Exact Test			
Linear-by-Linear Association	17.101	1	.000
N of Valid Cases	128		

a. 1 cells (25.0%) have expected count less than 5. The minimum expected count is 2.95.

Source: Field Data (2023)

Pearson Chi-Square value is 17.235 with 1 degree of freedom and a *p*-value (Asymptotic Significance) of .000. This test's *p*-value of .000, which is far less than the conventional alpha level of 0.05, indicates a statistically significant association between knowledge of

management of severe preeclampsia and adherence to the national guidelines in the management of severe preeclampsia.

The study rejects the Null hypothesis, H01: The level of knowledge has no significant influence on adherence to the Ministry of Health guidelines in the management of severe preeclampsia among nurses at KNH. Therefore the level of knowledge has a significant influence on adherence to the Ministry of Health guidelines in the management of severe preeclampsia among nurses at KNH.

4.4 Nurses' Perception towards the use of MOH Guidelines in Severe Preeclampsia Management

Table 11: Nurses' Perception towards the Use of MOH Guidelines

		Frequency	Percentage
The MoH Severe Preeclampsia Management guidelines are necessary for ensuring optimal patient outcomes	yes	119	93
	No	9	7
Believe that the use and adherence of MOH Guidelines in Severe Preeclampsia Management is easy	Yes	95	74.2
	No	33	25.8
Confident in your ability to adhere to the MOH Guidelines in Severe Preeclampsia Management	Yes	113	88.3
	No	15	11.7
Total		128	100

Source: Field Data (2023)

A greater majority of the respondents (93%) indicated that the MoH Severe Preeclampsia Management guidelines are necessary for ensuring optimal patient outcomes. Almost three-quarters of the respondents indicated that believed that the use and adherence of MOH Guidelines in Severe Preeclampsia Management is easy. In addition, a greater majority of the

respondents indicated that they were confident in their ability to adhere to the MOH Guidelines in Severe Preeclampsia Management.

In a further assessment of the nurse's perception towards the use of MOH Guidelines in Severe Preeclampsia Management, the respondents were requested to indicate their opinions on the statements about pre-eclampsia.

Table 12: Perception towards the Use of MOH Guidelines

	SD	D	N	A	SA	Mean	Std. dev
Severe pre-eclampsia is easily recognized	11.7	4.7	7	52.3	24.2	3.73	1.22
Severe Pre-eclampsia is easy to manage	0	28.1	11.7	45.3	14.8	3.47	1.06
Pre-eclampsia/MoH Management guidelines are clear and easy to understand and use	4.7	14.1	16.4	28.9	35.9	3.77	1.21
Adherence to the health guidelines is achievable in my workplace	14.1	4.7	7	35.2	39.1	3.80	1.38
Magnesium sulphate does not work in a patient with severe pre-eclampsia	54.7	22.7	7	6.3	9.4	1.93	1.31
I don't need MoH guidelines when managing patients with severe pre-eclampsia	53.9	17.2	9.4	5.5	14.1	2.09	1.46

Source: Field Data (2023)

The mean of 3.73 indicates an agreement with the statement that Severe pre-eclampsia is easily recognized suggesting that most respondents feel that recognizing severe pre-eclampsia is relatively straightforward. The standard deviation shows some variability in responses, but not excessively high, indicating a fair level of consensus.

The mean of 3.47 indicates a moderate level of agreement with the statement that Severe Pre-eclampsia is easy to manage suggesting that respondents are somewhat divided but lean

towards agreeing that managing severe pre-eclampsia is manageable. The standard deviation is relatively high, indicating a high variability in the responses.

The mean of 3.77, shows an agreement with the statement that Pre-eclampsia/MoH Management guidelines are clear and easy to understand and use. This suggests that respondents generally find the guidelines clear and easy to use. The standard deviation (1.21) indicates some variability in opinions, but overall, there is a reasonable consensus.

The respondents agreed that adherence to the health guidelines is achievable in their workplace. This indicates a moderate to high level of agreement, implying that most respondents believe they can adhere to the guidelines in their workplace. The standard deviation (1.38) is somewhat higher, suggesting a wider spread in opinions.

The respondents disagreed that Magnesium sulphate does not work in a patient with severe pre-eclampsia as described by a mean of 1.93 and a standard deviation of 1.31. The standard deviation is somewhat higher, suggesting a wider spread in opinions.

Further, the respondents disagreed they don't need MoH guidelines when managing patients with severe pre-eclampsia as shown by a mean of 2.09. The standard deviation (1.46) is somewhat higher, suggesting a wider spread in opinions.

4.4.1 Qualitative findings

The interviewees described the Nurses' Perception towards the Use of MOH Guidelines in Severe Preeclampsia Management as positive perception. For instance, key interviewee 2 stated;

> ''Many nurses view these guidelines as a vital tool that enhances the quality of care for patients with severe preeclampsia. They appreciate the guidelines for providing a structured approach to management, ensuring consistency in care across different healthcare providers and settings'' (KI 5).

From the interviews, the interviewees stated that the perception of nurses towards the use of Ministry of Health (MOH) guidelines in severe preeclampsia management does affect its

utilization. The way nurses view these guidelines plays a crucial role in how they are implemented in clinical practice. They described that positive perception reflects a level of confidence among nurses in their clinical practice. Nurses who view the guidelines positively are more likely to adhere to them. They trust that following these guidelines will lead to better patient outcomes and more effective management of severe preeclampsia. Conversely, if nurses have a negative perception, they may be less likely to follow the guidelines, possibly relying instead on personal experience or alternative methods they perceive as more effective. A key interviewee stated;

> ‘‘Nurses who perceive the guidelines positively are more likely to engage with them and comply with their recommendations. This positive perception can be fostered through understanding the evidence base behind the guidelines, experiencing or observing positive outcomes from their implementation, and receiving adequate training and support’’ (KI4).

Table 13: Chi-Square Tests between Guideline Necessity on Management and Adherence with MoH national guidelines

	Value	df	*p*-value
Pearson Chi-Square	49.325[a]	1	.000
Likelihood Ratio	36.456	1	.000
Linear-by-Linear Association	48.940	1	.000
N of Valid Cases	128		

a. 1 cells (25.0%) have expected count less than 5. The minimum expected count is 1.48.

Source: Field Data (2023)

Pearson Chi-Square value is 49.325 with 1 degree of freedom and a *p*-value (Asymptotic Significance) of .000. This test's *p*-value of .000, which is far less than the conventional alpha level of 0.05, indicates a statistically significant association between the necessity of the guideline in ensuring optimal patient outcomes and adherence to the national guidelines in the management of severe preeclampsia.

Table 14: Chi-Square Tests between ease of Guideline use on Management and Adherence with MoH national guidelines

	Value	df	*p*-value
Pearson Chi-Square	47.159[a]	1	.000
Likelihood Ratio	42.154	1	.000
Linear-by-Linear Association	46.790	1	.000
N of Valid Cases	128		

a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 5.41.

Pearson Chi-Square value is 47.159 with 1 degree of freedom and a *p*-value (Asymptotic Significance) of .000. This test's *p*-value of .000, which is far less than the conventional alpha level of 0.05, indicates a statistically significant association between ease of the guideline use and adherence to the national guidelines in the management of severe preeclampsia.Table 15: Chi-Square Tests between confidence in Guideline use on Management and Adherence with MoH national guidelines

Source: Field Data (2023)

	Value	df	*p*-value
Pearson Chi-Square	86.574[a]	1	.000
Likelihood Ratio	67.361	1	.000
Linear-by-Linear Association	85.898	1	.000
N of Valid Cases	128		

a. 1 cells (25.0%) have expected count less than 5. The minimum expected count is 2.46.

Source: Field Data (2023)

Pearson Chi-Square value is 86.574 with 1 degree of freedom and a *p*-value (Asymptotic Significance) of .000. This test's *p*-value of .000, which is far less than the conventional alpha level of 0.05, indicates a statistically significant association between confidence in Guideline use and adherence to the national guidelines in the management of severe preeclampsia.

The study rejects the Null hypothesis, H02: Perception has no significant influence on adherence to the Ministry of Health guidelines in the management of severe preeclampsia among nurses at KNH. Therefore perception has a significant influence on adherence to the

Ministry of Health guidelines in the management of severe preeclampsia among nurses at KNH.

4.5 Institutional-related Factors

Table 16: Institutional-related Factors

		Frequency	Percentage
Experience a challenge of more workload due to a shortage of staff	Yes	119	93
	No	9	7
Ever experience a shortage of Magnesium sulphate	Yes	41	32
	No	87	68
Experience stock outs for essential antihypertensive	Yes	119	93
	No	9	7
Can you easily get magnesium sulphate in near facilities for use in case you encounter a patient with eclampsia	Yes	70	54.7
	No	58	45.2
Readily have sufficient equipment for use when you encounter a patient with eclampsia	yes	88	68.8
	No	40	31.3
In the facility do you have a hand copy of the guidelines for the management of severe preeclampsia	Yes	81	63.3
	No	47	36.7
Has the facility trained you on the management of severe preeclampsia guidelines	Yes	71	55.5
	No	57	44.5

Source: Field Data (2023)

A vast majority of the respondents (93%) experience an increased workload due to staff shortages, which can impact patient care and staff well-being. About one-third (68%) of the respondents have experienced a shortage of Magnesium sulphate, a critical medication in the management of eclampsia. There is a significant issue with the availability of essential antihypertensives, as nearly all respondents (93%) have experienced stock outs. Just over half of the respondents (54.7%) could easily access Magnesium sulphate from nearby facilities,

while nearly half could not (45.2%), indicating potential challenges in managing eclampsia effectively. A majority (68.8%) have sufficient equipment for managing eclampsia, but a significant minority do not, which could affect the quality of care.

The respondents indicated other equipment/supplies available that help in the management of the cases as follows; critical care unit, input-output monitoring tool, Antihypertensives, ventilators, suction machine, cardiac monitor, dopper machine, CTG (cardiotocography) Machine, blood pressure machines, ready theatre, drip stands, syringes, needles, catheterizations for urine monitor, infusion pump, anti-consultants, sphygmomanometer, corticosteroids, tongue depressor and stethoscope. The few respondents who noted a shortage of equipment indicated the equipment/supplies not available but important in the management of the cases as; beds with rails, cardiac monitors and restraints.

Most respondents (63.3%) have access to a hand copy of the guidelines, but a notable proportion does not, which may impact the adherence to standard care protocols. Slightly more than half of the respondents (55.5%) have received training on managing severe preeclampsia, indicating a need for more widespread and consistent training.

4.5.1 Qualitative findings

From the interviews, the interviewees stated that several institutional factors can affect the utilization of the Ministry of Health (MOH) guidelines in the management of severe preeclampsia. These include staff shortages, stock outs, and lack of equipment. They explained that hospital- and facility-related issues can significantly delay the diagnosis of preeclampsia. A shortage of nurses or other healthcare professionals can lead to increased workloads, making it challenging for staff to devote adequate time to adhere strictly to guidelines. Regular stock outs of crucial medications like Magnesium Sulphate can hinder the ability of nurses to provide

guideline-based care. The lack of essential equipment for monitoring and treating severe preeclampsia, such as blood pressure monitors, can impede adherence to the guidelines.

For instant the interviewees stated;

> "In my view, several institutional factors significantly influence the utilization of Ministry of Health (MOH) guidelines in the management of severe preeclampsia. These factors include resource availability, staffing levels and skill mix, training and professional development, clinical governance and leadership, information systems and accessibility, and feedback and evaluation mechanisms'' (KI2).
> ''Hospital and facility-related issues, such as limited access to diagnostic tools, insufficient staff training and awareness, inefficient referral systems, and workflow and process issues, can significantly delay the diagnosis of preeclampsia, impacting patient outcomes"(KI3).

Table 17: Chi-Square Tests between workload, Management and Adherence with MoH national guidelines

	Value	df	*p*-value
Pearson Chi-Square	41.900[a]	1	.000
Likelihood Ratio	33.357	1	.000
Linear-by-Linear Association	21.885	1	.000
N of Valid Cases	128		

a. 1 cells (25.0%) have expected count less than 5. The minimum expected count is 1.48.
Source: Field Data (2023)

Pearson Chi-Square value is 41.9 with 1 degree of freedom and a *p*-value (Asymptotic Significance) of .000. This test's *p*-value of .000, which is less than the conventional alpha level of 0.05, indicates there is a statistically significant association between workload and adherence to the national guidelines in the management of severe preeclampsia.

Table 18: Chi-Square Tests between medicine stockouts and Management and Adherence with MoH national guidelines

	Value	df	*p*-value
Pearson Chi-Square	1.900[a]	1	.168
Likelihood Ratio	3.357	1	.067
Linear-by-Linear Association	1.885	1	.170
N of Valid Cases	128		

a. 1 cells (25.0%) have expected count less than 5. The minimum expected count is 1.48.

Source: Field Data (2023)

Pearson Chi-Square value is 1.9 with 1 degree of freedom and a *p*-value (Asymptotic Significance) of .168. This test's *p*-value of .0.168, which is higher than the conventional alpha level of 0.05, indicates there is no statistically significant association between medicine stockouts and adherence to the national guidelines in the management of severe preeclampsia.

Table 19: Chi-Square Tests between equipment availability and Management and Adherence with MoH national guidelines

	Value	df	*p*-value
Pearson Chi-Square	.084[a]	1	.772
Likelihood Ratio	.085	1	.771
Linear-by-Linear Association	.083	1	.773
N of Valid Cases	128		

a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 6.56.

Source: Field Data (2023)

Pearson Chi-Square value is 0.084 with 1 degree of freedom and a *p*-value (Asymptotic Significance) of .772. This test's *p*-value of .0.772, which is higher than the conventional alpha level of 0.05, indicates there is no statistically significant association between equipment availability and adherence to the national guidelines in the management of severe preeclampsia.

Table 20: Chi-Square Tests between having a copy of the guidelines and Management and Adherence with MoH national guidelines

	Value	df	*p*-value
Pearson Chi-Square	43.294[a]	1	.000
Continuity Correction	40.098	1	.000
Likelihood Ratio	49.642	1	.000

Fisher's Exact Test			
Linear-by-Linear Association	42.956	1	.000
N of Valid Cases	128		

a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 7.71.
Source: Field Data (2023)

Pearson Chi-Square value is 43.294 with 1 degree of freedom and a *p*-value (Asymptotic Significance) of .000. This test's *p*-value of .0.000, which is lower than the conventional alpha level of 0.05, indicates there is a statistically significant association between having copy of the guidelines and adherence to the national guidelines in the management of severe preeclampsia.

4.6 Adherence to MoH Guidelines

Table 21: Adherence to MoH Guidelines

		Frequency	Percentage
Do you refer to the Ministry of Health guidelines in the management of severe preeclampsia	yes	95	74.2
	no	33	25.8
Do you comply with the Ministry of Health guidelines in the management of severe preeclampsia	Yes	107	83.6
	No	21	16.4
Kindly rate the extent to which Midwives in the hospital adhere to the Ministry of Health guidelines in the management of severe preeclampsia	Rarely	3	2.3
	Sometimes	12	9.4
	Always	70	54.7
	Often	24	18.8
	High	16	12.5
	Low	3	2.3

Source: Field Data (2023)

A significant majority of respondents (74.2%) refer to the Ministry of Health guidelines when managing severe preeclampsia. However, there is still a notable portion (about a quarter) who do not refer to these guidelines, which could reflect a gap in knowledge or accessibility.

A higher percentage of respondents (83.6) state that they comply with the guidelines compared to those who refer to them. This suggests a strong overall adherence to the guidelines among the respondents, though there remains a minority who do not comply.

The majority of respondents (54.7%) perceive that midwives adhere to the guidelines always indicating a good level of adherence in their view. However, there is a spectrum of responses, with some reporting 'Rarely' or 'Low' adherence, highlighting variability in guideline adherence among midwives.

The respondents indicated their levels of agreement on the statements describing the adherence to the Ministry of Health guidelines in the management of severe preeclampsia.

Table 22: Adherence Aspects related to adherence to the Ministry of Health guidelines

	SD	D	N	A	SA	Mean	Std.dev
I always measure blood pressure, urine protein, and fetal heart rate in accordance with the Pre-eclampsia/MoH Management guidelines	7	0	4.7	32.8	55.5	4.30	1.07
I always provide appropriate pharmacologic therapy for patients with pre-eclampsia, as recommended in the guidelines	9.4	0	0	32.8	57.8	4.30	1.16
I administer Antihypertensive medications to lower blood pressure, and magnesium sulfate to prevent seizures	17.2	7.8	4.7	20.3	50	3.78	1.54
I closely monitor urine output	7	0	4.7	32.8	55.5	4.30	1.07
I refrain from using diuretics for fluid management in severe Preeclampsia cases	9.4	0	0	32.8	57.8	4.20	1.16
I consider the induction of delivery after reaching a gestation period of 34 weeks.	17.2	7.8	4.7	20.3	50	3.78	1.54

Source: Field Data (2023)

With a high mean of 4.30, the majority of respondents strongly agreed that they always measure blood pressure, urine protein, and fetal heart rate in accordance with the Pre-eclampsia/MoH Management guidelines. The standard deviation of 1.07, indicates some level of consensus among respondents. With a high mean of 4.30, the majority of respondents strongly agreed that they always provide appropriate pharmacologic therapy for patients with pre-eclampsia, as recommended in the guidelines. The standard deviation of 1.16, indicates some level of consensus among respondents.

The respondents had a general agreement (Mean of 3.78), that they administer Antihypertensive medications to lower blood pressure, and magnesium sulfate to prevent seizures, but the higher standard deviation (1.54) indicates more variability in responses, which could imply some differences in practice or understanding among the respondents. Respondents strongly agreed with the importance of monitoring urine output, with a high mean (4.30) and a low standard deviation (1.07) indicating strong consensus. There was a strong agreement on avoiding diuretics in severe pre-eclampsia management (4.30). The standard deviation, (1.16), shows strong but slightly varied agreement.

There was a moderately high mean (3.78), indicating general agreement that they consider the induction of delivery after reaching a gestation period of 34 weeks, but the higher standard deviation (1.54) suggests a greater diversity in views or practices among respondents. The respondents indicated that they face challenges such as a shortage of staff and equipment when trying to adhere to the guideline the Ministry of Health guidelines in the management of severe preeclampsia.

4.6.1 Qualitative findings

The interviewees explained that they have managed to diagnose preeclampsia severally. They defined success as a successful diagnosis would mean accurately identifying the condition as early as possible to manage the risks to both the mother and the baby. Early detection is crucial

because preeclampsia can lead to serious, even fatal, complications for both the mother and the baby. One of the interviewees expressed her experiences, stating,

> ‘‘We have managed to diagnose severe preeclampsia effectively. For us, a successful diagnosis means accurately identifying the condition as early as possible to manage the risks to both the mother and the baby. Early detection is crucial because preeclampsia can lead to serious, even fatal, complications for both’’ (KI1).

The interviewees further explained a higher rating of the extent to which Midwives in the hospital adhere to the MoH guidelines in management of severe preeclampsia. This response indicates that the majority of midwives consistently follow the MoH guidelines when managing severe preeclampsia. A high rating reflects a strong commitment to following the guidelines, suggesting that the midwives not only know the guidelines well but also apply them regularly in their practice.

The interviewees explained that Midwives face several barriers and challenges in adhering to the Ministry of Health (MoH) guidelines for the management of severe preeclampsia including lack of supplies, resource constraints, staffing ratio issues and late referrals.

The unavailability of essential medications like antihypertensives can severely hinder the effective management of severe preeclampsia. These medications are crucial for controlling blood pressure and preventing complications. A lower staffing ratio means a higher workload for each midwife, which can lead to burnout and reduced quality of care. When midwives are overburdened, they may have less time to spend with each patient, making it difficult to provide comprehensive care as outlined in the guidelines. A high workload can also lead to difficulties in monitoring patients as frequently as required, potentially leading to missed or delayed interventions. Late referrals of patients with severe preeclampsia to appropriate care facilities can delay the initiation of guideline-recommended treatments. This delay can increase the risk of complications for both the mother and the baby.

They noted,

> ‘‘The unavailability of essential medications like antihypertensives can severely hinder the effective management of severe preeclampsia. These medications are crucial for controlling blood pressure and preventing complications. Furthermore, a lower staffing ratio means a higher workload for each midwife, leading to potential burnout and reduced quality of care. When midwives are overburdened, the time they can spend with each patient is reduced, making comprehensive care as outlined in the guidelines challenging to provide’’ (KI5).

The interviews sought to establish the preeclampsia diagnoses may be made more accurate. The participants indicated that improving the accuracy of preeclampsia diagnoses involves several strategies that address both clinical and systemic factors including staffing, training, and sensitizing referrals. Ensuring sufficient staffing levels in maternity and obstetric units can reduce workload pressures, allowing more time for thorough assessments and monitoring, which are vital for accurate preeclampsia diagnosis. Continuous education and training programs for all healthcare providers, including midwives, nurses, and doctors, on the latest diagnostic criteria and guidelines for preeclampsia. Establishing clear, efficient referral pathways for patients who show signs of preeclampsia, ensures they receive timely specialist care.

For instance;

> ‘‘Ensuring sufficient staffing levels in maternity and obstetric units is crucial to alleviate workload pressures, thus allowing more time for thorough assessments and monitoring, vital for an accurate preeclampsia diagnosis’’ (KI3).
>
> ‘‘I think it is essential to have continuous education and training programs for all healthcare providers, including midwives, nurses, and doctors, on the latest diagnostic criteria and guidelines for preeclampsia’’ (KI1).

4.8 Discussion of Findings

4.8.1 Socio-demographic characteristics Influence adherence to the Ministry of Health guidelines in the management of severe preeclampsia among the Nurses at KNH

The study on the influence of socio-demographic characteristics on adherence to the Ministry of Health guidelines in the management of severe preeclampsia among nurses at Kenyatta

National Hospital (KNH) revealed a significant association between age and adherence to the MoH guidelines, suggesting that older nurses, who typically have more experience, are more likely to adhere to these guidelines. This could be attributed to their greater familiarity and confidence in using the guidelines, likely developed over years of practice. This finding is consistent with Fred Muhairwe's (2020) study in Rwanda, which found that most nurses were middle-aged, with a substantial portion having more than two years of experience. Similarly, the study by Olaoye *et al*. (2019) in Nigeria reported an average age of 35.45 years among maternity nurses, indicating a seasoned workforce. These studies support the idea that experience, which often correlates with age, enhances adherence to clinical guidelines.

The study at KNH did not find a significant association between marital status and adherence to guidelines. This suggests that marital status might not be a crucial factor in determining adherence to professional guidelines in this context. This is in contrast to Olaniyan *et al*. (2023) study in Nigeria, which highlighted that marital dissatisfaction among nurses, due to work demands and poor remuneration, might affect their motivation. The difference in findings could be due to varying social and cultural contexts or differing work environments across the regions.

Contrary to expectations, the study at KNH did not find a significant association between the level of education and adherence to the guidelines. This suggests that, within this particular context, having higher educational qualifications does not necessarily translate to better adherence to the guidelines. This finding is somewhat in contrast with the assertion by Olaide *et al*. (2018) in Nigeria that the level of education is an important consideration in employing healthcare workers. This discrepancy might point to other factors, such as perception, institutional culture or specific training on guidelines, being more influential in adherence than the general educational level.

4.8.2 Level of knowledge on adherence to the Ministry of Health guidelines in the management of severe preeclampsia among nurses at KNH

The findings showed strong knowledge about Magnesium Sulphate being used in eclamptic fits. However, there was significant variability in responses regarding its dosage. This finding aligns with studies in Nigeria and other regions where nurses demonstrated awareness of MgSO4 as a treatment for preeclampsia/eclampsia. However, gaps in knowledge about dosage and administration, as noted by Lumela *et al*. (2017), indicate a need for more focused training. The divided opinion or uncertainty about the role of proteinuria in diagnosing preeclampsia at KNH suggests a gap in understanding this critical diagnostic criterion. This finding is echoed in studies by Confidence *et al*. (2022) and Garovic *et al*. (2022), highlighting a broader trend of inconsistency in knowledge about preeclampsia management, particularly in diagnostic criteria. The high variance in responses at KNH regarding the effectiveness of Magnesium Sulphate in managing severe eclampsia points to a lack of consensus or confidence among nurses. This is consistent with the findings by Garovic *et al*. (2022), where healthcare professionals expressed a lack of faith in or fear of the toxicity of MgSO4, limiting its use.

The correct understanding among many KNH nurses that diazepam is not the recommended first-line anticonvulsant (in favor of magnesium sulfate) reflects a level of awareness consistent with current guidelines. The strong knowledge among KNH respondents about the importance of delivering the fetus in managing pre-eclampsia is a positive indication of adherence to critical management steps. The high variation in opinions about the warning signs of preeclampsia onset suggests a need for more comprehensive training in early diagnosis and management. The significant association between training and adherence to guidelines at KNH reinforces the importance of continuous education. This is supported by the findings of Angelina *et al*. (2020), emphasizing the role of educational preparation in awareness of treatment protocols.

The moderate to good knowledge level described at KNH indicates room for improvement. This is consistent with studies like that of Olaoye *et al*. (2019) and El Rheem & Mousa (2018), which found variability in knowledge levels about WHO guidelines among healthcare professionals.

4.8.3 Perception on adherence to the Ministry of Health guidelines in the management of severe preeclampsia among nurses at KNH

The study at Kenyatta National Hospital (KNH) assessing the influence of perception on adherence to the Ministry of Health guidelines in managing severe preeclampsia among nurses revealed important insights that align with existing literature on healthcare practices and guideline adherence. The overwhelming majority of KNH nurses (93%) perceived the guidelines as essential for optimal patient outcomes. This high level of perceived necessity correlates strongly with adherence to the guidelines, as evidenced by the Pearson Chi-Square value of 49.325 ($p < .000$), indicating that recognizing the importance of guidelines is a significant factor in their application. Most nurses at KNH found the guidelines easy to use and were confident in their ability to adhere to them. This positive perception and ease of use, reflected in the Pearson Chi-Square values (47.159 and 86.574 respectively, both with $p < .000$), are crucial for effective implementation, as suggested by Garovic (2022) and the health belief model (Potter & Perry, 2018). These findings are consistent with the notion that positive attitudes towards guidelines enhance their proper utilization, leading to effective medical practices and improved patient outcomes.

There was a moderate agreement among nurses regarding the ease of recognizing and managing severe preeclampsia. These findings, with their associated variabilities, suggest that while there is a general consensus on the guidelines' clarity, opinions differ on specific management aspects. This variation underscores the need for targeted education and training to ensure a uniform understanding and application of the guidelines. Nurses disagreed with the

statement that Magnesium sulphate is ineffective, indicating a general consensus on its efficacy in treating severe preeclampsia. However, the high standard deviation suggests a range of opinions, possibly reflecting gaps in knowledge or experience with the medication. Nurses disagreed with the notion that guidelines are unnecessary, reinforcing the importance of standardized protocols in clinical practice. There was a statistically significant association between confidence in Guideline use and adherence to the national guidelines in the management of severe preeclampsia. These findings align with studies in other regions, such as the research by Theodorou *et al*. (2018) and Seyoum *et al*. (2021), which highlighted the role of perceptions in guideline adherence. Similarly, studies in Uganda and Ghana (Garovic *et al*., 2022; Browne *et al*., 2019) underscored the importance of proper guideline usage in improving maternal outcomes.

4.8.4 Institutional-related factors influencing adherence to the Ministry of Health guidelines in the management of severe preeclampsia among nurses at KNH.

The majority of respondents at KNH reported an increased workload due to staff shortages. High workload, as indicated by a significant Pearson Chi-Square value of 41.9 ($p < .000$), is a notable barrier to adhering to guidelines, echoing findings by Carceres *et al*. (2021) and Browne *et al*. (2019). These studies highlighted that increased workload due to inadequate staffing leads to poor guideline implementation, as healthcare workers struggle to divide their attention among many patients.

Shortages of critical medications like Magnesium Sulphate and essential equipment were reported at KNH. However, contrary to expectations, the study found no statistically significant association between these shortages and guideline adherence (Pearson Chi-Square value of 1.9 for medicine stockouts and 0.084 for equipment availability). This finding diverges from studies like Patel *et al*. (2020) and Fafa *et al*. (2018), which emphasized the impact of drug shortages on patient care and adherence to guidelines.

Most respondents at KNH had access to a hand copy of the guidelines and over half had received training in managing severe preeclampsia. A significant association was found between having a copy of the guidelines and adherence (Pearson Chi-Square value of 43.294, $p < .000$), suggesting that accessibility to guidelines is crucial for effective implementation. This aligns with the broader literature that emphasizes the importance of guideline availability and proper training in ensuring adherence.

The interviews at KNH highlighted that nurses' perceptions of guidelines and institutional support significantly affect their utilization. This is in line with the health belief model, as described by Potter & Perry (2018), which underscores the influence of personal attitudes and perceptions on healthcare practices.

The findings at KNH contrast with studies in other regions, such as those by Eddy *et al*. (2022), which highlighted the detrimental effect of drug shortages on guideline adherence. This discrepancy might indicate that other factors, such as institutional culture or individual nurse resilience, could play a role in managing these shortages at KNH.

CHAPTER FIVE

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

5.0 Introduction

The chapter presents sections on summary which recaps the findings, the conclusion which is the inferences of the findings and the recommendations which are the suggestions made from the findings.

5.1 Summary of Findings

5.1.1 Influence of socio-demographic characteristics on adherence to the Ministry of Health guidelines in the management of severe preeclampsia

The study primarily focused on the socio-demographic characteristics of nurses and their impact on the utilization of Ministry of Health guidelines for managing severe preeclampsia. A significant portion of the respondents were female, with most falling within the 18-30 age group. The prevalent educational background among the respondents was a Basic Diploma. In terms of marital status, the majority were married, and a large number had over 10 years of service.

In analyzing the demographics of nursing officers in charge, it was noted that a considerable proportion were female, possessing either a higher diploma or a degree. All of them had received training on preeclampsia, and a majority had over a decade of experience. The study revealed insights into how these socio-demographic factors influence the application of the guidelines. Experience, which often correlates with age, was seen as a key factor. Nurses with more years in the field were more likely to be familiar with and confident in using the guidelines.

Statistical analysis indicated a significant association between certain demographic factors and adherence to the guidelines. Age was found to be a significant factor in adherence to the

management of severe preeclampsia guidelines. However, other factors like marital status and education level did not show a statistically significant correlation with adherence to these guidelines. This suggests that while certain socio-demographic characteristics may influence guideline adherence, others do not significantly impact the application of these critical healthcare protocols.

5.1.2 Influence of the level of knowledge on adherence to the Ministry of Health guidelines in the management of severe preeclampsia

A significant portion (62.5%) of the respondents had been trained on MOH guidelines for managing preeclampsia. Additionally, a high percentage (85.9%) indicated having knowledge of the management of severe preeclampsia as per MOH guidelines. The assessment of their knowledge levels revealed that nearly half (47.7%) of the respondents had a moderate level of knowledge, while an equivalent percentage reported a high level of knowledge on the subject. When evaluating specific statements related to preeclampsia management; there was strong agreement and knowledge that magnesium sulfate is used as an anticonvulsant in eclamptic fits, though there was some level of disagreement or variance in opinions. A general agreement was noted on the recommended dosage of magnesium sulfate, as per WHO guidelines, but with considerable variability in responses. The role of proteinuria as a sign of preeclampsia showed general agreement, but with high variability, indicating divided opinions or uncertainty. Respondents recognized the effectiveness of magnesium sulfate in preventing and treating severe eclampsia, but opinions varied. There was a lower level of agreement and higher disagreement regarding the use of Diazepam as an anticonvulsant in eclamptic fits, indicating correct understanding among many respondents. There was strong agreement that the delivery of the fetus is key in managing pre-eclampsia. Many believed there are warning signs for the onset of preeclampsia, yet opinions varied significantly. The interviewees described the nurses'

knowledge level on MOH guidelines as moderate to good. Increasing nurses' knowledge about the guidelines could lead to better adherence.

Statistical analysis showed a significant association between training and adherence to national guidelines in severe preeclampsia management. Furthermore, there was a statistically significant association between knowledge of management and adherence to these guidelines.

5.1.3 Influence of perception on adherence to the Ministry of Health guidelines in the management of severe preeclampsia among nurses at KNH

A vast majority (93%) of the respondents acknowledged the necessity of MOH severe preeclampsia management guidelines for optimal patient outcomes. Additionally, almost three-quarters found the use and adherence to these guidelines easy, indicating a general consensus on their practicality and relevance in clinical settings. A significant portion of respondents expressed confidence in their ability to adhere to the MOH Guidelines in severe preeclampsia management. This suggests a positive attitude towards guideline implementation and a belief in their own capability to follow these protocols effectively. The majority agreed that severe pre-eclampsia is easily recognizable, though there was some variability in responses.

There was a moderate level of agreement that severe pre-eclampsia is manageable, with noticeable variability indicating differing opinions among respondents. The guidelines themselves were generally perceived as clear and easy to understand, with most respondents agreeing on their clarity and usability. The belief that adherence to health guidelines is achievable in their workplace was prevalent among respondents, although opinions varied to some extent.

Respondents disagreed with the statement that Magnesium sulphate is ineffective in severe pre-eclampsia cases. They also disagreed with the notion that MOH guidelines are unnecessary when managing patients with severe pre-eclampsia. Interviews revealed that nurses generally have a positive perception of the MOH guidelines. This positive outlook is crucial as it

influences their utilization in clinical practice. Nurses with a positive view of the guidelines tend to trust them and follow them more diligently, leading to better patient outcomes.

Statistical analysis showed a significant association between the perceived necessity and ease of guideline use, as well as confidence in using the guidelines, and adherence to the national guidelines in the management of severe preeclampsia.

A significant majority (93%) of respondents reported increased workloads due to staff shortages. This situation can negatively impact patient care and the well-being of the staff, potentially affecting adherence to the guidelines. A notable issue identified was the shortage of Magnesium sulphate, crucial for eclampsia management, experienced by about 68% of respondents. Additionally, nearly all respondents (93%) faced stock outs of essential antihypertensives. While over half of the respondents could access Magnesium sulphate from nearby facilities, nearly half faced challenges in obtaining it. The availability of sufficient equipment for managing eclampsia, reported by 68.8% of respondents, is another critical factor, with a significant minority lacking the necessary equipment. Respondents indicated the availability of various equipment and supplies such as CCU, monitoring tools, ventilators, and blood pressure machines, which aid in managing severe preeclampsia. However, some essential items like beds with rails and monitors were noted to be in short supply. Most respondents (63.3%) had access to a hand copy of the guidelines. However, a notable proportion did not, which could impact adherence. Interviews revealed that institutional factors such as staff shortage, medication stock outs, and lack of equipment can significantly delay diagnosis and hinder adherence to guidelines. Overloaded workloads due to staff shortages make it challenging to follow guidelines closely.

The Pearson Chi-Square tests showed a significant association between workload and adherence to guidelines, indicating that increased workload negatively impacts guideline adherence. However, no statistically significant association was found between medicine

stockouts or equipment availability and adherence to the guidelines. There was a significant association between having a copy of the guidelines and adherence, emphasizing the importance of easy access to the guidelines.

5.2 Conclusion

The study's findings indicate that socio-demographic characteristics of nurses, such as age, education level, and years of experience, play a crucial role in the utilization of Ministry of Health guidelines for managing severe preeclampsia. Age showed a significant association with adherence to these guidelines, suggesting that more experienced nurses are likely to be more familiar and compliant with them, while other factors like marital status and education level did not demonstrate a statistically significant impact on guideline adherence. The high proportion of trained respondents and their varied levels of knowledge highlight the importance of continuous training and education in enhancing guideline adherence. These insights underscore the need for targeted training programs that consider these socio-demographic factors to improve the application of preeclampsia management guidelines, ultimately enhancing patient care outcomes.

The study clearly demonstrates that the level of knowledge among nurses significantly influences their adherence to Ministry of Health guidelines in managing severe preeclampsia. Higher levels of awareness and understanding of these guidelines correlate with better compliance, indicating that well-informed nurses are more likely to implement the recommended practices effectively. This highlights the critical need for ongoing education and training programs that enhance nurses' knowledge and understanding of these guidelines. Such initiatives are essential for ensuring high standards of patient care and improving outcomes in the management of severe preeclampsia. Consequently, investing in the continuous

professional development of nursing staff emerges as a key strategy in promoting adherence to these vital health guidelines

In conclusion, the study at KNH indicates that nurses' perceptions significantly influence their adherence to severe preeclampsia management guidelines. A positive view of the guidelines' necessity, ease of use, and effectiveness is associated with higher adherence levels. These findings highlight the importance of fostering positive attitudes towards guidelines and ensuring their accessibility and comprehensibility to enhance adherence and ultimately improve patient outcomes.

The study indicates that institutional factors like workload, availability of the guidelines were significant factors influencing adherence to the Ministry of Health guidelines in the management of severe preeclampsia. However, for factors such as equipment, and medication availability, their direct impact on guideline adherence might be mitigated by other factors, such as nurse resilience, access to guidelines, and training. However, there is a clear indication that improving these institutional factors could further enhance adherence and patient care quality. This suggests a need for systemic changes to address these issues, including increasing staff numbers, ensuring consistent medication and equipment supply, and widespread training on guidelines.

5.3 Recommendations

The Ministry of Health should develop and implement training programs specifically tailored to the needs of younger and less experienced nurses, as age and experience were significant factors in guideline adherence. These programs should focus on practical aspects of managing severe preeclampsia, including the latest MOH guidelines. The ministry should implement mandatory refresher courses at regular intervals to keep nurses updated on any changes or

advancements in the guidelines. These courses can be conducted online or in person for greater accessibility.

KNH should regularly assess the knowledge levels of nurses regarding these guidelines and provide individualized feedback. Identifying knowledge gaps allows for targeted educational interventions.

There is a need for KNH to develop mentorship programs and peer support groups where experienced nurses can help less experienced staff build confidence in using the guidelines. Sharing real-life cases and experiences can be particularly effective. KNH should conduct sessions to address and clarify any misconceptions about the guidelines, such as the effectiveness of certain treatments or management strategies.

KNH inconjuction with MOH should implement strategies to manage staff shortages and redistribute workloads. This could include hiring additional staff, using temporary staff during peak times, or reorganizing tasks to ensure that the workload is manageable and does not impede adherence to guidelines.

KNH through the MOH should develop a more robust system for managing and monitoring medication stocks, particularly for essential drugs like Magnesium sulphate and antihypertensives, to prevent stock outs and ensure that necessary medications are always available. They should also regularly assess and fulfil the equipment needs in healthcare facilities. This includes ensuring that all necessary equipment for managing severe preeclampsia, like blood pressure monitors and infusion pumps, is available and in good working condition.

KNH should ensure that all healthcare providers have easy access to the latest version of the guidelines. This could involve distributing physical copies, creating easily accessible digital versions, or integrating them into hospital information systems.

5.4 Suggestions for Further Studies

Further studies could compare adherence rates and outcomes between different institutions or regions with varying resources, policies, and training programs. This would provide insights into the effectiveness of different approaches in managing severe preeclampsia.

Further studies could assess how adherence to guidelines affects patient outcomes and satisfaction. This could involve tracking recovery rates, complications, and patient feedback.

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APPENDICES

Appendix I: Letter to KNH/UoN Ethics and Research Committee

Esther Njeri Nduati

C/o Mount Kenya University,

Thika.

THE CHAIRPERSON,

KNH/UON ERC,

P.O BOX 20723-00202,

NAIROBI.

Email: uonknh_erc@uonbi.ac.ke

Telephone: 0799-495829 / 0799-495830

Dear Sir/Madam,

REF: SEEKING PERMISSION TO CARRY OUT RESEARCH IN KENYATTA NATIONAL HOSPITAL.

I humbly request for your permission to conduct research on the ***determinants of adherence to ministry of health guidelines in management of severe preeclampsia among midwives in maternity unit, Kenyatta National Hospital.***

I am a post-basic student undertaking a degree of Master of Science in nursing - midwifery at the Mount Kenya University, School of Nursing. The findings of this study will be resourceful to the mothers and their newborns who will be delivered in the hospital.

Your kind consideration will be highly appreciated.

Yours faithfully,

Esther Njeri Nduati

MScN/2016/59214

Appendix II: Consent Form for Participants

PARTICIPANT INFORMATION AND CONSENT FORM

INFORMED CONSENT FORM FOR INVITED TO PARTICIPATE IN A STUDY TITLED: DETERMINANTS OF ADHERENCE TO MINISTRY OF HEALTH GUIDELINES IN MANAGEMENT OF SEVERE PREECLAMPSIA AMONG MIDWIVES IN MATERNITY UNIT, KENYATTA NATIONAL HOSPITAL

Dear Respondent,

I am ESTHER NJERI NDUATI, a master of science in nursing – midwifery student in Mount Kenya University. I am conducting the above named study. As part of my study, I will be sharing certain details with you and asking for your input. This consent form may include terms that are unfamiliar to you. If you would want a moment of silence while I explain anything, just let me know. The findings of this study will be resourceful to the mothers and their newborns who will be delivered in the hospital.

May I continue? YES / NO

What is this Study About?

I will interview Kenyatta National Hospital Midwives and Nursing Officer In charges. The purpose of this study is to evaluate the determinants of adherence to ministry of health guidelines in management of severe preeclampsia among midwives in maternity unit. This will be useful in recommending that the Ministry of Health's guidelines for treating severe preeclampsia be strictly followed.

What will happen if you decide to be in this Research Study?

The following will occur if you consent to participate in this study:

It will take you about 20 minutes to complete the survey. Knowledge of preeclampsia diagnosis and current practice are only two of the subjects that will be explored in the survey.

Voluntary Participation

Your participation in this research is entirely optional. Whether or if you take part is totally up to you. The decisions you make will have no effect on you. Even if you agreed to participate earlier you may change your mind later.

Procedures

You will be interviewed by use of a questionnaire. Your name will not be written on the questionnaire when filling it. I will be reading each question and you will be required to respond to it. You can ask me to move on to the next question if you feel uncomfortable to with the

question, the information recorded will be kept confidential and no other than the researcher will have an access to the information recorded during interview.

Duration

The duration of interview may be about 15-20 minutes and data will be collected for about two weeks.

Risk

There will be no risk that this study may put you on, only that there is a possibility that you will share some of your personal information with me, if you are not comfortable with the questions feel free to ask me to move to the next question.

Reimbursements

Your participation in this research will not result in any tangible gain for you in any way. You will not be provided with any monetary token for taking part in the research.

Confidentiality

The information obtained will not be shared with anyone. This information will be kept private. The questionnaire will not include your name but rather a number as code. Only the researcher will know your phone number and once the number has been compiled the questionnaire will be locked away in a secure location.

Sharing the result

The information you provide today will not be shared with anyone and nothing will be attributed to your name. The findings of this research project will be shared with you, Hospital and Management team as a whole. Furthermore, the final result will be available at maternity unit so as everyone can read the recommendation to improve adherence to use of MoH guidelines and the Hospital Management Team can act on the challenges that maternity unit nurses face.

Right to refuse or withdraw

You are under no obligation to take part in this study, and doing so will have no negative consequences for you. Even if you have begun the interview you may wish to withdraw from the research process. At the end of the interview you will have the opportunity to review what you have said and you can request your answers to be modified.

Who to contact

If you have any questions, you are more than welcome to ask them at any time during this conversation. You can get in touch with Esther if you have any questions at a later time on 0731368159.

This proposal has been approved by Kenyatta National Hospital-University of Nairobi Research Ethics Committee, whose responsibility it is to safeguard the well-being of those who volunteer to take part in a study.

PARTICIPANT'S ADDITIONAL CONSENT STATEMENT

I acknowledge that I have read and fully understand the participant information and permission form.

I have had enough time to think over the information presented and seek guidance if needed.

I've been given a chance to ask inquiries and have received answers that have satisfied me.

I agree that any data obtained will be treated as strictly private and used solely for research.

I am aware that my participation in this study is fully optional and that my decision to quit at any time will not compromise the integrity of the research.

When I sign this permission form, I know that it won't mean I lose any rights.

I acknowledge reading this consent form in its entirety and giving my informed permission to take part in this research.

I understand a signed and dated copy of this form will be sent to me.

I agree to participate **YES** ☐ **NO** ☐

Participant signature _____ Date _____

RESEARCHER'S STATEMENT

It is my responsibility, as the undersigned, to ensure that the participant understands all aspects of this study. The participant is fully informed and giving her permission voluntarily.

Researcher's signature _____ Date _____

OPINION OF THE WITNESS

The undersigned has seen the consenting procedure take place. The researcher has provided the volunteer with a thorough explanation of all the important aspects of this investigation. She has read and fully comprehended the agreement she is making.

Signature _____ Date _____

Appendix III: Questionnaire

Date…… **Code**…….

Instructions:

- Do not provide any identifying information on the survey.
- There are 4 distinct parts to this questionnaire. It would be much appreciated if you could finish filling out the whole form.
- Respond by ticking (√) the most appropriate responses.

Section A: Socio-Demographic Characteristics of the Respondents

1. Sex

   Male ⬭

   Female ⬭

2. What is your age in complete years_____?

3. What is the highest qualification in your professional training?

   a) Basic Diploma ⬭

   b) Higher Diploma

   c) Degree ⬭

   d) Masters' degree

   e) Other (specify) ⬭

4. What is your marital status?

   a) Single ⬭

   b) Married ⬭

   c) Widowed ⬭

   d) Separated ⬭

   e) Any other specify ……

5. How long have you been in the field since you first qualified?

   a) Less than 1 year ⬭

   b) 1-5 years ⬭

   c) 6 -10 years ⬭

   d) More than 10 years ⬭

Section B: Nurses Knowledge of on Ministry of Health Guidelines in Severe Preeclampsia Management

6. Have you been trained on MOH guidelines on management of preeclampsia?

   Yes⬭

   No⬭

7. Do you have the knowledge on the management of severe preeclampsia as provided for by Ministry of Health?

   Yes⬭

   No⬭

8. How would you rate your knowledge on the management of severe preeclampsia as provided for by Ministry of Health?

   Low⬭

   Moderate ⬭

   high⬭

9. On the scale of 1-5give your responses (1= Strongly Disagree, 2= Disagree, 3=Neutral, 4=Agree and 5=Strongly Agree).

		1	**2**	**3**	**4**	**5**
1	Magnesium sulphate is the anticonvulsants used in eclamptic fits					
2	Magnesium sulphate dosage recommended by the WHO guidelines is 4 grams administered intravenously and 10 grams administered intramuscularly					

3	Proteinuria is always a sign of preeclampsia					
4	Magnesium sulphate is more effective in the prevention and treatment of severe eclampsia					
5	Diazepam is the recommended anticonvulsant to use in eclamptic fits					
6	Delivery of fetus is key in management of Pre-eclampsia					
7.	The onset of Preeclampsia has a warning					

Section C: Nurses' Perception towards the Use of MOH Guidelines in Severe Preeclampsia Management

10. The MoH Severe Preeclampsia Management guidelines are necessary for ensuring optimal patient outcomes?

    Yes ⬭

    No ⬭

11. Do you believe that the use and adherence of MOH Guidelines in Severe Preeclampsia Management is easy?

    Yes ⬭

    No ⬭

12. Do you feel confident in your ability to adhere to the MOH Guidelines in Severe Preeclampsia Management?

    Yes ⬭

    No ⬭

13.

14. On the scale of 1-5give your responses (1= Strongly Disagree, 2= Disagree, 3=Neutral, 4=Agree and 5=Strongly Agree).

		1	**2**	**3**	**4**	**5**

1	Severe pre-eclampsia is easily recognized					
2	Severe Pre-eclampsia is easy to manage					
3	Pre-eclampsia/MoH Management guidelines are clear and easy to understand and use					
4	Adherence to the health guidelines is achievable in my workplace					
5	Magnesium sulphate does not work in a patient with severe pre-eclampsia					
6	I don't need MoH guidelines when managing patients with severe pre-eclampsia					

Section D. Institutional-related Factors

15. Do you experience a challenge of more workload due to a shortage of staff?

a) Yes ⬭

b) No ⬭

16. Do you ever experience a shortage of Magnesium sulphate?

a) Yes ⬭

b) No ⬭

17. Do you experience stock outs for essential antihypertensive?

a) Yes ⬭

b) No ⬭

18. Can you easily get magnesium sulphate in near facilities for use in case you encounter a patient with eclampsia?

c) Yes ⬭

d) No ⬭

19. Do you readily have sufficient equipment for use when you encounter a patient with eclampsia?

a) Yes ⬭

b) No ⬭

20. If yes, what other equipment/supplies do you have that help in the management of the cases?

a) ……..

b) ……..

c) ……..

d) ……..

21. If no, which equipment/supplies are not available but important in the management of the cases?

a) ……..

b) ……..

c) ……..

d) ……..

22. In the facility do you have a hand copy of the guidelines for the management of severe preeclampsia?

a) Yes ⬭

b) No ⬭

23. Has the facility trained you on the management of severe preeclampsia guidelines?

a) Yes ⬭

b) No ⬭

Section E. Adherence to MoH Guidelines

24. Do you refer to the Ministry of Health guidelines in the management of severe preeclampsia?

Yes ⬭

No ⬭

25. Do you comply with the Ministry of Health guidelines in the management of severe preeclampsia?

Yes ⬭

No ⬭

26. Kindly rate the extent to which Midwives in the hospital adhere to the Ministry of Health guidelines in the management of severe preeclampsia?

Not at all ⬭

Rarely ⬭

Sometimes ⬭

Always ⬭

Often ⬭

High ⬭

Moderate ⬭

Low ⬭

27. On the scale of 1-5give your responses (1= Strongly Disagree, 2= Disagree, 3=Neutral, 4=Agree and 5=Strongly Agree).

		1	**2**	**3**	**4**	**5**
1	I always measure blood pressure, urine protein, and fetal heart rate in accordance with the Pre-eclampsia/MoH Management guidelines					

2	I always provide appropriate pharmacologic therapy for patients with pre-eclampsia, as recommended in the guidelines					
3	I administer Antihypertensive medications to lower blood pressure, and magnesium sulfate to prevent seizures					
4.	I closely monitor urine output					
5.	I refrain from using diuretics for fluid management in severe Preeclampsia cases					
6.	I consider the induction of delivery after reaching a gestation period of 34 weeks.					

28. What barriers/challenges do you face when trying to adhere to the guideline the Ministry of Health guidelines in the management of severe preeclampsia?

……

……

Appendix IV: Key Informant Interview Guide

Dear participant,

I appreciate your time and effort in participating in this study's Key informant interview on "Determinants of adherence to Ministry of Health guidelines in management of severe Preeclampsia among Midwives in maternity unit at KNH Nairobi, Kenya"

The participant information sheet describes the specifics of the study. The informed consent form you'll need to fill out as evidence of your agreement to participate lays out the requirements for giving your permission. In responding to the questions, please be open, honest, and proactive. A Key Informant Interview Guide will be used to direct the conversation with the interviewee. Any and all data collected will be kept in the strictest confidence and used only for the stated study objectives. Please try to be as specific as you can in your answers. Any questions you may have, please ask. All of this is really appreciated.

Section I: Demographic data

1. Sex Male [ ] Female [ ]
2. Level of education attained

Diploma [ ] Higher Diploma [ ] Degree [ ] Masters [ ]

Other (Specify) _____

3. How many years of experience do you have_____?
4. Have you received training on preeclampsia Yes [ ] No [ ]
5. If Yes, when was the last training you received _____

Where? _____

Section II: Socio-Demographic Characteristics of Nurses and utilization of the MOH guidelines in the management of severe preeclampsia

6. What, in your view, are the Nurses' socio-demographic characteristics that influence the utilization of the Ministry of Health guidelines in the management of severe preeclampsia?
7. How do the stated socio-demographic characteristics influence the utilization of the Ministry of Health guidelines in the management of severe preeclampsia?

Section III: Nurses' Knowledge on MOH Guidelines in Severe Preeclampsia Management

8. How would you describe the nurses' level of knowledge on the Ministry of Health guidelines in severe preeclampsia management?
9. Does the nurses' level of knowledge on Ministry of Health guidelines in severe preeclampsia management affect its utilization? If yes, how?

Section IV: Nurses' Perception towards the Use of MOH Guidelines in Severe Preeclampsia Management

10. How would you describe the Nurses' Perception Towards the Use of MOH Guidelines in Severe Preeclampsia Management
11. Does the perception of nurses towards the use of Ministry of Health guidelines in severe preeclampsia management affect its utilization? If YES, how?

Section V. Institutional-related Factors

12. What institutional factors in your view affect the utilization of the Ministry of Health guidelines in severe preeclampsia management?
13. To what extent do you think hospital- and facility-related issues delay preeclampsia diagnosis? In what sense?

Section VI: Adherence to the Ministry of Health guidelines

14. What has your history with preeclampsia diagnosis been like? How did you define success? In order to confirm the diagnosis, what tests are performed?

15. How would you rate the extent to which Midwives in the hospital adhere to the MoH guidelines in management of severe preeclampsia?
16. What barriers/challenges are faced by the Midwives in adherence to the guidelines the MoH guidelines in management of severe preeclampsia?
17. In your opinion, how may preeclampsia diagnoses be made more accurate?

Appendix V: National Guidelines on Management of Severe Preeclampsia

(Scanned from the National Guidelines for Quality Obstetrics and Perinatl Care)

Pre- Eclampsia and Eclampsia

Outline

1. Introduction and Definition pre-eclampsia and eclampsia
2. Risk factors for pre-eclampsia and eclampsia
3. Classification of pre-eclampsia /Eclampsia
4. Diagnosis pre-eclampsia /Eclampsia
5. Management of pre-eclampsia and eclampsia

Introduction / Epidemiology

Preeclampsia is a disorder of widespread vascular endothelial malfunction and vasospasm that occurs after 20 weeks' gestation and can present as late as 4-6 weeks postpartum. It is clinically defined by hypertension and proteinuria, with or without pathologic oedema.

Preeclampsia is part of a spectrum of hypertensive disorders that complicate pregnancy. These include chronic hypertension, preeclampsia superimposed on chronic hypertension, gestational hypertension, preeclampsia, and eclampsia. Although each of these disorders can appear in isolation, they are thought of as progressive manifestations of a single process and are believed to share a common aetiology.

The global incidence of preeclampsia has been estimated at 5-14% of all pregnancies. In developing countries, hypertensive disorders were the second most common obstetrical cause of stillbirths and early neonatal deaths, Preeclampsia is the third leading pregnancy-related cause of death, after haemorrhage and sepsis. Preeclampsia is the cause in an estimated 790 maternal deaths per 100,000 live births accounting for 23.6%.

Race: The frequency of mortality differs among race and ethnicity, with black women having a worse mortality rate than white women.

Age: Preeclampsia occurs more frequently in women at the extremes of reproductive age.

- Younger women (<20 y) have a slightly increased risk. Primigravid patients in particular seem to be predisposed.
- Older women (>35 y) have a markedly increased risk.

Genetics have long been understood to play an important role, and the risk of preeclampsia is positively correlated between close relatives; a recent study showed that 20-40% of daughters and 11-37% of sisters of preeclamptic women also develop preeclampsia. Twin studies have also shown a high correlation, approaching 40%.

Definitions:

Consensus is lacking among the various national and international organizations about the values that define the disorder, but a reasonable limit in a woman who was normotensive prior to 20 weeks' gestation is a systolic blood pressure (BP) greater than 140 mm Hg and a diastolic BP greater than 90 mm Hg on 2 successive measurements 4-6 hours apart.

Preeclampsia in a patient with pre-existing essential hypertension is diagnosed if systolic BP has increased by 30 mm Hg or if diastolic BP has increased by 15 mm Hg.

Proteinuria is defined as 300 mg or more of protein in a 24-hour urine sample. Although more convenient, a urine dipstick value of 1+ or more (30 mg/dL) is not reliable.

Risk factors for pre-eclampsia and eclampsia

- Pregnancy-associated risk factors
  - Chromosomal abnormalities
  - Hydatidiform mole
  - Multiple pregnancy: Incidence is increased in twin gestations but is unaffected by their zygosity.
  - Oocyte donation or donor insemination
  - Urinary tract infection
- Maternal-specific risk factors
  - Extremes of age (maternal age <20 and>35 yrs)
  - Black race: (In the United States, the incidence of preeclampsia is 1.8% among white women and 3% in African Americans).
  - Family history of preeclampsia
  - Nulliparity (more common in primigravidae)
  - Preeclampsia in a previous pregnancy
  - Change of male partner
  - Diabetes
  - Obesity: Body weight is strongly correlated with progressively increased risk, ranging from 4.3% for women with a BMI <20 kg/m to 13.3% in those with a BMI >35 kg/m.
  - Chronic hypertension
  - Renal disease
  - Collagen vascular disease
  - Antiphospholipid syndrome
  - Periodontal disease
  - Vitamin D deficiency: One literature review suggests that maternal vitamin D deficiency may increase the risk of preeclampsia and foetal grown restriction.

Essential for diagnosis of Pre-Eclampsia:

Hypertension: Hypertension is blood pressure (BP) of 140/90 mmHg or more on two occasions six hours apart OR A diastolic blood pressure of 110 mmHg or more on a single occasion ***Proteinuria:*** Is a protein concentration of 0.3 g/l or more in at least two random urine specimens collected six hours apart OR Urine dipstick finding of ***'trace', '1+',*** or more proteins Normally protein is not supposed to be present in urine.
Oedema: Gradual or sudden swelling of the face, hands and legs.

Eclampsia:

It is characterized by convulsions -fits (in the absence of other medical conditions predisposing to convulsions) in a woman with pre-eclampsia.

Impending Eclampsia:

Impending eclampsia means that eclamptic fits are likely to occur very soon, usually in a woman with severe pre-eclampsia. Symptoms and Signs of impending eclampsia include:

- Severe headache
- Drowsiness
- Mental confusion
- Visual disturbance (e.g. blurred vision, flashes of flight)
- Epigastric pain
- Nausea / vomiting
- A sharp rise in blood pressure
- Decreased urinary output
- Increased proteinuria
- Hyper-reflexia

Classification of pre-eclampsia/ eclampsia

Pre-eclampsia is classified as mild, and severe. The clinical picture of the different stages is shown in the table below:

Table showing Classification and Clinical picture of Pre-eclampsia and Eclampsia

Finding	Mild Pre-eclampsia	Severe Pre-eclampsia	Eclampsia
Diastolic blood pressure	absolute level is > 90 but <100	absolute level is >100	As in severe pre-eclampsia plus fits
Proteinuria	Trace or 1+	2+ or greater	
Generalized oedema including face and hands	Absent	Persistently present	
Headache	Absent	Present	
Visual disturbance	Absent	Present	
Upper abdominal pain	Absent	Present	
Oliguria	Absent	Present	
Diminished foetal movement	Absent	Present	

Characteristics of Eclamptic fits:

- Convulsions may occur regardless of the severity of hypertension, are difficult to predict and typically occur in the absence of hyper-reflexia, headache or visual changes.
- Convulsions are tonic-clonic and resemble grand-mal seizures of epilepsy
- Seizures may recur in rapid sequence as in status epilepticus, and end in death.
- Convulsion may be followed by coma that lasts minutes or hours, depending on the frequency of seizures.
- 25% of eclamptic fits occur after delivery of the baby.

Stages of eclamptic fit

An eclamptic fit is similar to an epileptic fit, and has the following stages:

A) Premonitory stage

This lasts 10-20 seconds, during which:

- The eyes roll or stare
- The face and hand muscle may twitch
- There is a loss of consciousness

B) *Tonic stage*

This stage lasts 10-20 seconds, during which:

- The muscles go stiff or rigid
- The colour of the skin becomes blue or dusky (cyanosis)
- The back may be arched
- The teeth are clenched
- The eyes bulge

Remember that the onset of pre-eclampsia and eclampsia can be very sudden and without warning

C) *Clonic Stage*

This stage lasts 1- 2 minutes and is marked by:

- Violet contraction and relaxation of the muscles occur
- Increased saliva causes "foaming" at the mouth
- Deep noisy breathing
- Inhalation of mucous or saliva
- The face looks congested (filled with blood) and swollen
- Tongue is bitten by violent action of the jaws

D) *Coma stage*

This may last minutes or hours. During this time

- There is a deep state of unconsciousness
- Breathing is noisy and rapid
- Cyanosis fades, but the face remains congested and swollen
- Further fits may occur before the woman regains consciousness

Differential diagnosis of Eclampsia

Eclampsia must be differentiated from other conditions that may be associated with convulsions and coma, e.g. epilepsy, cerebral malaria, meningitis, head injury, cerebrovascular accident, intoxication (alcohol, drugs, and poisons), drug withdrawal, metabolic disorders, water intoxication, , encephalitis, hypertensive encephalopathy, hysteria.

Diagnosis of Preeclampsia /Eclampsia

History:

Mild-to-moderate preeclampsia may be asymptomatic. Many cases are detected through routine prenatal screening.

Patients with severe preeclampsia display end-organ effects and may complain of the following:

- CNS
  - Headache
  - Visual disturbances - Blurred, scintillating scotomata
  - Altered mental status

  - Blindness - May be cortical or retinal
- Dyspnoea
- Edema: This exists in many pregnant women but sudden increase in edema or facial edema is more concerning for preeclampsia.
- Epigastric or right upper quadrant (RUQ) abdominal pain: Hepatic involvement occurs in 10% of women with severe preeclampsia.
- Weakness or malaise:

Physical Examination

Findings on physical examination may include the following:

- Increased BP compared with the patient's baseline or greater than 140/90 mm Hg
- Altered mental status
- Decreased vision or scotomas
- Papilledema
- Epigastric or RUQ abdominal tenderness
- Peripheral edema: Edema can be normal in pregnancy; however, a sudden increase in edema or swelling of the face is more suggestive of preeclampsia and should be promptly investigated.
- Hyperreflexia or clonus: Although deep tendon reflexes are more useful in assessing magnesium toxicity, the presence of clonus may indicate an increased risk of convulsions.
- Seizures
- Focal neurologic deficit

Investigations:
Laboratory Studies

- CBC count and peripheral smear
  - Microangiopathic haemolytic anaemia (HELLP)
  - Thrombocytopenia <100,000
  - Hemoconcentration may occur in severe preeclampsia.
  - Schistocytes on peripheral smear
- Liver function tests: Transaminase levels are elevated from hepatocellular injury and in HELLP syndrome.
- Serum creatinine level: Levels are elevated due to decreased intravascular volume and decreased glomerular filtration rate (GFR).
- Urinalysis - Proteinuria is one of the diagnostic criteria for preeclampsia.
  - Significant proteinuria defining preeclampsia is 300 mg or more of protein in a 24-hour urine sample.
  - Proteinuria suggestive of preeclampsia is greater than or equal to 1+ protein on urine dipstick or 300 mg/L or more on urine dipstick.
- Abnormal coagulation profile: PT and aPTT are elevated.
- Disseminated intravascular coagulopathy testing will show fibrin split products and decreased fibrinogen levels.
- Uric acid
  - Hyperuricemia is one of the earliest laboratory manifestations of preeclampsia. It has a low sensitivity, ranging from 0-55%, but a relatively high specificity, ranging from 77-95%.

Ultrasonography:

This is used to assess the status of the foetus as well as to evaluate for growth restriction (typically asymmetrical IUGR). Aside from transabdominal ultrasonography, umbilical artery Doppler ultrasonography should be performed to assess blood flow.

Management of patients with pre-eclampsia /eclampsia.

General principles:

BP control

- The goal is to lower BP to prevent cerebrovascular and cardiac complications while maintaining uteroplacental blood flow.
- Control of mildly increased BP does not appear to improve perinatal morbidity or mortality, and, in fact, it may reduce birth weight.
- Antihypertensive treatment is indicated for diastolic blood pressure above 105 mm Hg and systolic pressure above 160 mm Hg, though patients with chronic hypertension may tolerate higher values.
- Patients with severe preeclampsia who have BP below 160/105 mm Hg may benefit from antihypertensives because of the possibility of unpredictable acceleration of the disease and sudden increases in hypertension.
- The goal is to maintain diastolic blood pressure between 90 and 100 mm Hg and systolic pressure between 140 and 155 mm Hg.
- First-line medications are labetalol, given orally or IV; nifedipine, given orally or IV; or hydralazine IV. (*Atenolol, ACE inhibitors, ARBs, and diuretics should be avoided*).

Control of seizures

- The basic principles of airway, breathing, circulation (the ABCs) should always be followed as a general principle of seizure management.
- Active seizures should be treated with intravenous magnesium sulphate as a first-line agent.
- Prophylactic treatment with magnesium sulphate is indicated for all patients with severe preeclampsia.
- Magnesium levels, respiratory rate, reflexes, and urine output must be monitored to detect magnesium toxicity. Magnesium sulphate is mostly excreted in the urine, and therefore urine output needs to be closely monitored. If urine output falls below 20 mL/h, the magnesium infusion should be stopped.
- Be aware of the risk of seizures following delivery — up to 44% of eclampsia cases have been reported to occur postnatally. This risk is especially elevated 48 hours postpartum, but it can occur at any time up to 4 weeks after delivery.
- For seizure refractory to magnesium sulphate therapy, benzodiazepines and/or phenytoin may be considered.

Fluid management

- Despite the peripheral edema, patients with preeclampsia are intravascularly volume depleted with high peripheral vascular resistance. **Diuretics should be avoided.**
- Aggressive volume resuscitation may lead to pulmonary edema, which is a common cause of maternal morbidity and mortality. Pulmonary edema occurs most frequently 48-72 hours postpartum, probably due to mobilization of extravascular fluid.
- Because volume expansion has no demonstrated benefit, patients should be fluid restricted when possible, at least until the period of postpartum diuresis. Total fluids should generally be limited to 80 mL/h or 1 mL/kg/h.
- Careful measurement of fluid input and output is advisable, particularly in the immediate postpartum period. Many patients will have a brief (up to 6 h) period of oliguria following delivery; this should be anticipated and not overcorrected.
- If fluids are required, preferably use Ringer's Lactate or Normal saline at a rate of 80 mls/ hr or 1ml/kg/hr. Avoid using Dextrose or Dextrose- Saline infusion

Delivery

- Delivery is the definitive treatment for antepartum preeclampsia.
- Patients with mild preeclampsia are often induced after 37 weeks' gestation. Prior to this, the immature foetus is treated with expectant management with corticosteroids to accelerate lung maturity in preparation for early delivery.
- In patients with severe preeclampsia, induction of delivery should be considered after 34 weeks' gestation. In these cases, the severity of disease must be weighed against the risks of prematurity.
- Eclampsia is common after delivery and has occurred up to 6 weeks after delivery. Patients at risk for eclampsia should be carefully monitored postpartum. Additionally, patients with preeclampsia successfully treated with delivery may present with recurrent preeclampsia up to 4 weeks postpartum.

Medication

Magnesium sulphate is the first-line treatment of prevention of primary and recurrent eclamptic seizures.

For eclamptic seizures refractory to magnesium sulphate, Diazepam and phenytoin may be used as second-line agents.

In the setting of severe hypertension (systolic BP, >160 mm Hg; diastolic BP, >110 mm Hg), antihypertensive treatment is recommended. Antihypertensive treatment decreases the incidence of cerebrovascular problems but does not alter the progression of preeclampsia.

Anticonvulsants:

Magnesium sulphate:

This works by antagonizing calcium channels of smooth muscle. Administer IV/IM for seizure prophylaxis in preeclampsia. Use IV for quicker onset of action in true eclampsia. The table below illustrates the dosage and administration schedule.

Magnesium sulphate schedules for severe pre-eclampsia and eclampsia

Loading Dose

Magnesium sulphate 20% Solution, 4g IV over 5 minutes

Follow promptly with 10g of 50% magnesium sulphate solution, 5g in each buttock as deep IM injection with 1mL of 2% lignocaine in the same syringe

Ensure that aseptic technique is practiced when giving magnesium sulphate deep IM injection. Warn the woman that a feeling of warmth will be felt when magnesium sulphate is given.

If convulsions occur after 15 minutes, give 2g magnesium sulphate (50% solution) IV over 5 minutes

Maintenance Dose

Give 5g magnesium sulphate (50% solution) + 1 mL lignocaine 2% IM every 4 hours into alternate buttocks. Continue treatment with magnesium sulphate for 24 hours after delivery or the last convulsion, whichever occurs last.

If 50% solution is not available, give 1g of 20% magnesium sulphate solution IV every hour by continuous infusion

CLOSELY MONITOR THE WOMAN FOR SIGNS OF TOXICITY

Before repeat administration, ensure that:

Respiratory rate is at least 16 per minute

Patellar reflexes are present

Urinary output is at least 30 ml per hour over preceding four hours

WITHHOLD OR DELAY DRUG IF:

Respiratory rate falls below 16 per minute

Patellar reflexes are absent

Urinary output falls below 30ml per hour over the preceding 4 hours

Keep antidote ready:

In case of respiratory arrest:

Assist ventilation (mask and bag, anaesthesia apparatus, intubation)

Give Calcium gluconate 1g (10mL of 10% solution) IV slowly until calcium gluconate begins to antagonise the effects of magnesium sulphate and respiration begins

Phenytoin:

Phenytoin has been used successfully in eclamptic seizures, but cardiac monitoring is required due to associated bradycardia and hypotension.

Central anticonvulsant effect of phenytoin is by stabilizing neuronal activity by decreasing the ion flux across depolarizing membranes.

Some benefits to using phenytoin are that:

- It can be continued orally for several days until the risk of eclamptic seizures has subsided,
- It has established therapeutic levels that are easily tested,
- It has no known neonatal adverse effects are associated with short-term usage.

Dosage:

10 mg/kg loading dose infused IV no faster than 50 mg/min, followed by maintenance dose started 2 hrs later at 5 mg/kg

In the absence of MgSO4, diazepam is used following the regime below

Diazepam schedules for severe pre-eclampsia and eclampsia

Intravenous administration:

Loading dose

- Diazepam 20mg IV slowly over 2 minutes
- If **convulsions recur**, repeat loading dose

Maintenance dose

- Diazepam 40mg in 500ml IV fluids (normal saline or Ringer's Lactate) titrated to keep the woman sedated but can be aroused
- Maternal respiratory depression may occur when dose exceeds 30mgs in 1 hour
- Assist ventilation (mask and bag, anaesthesia apparatus, intubation), if necessary
- Do not give more than 100mg in 24 hours.

Rectal Administration:

- Give Diazepam rectally when IV access is not possible. The loading dose is 20mg in 10ml syringe. Remove the needle, lubricate the barrel and insert the syringe into the rectum to half its length. Discharge the contents and leave the syringe in place, holding the buttocks together for 10 minutes to prevent expulsion of the drug. Alternatively, the drug may be instilled into the rectum through a catheter.
- **If convulsions are not controlled within 10 minutes** administer an additional 10mg per hour or more, depending on the size of the woman and her clinical response.

Antihypertensives

These agents are used to decrease systemic resistance and to help reverse uteroplacental insufficiency.

Hydralazine (Apresoline)

This is the first-line therapy against preeclamptic hypertension. It decreases systemic resistance through direct vasodilatation of arterioles, resulting in reflex tachycardia. Reflex tachycardia and resultant increased cardiac output helps reverse uteroplacental insufficiency, a key concern when treating hypertension in a patient with preeclampsia. Adverse effects to the foetus are uncommon.

Dosage

Give 5mg IV slowly over 10 mins if BP >or =160/110mm Hg; repeat 5 mg q20min to maximum of 20 mg

Labetalol

This is the recommended second-line therapy that produces vasodilatation and decreases in systemic vascular resistance. It has alpha-1 and beta-antagonist effects and beta2-agonist effects. The onset of action is more rapid than hydralazine and it results in less overshoot hypotension. Dosage and duration of labetalol is more variable. Adverse effects to foetus are uncommon.

Dosage

Give 20mg bolus, subsequently give doses of 40mg followed by 80mg IV at 10- 20 min intervals to achieve BP control to a maximum of 300 mg. Lebetolol may also be administered by contious IV infusion at 1mg /kg/hr

Nifedipine

It relaxes coronary smooth muscle and produces coronary vasodilatation, which, in turn, improves myocardial oxygen delivery. Sublingual administration is generally safe, despite theoretical concerns.

Dosage

Initial dosage is 10 mg orally of BP > or = 160/110 mm hg. One may repeat after 30 minutes as needed

Definitive Management

a) Mild Pre-eclampsia e.g. with BP 140/90

- Establish if the mother can rest at home
- Advise patient and relatives on importance of bed rest
- Give oral antihypertensives (alpha methyl dopa 250mg three times daily) Maintain diastolic BP at 90-100 mmHg
- Monitor maternal and foetal condition weekly
- Admit if coming too far away from hospital,
- Advise on worsening signs of the condition, and the need to report if any signs of severe pre-eclampsia are present
- Advise mother to take a diet, which is rich in protein, fibre and vitamins but low in carbohydrate and salt
- If the mother shows no improvement and facilities /skills to manage severe eclampsia are lacking, refer to higher level

c) Severe Pre-eclampsia e.g. BP diastolic > 100 mmHg

- Admit patient
- Nurse in a quiet semi dark room
- Monitor vital signs every 15- 30 minutes
- Start MgSO4 regime
- Consider timing and mode of delivery
- Closely monitor fluid intake and urine output
- Do blood chemistry (liver enzymes and creatinine)
- If the diastolic blood pressure is 110 mm Hg or more, start antihypertensive drugs, e.g. Hydralazine 5 mg IV slowly every 5 minutes until blood pressure is lowered. Repeat hourly as needed or give hydralazine 12.5mg IM every 2 hours as needed
- If hydralazine is not available, give labetolol or nifedipine
- If no improvement, refer to comprehensive centre accompanied by trained nurse

Management* of *eclampsia:

- Call for help
- Maintain open airway
- Control fits
- Control the blood pressure and monitor quarter hourly
- Start IV line but restrict fluid intake to avoid pulmonary and cerebral oedema. Maximum of 30 drops per minute.
- Catheterise, and closely monitor fluid intake and urine output

Management of fitting patient:

- Patient should be put in semi prone position so that mucous and saliva can drain out
- Tight fitting dresses around the neck should be loosened or removed
- No attempt should be made to insert any instrument into the mouth
- Administer magnesium sulphate (or diazepam) as per regime to control fits
- Aspirate secretions from the mouth and nostrils as necessary
- Give Oxygen continuously during fit and for 5 minutes after each fit (if available)
- Fitting should be allowed to complete its course without restraining the patient
- Privacy and dignity of patient must be observed - pull screens around her

DELIVERY:

Delivery is the only cure for pre-eclampsia and eclampsia

- Delivery should take place as soon as the woman's condition has been stabilized, preferably within 6-8 hours from first convulsion; or within 12 hours of admission
- Delaying delivery to increase foetal maturity will risk the lives of both the woman and the foetus.
- Delivery should occur regardless of the gestational age, but **Eclampsia alone is not an indication for C/section**. Get skilled anaesthetic help early; this will also aid the management of hypertensive crises and fits.

Mode of delivery

Vaginal delivery is recommended:

- If the **cervix is favourable** (soft, dilated, effaced), rupture the membranes and induce labour using oxytocin
- If there is no absolute indication for Cesaerian section
- If **safe anaesthesia is not available for C/section** or if the **foetus is dead or too premature for survival**:

If the cervix is unfavourable (firm, thick, closed), ripen the cervix using prostaglandins or a Foley catheter

Caesarean section should be done:

- If **vaginal delivery is not anticipated** within 8 hours (for eclampsia) or 24 hours (for severe pre-eclampsia), deliver by C/section
- If there are **foetal heart rate abnormalities** (< 100 or > 180 beats / minute)
- If the **cervix is unfavourable** (firm, thick, closed) and the **foetus is alive**,

Postnatal care:

- Continue anticonvulsive therapy for 24 hours after delivery or last convulsion, whichever occurs last.
- Continue antihypertensive therapy as long as the diastolic pressure is 110 mmHg or more.
- Continue to monitor urine output. If urine output is less than 500 ml in 24 hours, limit the amount of fluid intake to 500 mls per 24 hour + an amount equal to the amount of urine passed
- Watch carefully for the development of pulmonary oedema, which often occurs after delivery.
- Life threatening complications can still occur after delivery. Monitor carefully until the patient is clearly recovering.
- Consider referral of women who have:
  - Oliguria (less than 500 ml urine output in 24 hours) that persists for 48 hours after delivery

- Coagulation failure (e.g. coagulopathy or haemolysis, elevated liver enzymes and low platelets (HELLP) syndrome)
- Persistent coma lasting more than 24 hours after convulsion.

Complications

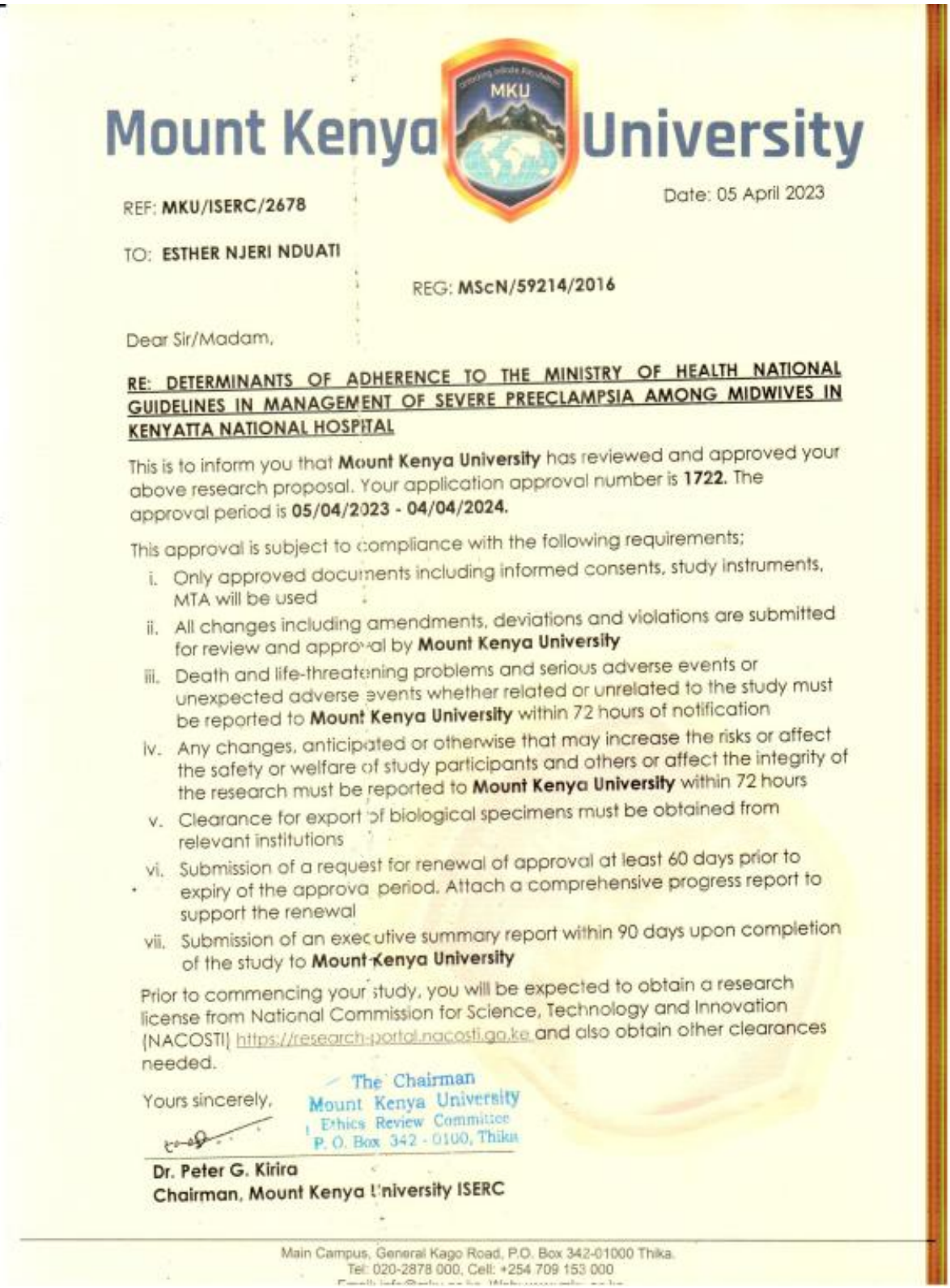
Complications of preeclampsia /eclampsia may include the following:

- Abruptio placentae with disseminated intravascular coagulopathy
- Renal insufficiency or failure
- Haemolysis, elevated liver enzyme levels, and low platelet count (or HELLP syndrome)
- Cerebral haemorrhage
- Maternal death and/or foetal demise

Prognosis

- Early detection and frequent obstetric assessment and prompt management markedly improves prognosis.
- Women at risk of preeclampsia must have pre conception care and attend ANC early and regularly
- A history of preeclampsia increases a woman's subsequent risk of vascular disease, including hypertension, thrombosis, ischemic heart disease, myocardial infarction, and stroke.

Appendix VI: ERC Letter



Mount Kenya University

REF: **MKU/ISERC/2678**

Date: 05 April 2023

TO: **ESTHER NJERI NDUATI**

REG: **MScN/59214/2016**

Dear Sir/Madam,

RE: DETERMINANTS OF ADHERENCE TO THE MINISTRY OF HEALTH NATIONAL GUIDELINES IN MANAGEMENT OF SEVERE PREECLAMPSIA AMONG MIDWIVES IN KENYATTA NATIONAL HOSPITAL

This is to inform you that **Mount Kenya University** has reviewed and approved your above research proposal. Your application approval number is **1722.** The approval period is **05/04/2023 - 04/04/2024.**

This approval is subject to compliance with the following requirements;

i. Only approved documents including informed consents, study instruments, MTA will be used
ii. All changes including amendments, deviations and violations are submitted for review and approval by **Mount Kenya University**
iii. Death and life-threatening problems and serious adverse events or unexpected adverse events whether related or unrelated to the study must be reported to **Mount Kenya University** within 72 hours of notification
iv. Any changes, anticipated or otherwise that may increase the risks or affect the safety or welfare of study participants and others or affect the integrity of the research must be reported to **Mount Kenya University** within 72 hours
v. Clearance for export of biological specimens must be obtained from relevant institutions
vi. Submission of a request for renewal of approval at least 60 days prior to expiry of the approval period. Attach a comprehensive progress report to support the renewal
vii. Submission of an executive summary report within 90 days upon completion of the study to **Mount Kenya University**

Prior to commencing your study, you will be expected to obtain a research license from National Commission for Science, Technology and Innovation (NACOSTI) https://research-portal.nacosti.go.ke and also obtain other clearances needed.

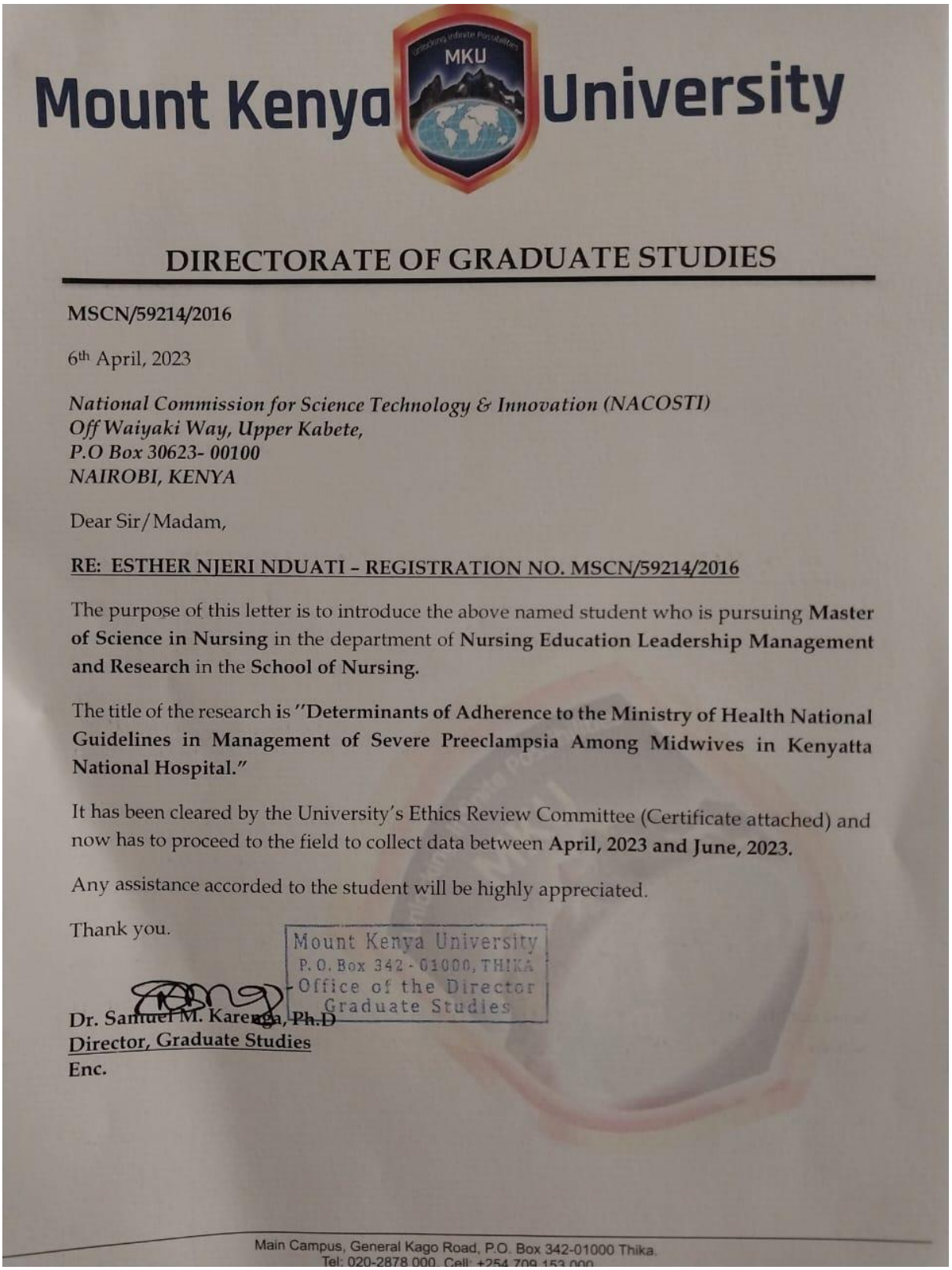
Yours sincerely,

The Chairman
Mount Kenya University
Ethics Review Committee
P. O. Box 342 - 0100, Thika

Dr. Peter G. Kirira
Chairman, Mount Kenya University ISERC

Main Campus, General Kago Road, P.O. Box 342-01000 Thika.
Tel: 020-2878 000, Cell: +254 709 153 000

Appendix VII: Introduction Letter from School of Post Graduate



Mount Kenya University

MKU

DIRECTORATE OF GRADUATE STUDIES

MSCN/59214/2016

6th April, 2023

National Commission for Science Technology & Innovation (NACOSTI)
Off Waiyaki Way, Upper Kabete,
P.O Box 30623- 00100
NAIROBI, KENYA

Dear Sir/Madam,

RE: ESTHER NJERI NDUATI – REGISTRATION NO. MSCN/59214/2016

The purpose of this letter is to introduce the above named student who is pursuing **Master of Science in Nursing** in the department of **Nursing Education Leadership Management and Research** in the **School of Nursing.**

The title of the research **is "Determinants of Adherence to the Ministry of Health National Guidelines in Management of Severe Preeclampsia Among Midwives in Kenyatta National Hospital."**

It has been cleared by the University's Ethics Review Committee (Certificate attached) and now has to proceed to the field to collect data between **April, 2023 and June, 2023.**

Any assistance accorded to the student will be highly appreciated.

Thank you.

Mount Kenya University
P. O. Box 342 - 01000, THIKA
Office of the Director
Graduate Studies

Dr. Samuel M. Karenga, Ph.D
Director, Graduate Studies
Enc.

Main Campus, General Kago Road, P.O. Box 342-01000 Thika.
Tel: 020-2878 000, Cell: +254 709 153 000

Appendix VIII: NACOSTI Research Permit

REPUBLIC OF KENYA

NATIONAL COMMISSION FOR SCIENCE,TECHNOLOGY & INNOVATION

Ref No: **753372**

Date of Issue: **29/April/2023**

RESEARCH LICENSE

This is to Certify that Miss.. ESTHER NJERI NDUATI of Mount Kenya University, has been licensed to conduct research as per the provision of the Science, Technology and Innovation Act, 2013 (Rev.2014) in Nairobi on the topic: DETERMINANTS OF ADHERENCE TO THE MINISTRY OF HEALTH NATIONAL GUIDELINES IN MANAGEMENT OF SEVERE PREECLAMPSIA AMONG MIDWIVES IN KENYATTA NATIONAL HOSPITAL for the period ending : 29/April/2024.

License No: **NACOSTI/P/23/25462**

753372

Applicant Identification Number

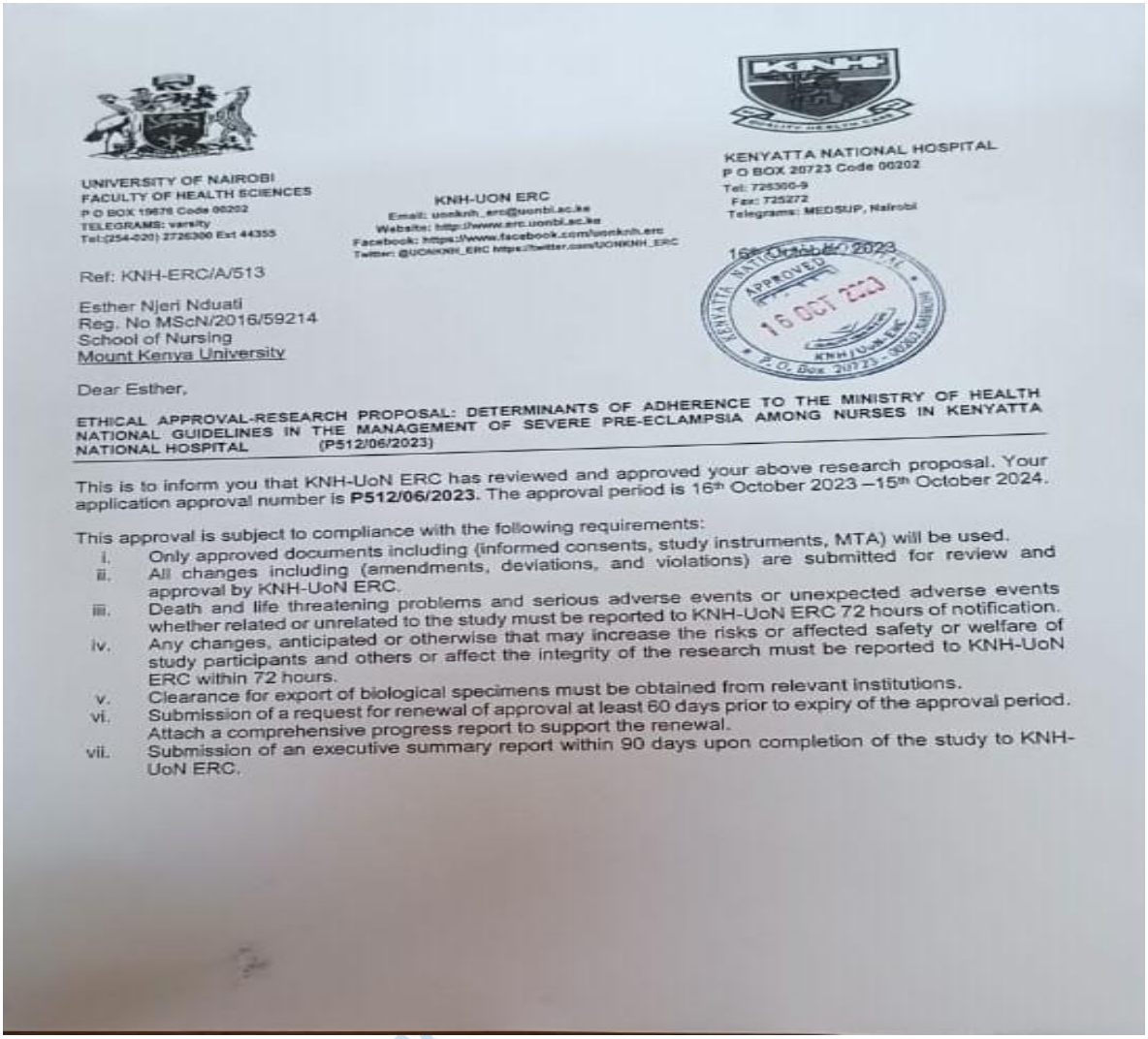
Director General
NATIONAL COMMISSION FOR SCIENCE,TECHNOLOGY & INNOVATION

Verification QR Code

NOTE: This is a computer generated License. To verify the authenticity of this document, Scan the QR Code using QR scanner application.

See overleaf for conditions

Appendix IX: KNH-UON ERC



UNIVERSITY OF NAIROBI
FACULTY OF HEALTH SCIENCES
P O BOX 19676 Code 00202
TELEGRAMS: varsity
Tel:(254-020) 2726300 Ext 44355

KNH-UON ERC
Email: uonknh_erc@uonbi.ac.ke
Website: http://www.erc.uonbi.ac.ke
Facebook: https://www.facebook.com/uonknh.erc
Twitter: @UONKNH_ERC https://twitter.com/UONKNH_ERC

KENYATTA NATIONAL HOSPITAL
P O BOX 20723 Code 00202
Tel: 725300-9
Fax: 725272
Telegrams: MEDSUP, Nairobi

16th October 2023
APPROVED
16 OCT 2023
KNH/UoN ERC
P. O. Box 20723 - 00202 NAIROBI

Ref: KNH-ERC/A/513

Esther Njeri Nduati
Reg. No MScN/2016/59214
School of Nursing
Mount Kenya University

Dear Esther,

ETHICAL APPROVAL-RESEARCH PROPOSAL: DETERMINANTS OF ADHERENCE TO THE MINISTRY OF HEALTH NATIONAL GUIDELINES IN THE MANAGEMENT OF SEVERE PRE-ECLAMPSIA AMONG NURSES IN KENYATTA NATIONAL HOSPITAL (P512/06/2023)

This is to inform you that KNH-UoN ERC has reviewed and approved your above research proposal. Your application approval number is **P512/06/2023.** The approval period is 16th October 2023 –15th October 2024.

This approval is subject to compliance with the following requirements:

i. Only approved documents including (informed consents, study instruments, MTA) will be used.
ii. All changes including (amendments, deviations, and violations) are submitted for review and approval by KNH-UoN ERC.
iii. Death and life threatening problems and serious adverse events or unexpected adverse events whether related or unrelated to the study must be reported to KNH-UoN ERC 72 hours of notification.
iv. Any changes, anticipated or otherwise that may increase the risks or affected safety or welfare of study participants and others or affect the integrity of the research must be reported to KNH-UoN ERC within 72 hours.
v. Clearance for export of biological specimens must be obtained from relevant institutions.
vi. Submission of a request for renewal of approval at least 60 days prior to expiry of the approval period. Attach a comprehensive progress report to support the renewal.
vii. Submission of an executive summary report within 90 days upon completion of the study to KNH-UoN ERC.

Appendix X: Similarity Index

DETERMINANTS OF ADHERENCE TO MINISTRY OF HEALTH; NATIONAL GUIDELINES IN MANAGEMENT OF SEVERE PRE-ECLAMPSIA AMONG NURSES AT KENYATTA NATIONAL HOSPITAL, KENYA

by ESTHER NJERI

Submission date: 22-Jun-2024 12:25PM (UTC+0300)
Submission ID: 2406663394
File name: ESTHER_NJERI_NDUATI.docx (6.5M)
Word count: 23528
Character count: 135251

DETERMINANTS OF ADHERENCE TO MINISTRY OF HEALTH; NATIONAL GUIDELINES IN MANAGEMENT OF SEVERE PRE-ECLAMPSIA AMONG NURSES AT KENYATTA NATIONAL HOSPITAL, KENYA

ORIGINALITY REPORT

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