

**IMPLEMENTATION OF CLINICAL GUIDELINES FOR THE MANAGEMENT OF
PRE-ECLAMPSIA BY MIDWIVES IN UMGUNGUNDLOVU DISTRICT OF KWAZULU
NATAL**

by

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DECLARATION

I declare that **IMPLEMENTATION OF CLINICAL GUIDELINES FOR THE MANAGEMENT OF PRE-ECLAMPSIA BY MIDWIVES IN UMGUNGUNDLOVU DISTRICT OF KWAZULU NATAL** is my own work and that all the sources that I have used or quoted have been indicated and acknowledged by means of complete references and that this work has not been submitted before for any other degree at any other institution.

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.....

SIGNATURE

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IMPLEMENTATION OF CLINICAL GUIDELINES FOR THE MANAGEMENT OF PRE-ECLAMPSIA BY MIDWIVES IN UMGUNGUNDLOVU DISTRICT OF KWAZULU NATAL

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ABSTRACT

The purpose of the study is to determine the knowledge of midwives on implementing clinical guidelines for the management of pre-eclampsia with the aim of improving midwifery practice and preventing maternal and neonatal death due to pre-eclampsia. A quantitative, descriptive, cross sectional study design was used for the study. Data was collected using a self-administered questionnaire from 100 midwives working in the maternity section of the clinic referring to the regional hospital in UMgungundlovu District. The Statistical Package for Social Sciences (SPSS) version 23 was used for data analysis.

The findings show that respondents to the study have a high mean value (3.6) of knowledge but need support in terms of providing training on the new guidelines. The study also showed that there is need to improve on distribution of guidelines. There was no significant association between demographic factors and the knowledge of midwives on clinical guidelines for the management of pre-eclampsia. A clinical audit of maternity records as well as a quality care project can be developed based on the findings.

KEY CONCEPTS

Clinical guidelines; knowledge; management; midwife; pre-eclampsia.

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TABLE OF CONTENTS

CHAPTER 1	1
ORIENTATION TO THE STUDY	1
1.1 INTRODUCTION.....	1
1.2.1 The source of the research problem.....	1
1.2.2 Background to the research problem.....	2
1.3 RESEARCH PROBLEM.....	7
1.4.1 Research purpose.....	7
1.4.2 Objectives	7
1.4.3 Research questions	8
1.5 SIGNIFICANCE OF THE STUDY.....	8
1.6 DEFINITION OF TERMS	9
1.6.1 Guidelines	9
1.6.2 Knowledge	9
1.6.3 Midwife.....	9
1.6.4 Pre-eclampsia	9
1.6.5 Maternal deaths	10
1.7 RESEARCH DESIGN AND METHOD.....	10
1.7.1 Research design	10
1.7.1.1 Quantitative design	10
1.7.1.2 Cross-sectional design.....	10
1.7.1.3 Correlational research.....	11
1.7.1.4 Descriptive design.....	11
1.7.2 Research methods.....	11
1.7.2.1 Research setting	11
1.7.2.2 Population	12
1.7.2.3 Sample and sampling technique	12
1.7.2.4 Sample size	13
1.7.2.5 Data collection methods and procedures.....	13
1.8 VALIDITY AND RELIABILITY.....	15
1.8.1 Validity	15
1.8.2 Internal validity	15
1.9 ETHICAL CONSIDERATIONS.....	15
1.10 SCOPE OF THE STUDY	17
1.11 STRUCTURE OF THE DISSERTATION.....	17
1.12 CONCLUSION.....	17

CHAPTER 2	18
LITERATURE REVIEW	18
2.1 INTRODUCTION.....	18
2.2 OVERVIEW OF HYPERTENSIVE DISORDERS IN PREGNANCY.....	18
2.2.1 Classification of hypertensive disorders in pregnancy	18
2.2.1.1 Chronic hypertension	19
2.2.1.2 Pre-eclampsia	19
2.2.1.3 Eclampsia	20
2.2.1.4 HELLP syndrome.....	20
2.2.2 Causes and predisposing causes of hypertensive disorders of pregnancy.....	20
2.3 INTERNATIONAL AND NATIONAL GUIDELINES AND PROTOCOLS.....	20
2.3.1 Guidelines formulated by WHO	20
2.3.2 Guidelines formulated by the United Kingdom National Institute for Health and Clinical Excellence (NICE)	22
2.3.3 Guidelines and protocols formulated by Australia and New Zealand	24
2.3.4 Guidelines for management of hypertensive disorders in African countries	25
2.4 SOUTH AFRICAN GUIDELINES AND PROTOCOLS FOR THE MANAGEMENT OF HYPERTENSION.....	27
2.4.1 The grading of pre-eclampsia.....	28
2.4.2 Guidelines for the management of hypertensive disorders at the clinic	28
2.4.2.1 Guidelines for the management of pre-eclampsia	28
2.4.2.2 Guidelines for the management of gestational hypertension	28
2.4.2.3 Guidelines for the management of mild pre-eclampsia	29
2.4.2.4 Guidelines for the Management of Severe Pre-eclampsia, Imminent Eclampsia and Eclampsia	29
2.4.3 Guidelines for the management of a woman with hypertension during antenatal care.....	30
2.4.4 Guidelines for the management of a woman with hypertension during labor	31
2.4.4.1 Guidelines for the management of a woman with Hypertension during the first stage of labor.....	31
2.4.4.2 Guidelines for the management of a woman during second stage of labor.....	32
2.4.4.3 Guidelines for the management of a woman with pre-eclampsia during third stage of labor.....	32
2.4.4.4 Guidelines for the management of a woman with pre-eclampsia during the puerperium stage (post-delivery).....	32
2.4.5 Indications for referral to the next level of care	33
2.4.6 Dissemination of guidelines to the Institutions	33
2.4.7 Midwifery training	33

2.5	CONCLUSION	34
CHAPTER 3		35
RESEARCH DESIGN AND METHODS		35
3.1	INTRODUCTION	35
3.2	RESEARCH DESIGN	35
3.2.1	Quantitative design	35
3.2.2	Descriptive design	36
3.2.3	Cross-sectional design	36
3.2.4	Correlational research	36
3.3	RESEARCH METHODS	37
3.3.1	Population	37
3.3.2	Sampling	37
3.3.2.1	Sampling procedures	38
3.3.2.2	Sample size	38
3.3.2.3	Ethical issues relating to sampling	39
3.3.3	Data collection	40
3.3.3.1	Data collection approach and method	40
3.3.2.2	Development and testing of the data collection instrument	40
3.3.2.3	Characteristics of the data collection instrument	41
3.3.2.4	Data collection process	42
3.3.2.5	Ethical consideration related to data collection	43
3.3.4	Data analysis	44
3.4	CONCLUSION	44
CHAPTER 4		45
DATA ANALYSIS, INTERPRETATION AND RESULTS		45
4.1	INTRODUCTION	45
4.2	PURPOSE OF THE STUDY	45
4.3	OBJECTIVES OF THE STUDY	45
4.4	RESEARCH QUESTIONS	45
4.5	STATISTICAL ANALYSIS AND INTERPRETATION OF RESULTS	46
4.6	DATA COLLECTION AND DATA MANAGEMENT	46
4.6.1	Demographic variables	48
4.6.1.1	Gender of the respondents	48
4.6.1.2	Age distribution of the respondents	49
4.6.1.3	Distribution of nursing qualifications of the respondents	49
4.6.1.4	Distribution of the number of years working in the maternity ward	50
4.6.1.5	Distribution of positions of respondents	51
4.6.1.6	Summary of demographic variables of respondents	52

4.6.2	Training on guidelines for management of pre-eclampsia	53
4.6.2.1	Training of all midwives on clinical guidelines for management of pre-eclampsia ...	54
4.6.2.2	Importance of receiving mentorship on the use of guidelines	54
4.6.2.3	Provision of in-service training by maternity specialist on use of clinical guidelines for management of pre-eclampsia	55
4.6.2.4	The conducting of workshops on the implementation of the guidelines	56
4.6.2.5	Summary of training on clinical guidelines	57
4.6.3	Awareness of clinical guidelines for management of pre-eclampsia	58
4.6.3.1	Involvement of midwives in the formulation of clinical guidelines	58
4.6.3.2	Accessibility of guidelines.....	59
4.6.3.3	Clarity of guidelines	59
4.6.3.4	Adherence to guidelines.....	60
4.6.3.5	Implementation of clinical guidelines and reduction of maternal death	60
4.6.3.6	Graphical presentation of item on awareness of clinical guidelines for management of pre-eclampsia.....	61
4.6.4	The referral system	62
4.6.4.1	Existence of a clear referral criteria for pre-eclampsia.....	62
4.6.4.2	Existence of an emergency number for the senior specialist or senior doctor to discuss the referral case	63
4.6.4.3	A client that has a blood pressure of 140/90 mmHg x3 occasions during antenatal care requires referral to a medical officer or an obstetrician	64
4.6.4.4	A blood pressure of 140/90 mmHg during the first ante-natal clinic visit does not necessarily need referral to medical officer	64
4.6.4.5	Graphical summary of the referral system for the management of pre-eclampsia ..	65
4.6.5	Equipment.....	67
4.6.5.1	Importance of using the correct size of the cuff when checking blood pressure in order to get accurate recordings.....	67
4.6.5.2	Servicing of blood pressure machine will not assist in getting correct blood pressure recording	67
4.6.5.3	When using the blood pressure machine, the correct recording of the blood pressure is influenced by the patient's position	68
4.6.5.4	The blood pressure machine and accessories must be serviced and calibrated on an annual basis.....	69
4.6.5.5	Graphical summary of equipment items	69
4.6.6	Identification of risk factors.....	70
4.6.6.1	Taking family history from patients assists in screening those that are at risk of developing pre-eclampsia	70
4.6.6.2	It is necessary to weigh clients during alternate visits.....	71

4.6.6.3	The height of patients must be measured at each and every visit	72
4.6.6.4	Abdominal obesity must be measured at each and every visit.....	72
4.6.6.5	The urinalysis must be done at each and every visit	73
4.6.6.6	Smoking twice a day does endanger the life of the baby in utero	74
4.6.6.7	Weight loss is not necessary when the mother is pregnant and is diagnosed with pre-eclampsia	74
4.6.6.8	Graphical summary of the identification of risk factors.....	75
4.6.7.1	Calcium Carbonate is provided as a supplementation only for women with a history of hypertension in their families.	76
4.6.7.2	Magnesium Sulphate is only given for eclamptic patients.....	77
4.6.8	Health education	79
4.6.8.1	It is important to educate patients with hypertension about change of lifestyle	79
4.6.8.2	It is vital to know the dietary intake and food resources in order to give proper health education	79
4.6.8.3	Resting and exercising does necessarily help patients with pre-eclampsia	80
4.6.8.4	It is important to educate patients about the signs of elevated blood pressure	81
4.6.8.5	Graphical summary of health education	81
4.6.9	Demographic factors affecting training of clinical guidelines	82
4.6.10	Demographic factors affecting awareness of clinical guidelines	84
4.6.11	Demographic factors affecting knowledge of the referral system.....	85
4.6.12	Demographic factors affecting the knowledge of equipment.....	87
4.6.13	Demographic factors affecting the identification of risk factors	88
4.7	CONCLUSION	90
CHAPTER 5.....		91
SUMMARY, CONCLUSION AND RECOMMENDATIONS		91
5.1	INTRODUCTION.....	91
5.2	SUMMARY.....	92
5.2.1	Training of midwives on clinical guidelines for the management of pre-eclampsia..	92
5.2.1.1	Awareness of midwives in the formulation of clinical guidelines	92
5.2.1.2	The referral system	93
5.2.1.3	Equipment.....	93
5.2.1.4	Identification of risk factors	93
5.2.1.5	Medication.....	94
5.2.1.6	Health education	94
5.2.2	Summary of demographic factors of midwives	94
5.2.2.1	Relationship to training on guidelines	94
5.2.3	Demographic factors affecting awareness of clinical guidelines	95
5.2.4	Demographic factors affecting knowledge of the referral system.....	95

5.2.5	Demographic factors affecting knowledge of equipment.....	96
5.2.6	Demographic factors affecting the identification of risk factors	96
5.2.7	Demographic factors affecting the knowledge of medication	97
5.2.8	Demographic factors affecting health education	97
5.3	CONCLUSION	97
5.4	RECOMMENDATIONS ON THE IMPLEMENTATION OF THE GUIDELINES ON MANAGEMENT OF PRE-ECLAMPSIA	98
5.5	RECOMMENDATIONS	98
5.5.1	Knowledge and practice	98
5.5.2	Further research.....	99
5.6	CONTRIBUTIONS OF THE STUDY.....	99
5.7	LIMITATIONS OF THE STUDY.....	99
5.8	CONCLUDING REMARKS.....	100
	LIST OF REFERENCES	101
	ANNEXURES.....	105
	Annexure A: Information letter to participant.....	106
	Annexure B: Informed consent	108
	Annexure C: Questionnaire on implementation of Clinical Guidelines for the management of patients with pre-eclampsia	109
	Annexure D: Ethical clearance certificate from Unisa	114
	Annexure E: Letter for permission to conduct the study on implementation of clinical guidelines for management of pre-eclampsia granted by UMgungundlovu District Manager	115
	Annexure F: Ethical clearance from KwaZulu-Natal Health Research Committee	116
	Annexure G: List of study health facilities	118
	Annexure H: Letter from the editor	119

LIST OF TABLES

Table 2.1	Guidelines that form part of WHO recommendations model	21
Table 2.2	UK clinical guidelines for the management of pregnancy with gestational hypertension.....	23
Table 2.3	Summary of guidelines for selecting antihypertensive drug treatment in pregnancy.....	25
Table 2.4	Important aspects to be considered when measuring the blood pressure	27
Table 4.1	Demographic distribution of the research sample (N=100)	53
Table 4.2	Training of all clinicians on clinical guidelines for management of pre-eclampsia (N=100)	54
Table 4.3	Importance of receiving mentorship on the use of guidelines	55
Table 4.4	Provision of in-service training by maternity specialist on use of clinical guidelines for management of pre-eclampsia	56
Table 4.5	Workshops on the implementation of the guidelines are conducted.....	56
Table 4.6	All clinicians are involved in the formulation of clinical guidelines	58
Table 4.7	Guidelines are easily accessible	59
Table 4.8	Guidelines are clear and easy to follow.....	59
Table 4.9	It is necessary to adhere to clinical guidelines whenever attending to antenatal clients	60
Table 4.10	Effective implementation of clinical guidelines for managing maternity client can reduce maternal death.....	61
Table 4.11	Existence of a clear referral criteria.....	62
Table 4.12	There is an emergency number for the senior specialist or senior doctor to discuss the referral case.....	63
Table 4.13	A client that has a blood pressure of 140/90 mmHg x3 occasions during antenatal care requires referral to a medical officer or an obstetrician.....	64
Table 4.14	A blood pressure of 140/90 mmHg during the first ante natal clinic visit does not necessarily need referral to a medical officer	65
Table 4.15	It is important to use the correct size of the cuff when checking blood pressure in order to get accurate recordings	67
Table 4.16	Servicing of blood pressure machine will not assist in getting correct blood pressure recording.....	68
Table 4.17	When using the blood pressure machine, the correct recording of the blood pressure is influenced by the patient's position	68

Table 4.18	The blood pressure machine and accessories must be serviced and calibrated on an annual basis	69
Table 4.19	Taking family history from patients assists in screening those that are at risk of developing pre-eclampsia.....	71
Table 4.20	It is necessary to weigh clients during alternate visits	71
Table 4.21	The height of patients must be measured at each and every visit.....	72
Table 4.22	Abdominal obesity must be measured at each and every visit	73
Table 4.23	The urinalysis must be done at each and every visit.....	73
Table 4.24	Smoking twice a day endangers the life of the baby in-utero	74
Table 4.25	Weight loss is not necessary when a mother is pregnant and is diagnosed with pre-eclampsia	74
Table 4.26	Calcium Carbonate is provided for as a supplementation for women with a history of hypertension in their families only	77
Table 4.27	Magnesium Sulphate is only given for eclamptic patients	77
Table 4.28	It is important to educate patients with hypertension about change of lifestyle...	79
Table 4.29	It is vital to know the dietary intake and food resources in order to give proper health education	80
Table 4.30	Resting and exercising does necessarily help patients with pre-eclampsia.....	80
Table 4.31	It is important to educate patients about the signs of elevated blood pressure...	81
Table 4.32	Test for factors affecting training on clinical guidelines	83
Table 4.33	Test for factors affecting awareness of clinical guidelines	85
Table 4.34	Test for factors affecting the knowledge of the referral system	86
Table 4.35	Test for factors affecting the knowledge of equipment	87
Table 4.36	Test for factors affecting the identification of risk factors.....	88
Table 4.37	Test for factors affecting the knowledge of medication.....	89
Table 4.38	Test for factors affecting health education	90

LIST OF FIGURES

Figure 1.1	KZN Map of UMgungundlovu District.....	6
Figure 1.2	Maternal deaths per province due to hypertension	12
Figure 4.1	Gender distribution of research respondents	48
Figure 4.2	Age distribution of research respondents.....	49
Figure 4.3	Qualification distribution of research respondents.....	50
Figure 4.4	Distribution of the number of years working in maternity ward for research respondents.....	51
Figure 4.5	Distribution of positions of the research respondents.....	52
Figure 4.6	Summary of items under training on clinical guidelines items	57
Figure 4.7	Awareness of on clinical guidelines items	61
Figure 4.8	Ranking of the referral system items based on percentages agreeing/strongly agreeing	66
Figure 4.9	Summary of knowledge of equipment items	70
Figure 4.10	Summary of identified risk factor items	76
Figure 4.11	Summary of knowledge of medication	78
Figure 4.12	Summary of health education items.....	82

LIST OF ABBREVIATIONS

CHC	Community Health Care
HELLP	Haemolysis Elevated Liver enzymes and Low Platelet count
ICM	International Confederation of Midwives
KZN	KwaZulu-Natal
NICE	National Institute for Health and Clinical Excellence
NSW	New South Wales
PHC	Primary Health Care
PIH	Pregnancy Induced Hypertension
SANC	South African Nursing Council
TDS	3 times a day
UK	United Kingdom
WHO	World Health Organization

CHAPTER 1

ORIENTATION TO THE STUDY

1.1 INTRODUCTION

Hypertensive disorders in pregnancy have been a problem worldwide and affected 10% of all pregnant mothers around the world (WHO 2011:4). Pre-eclampsia, according to Marshall and Rayner (2014:246), is defined as a hypertension presenting after 20 weeks of pregnancy and there is significant proteinuria.

The problem of pre-eclampsia and associated high blood pressure led countries to prepare guidelines and protocols on the management of the condition. The treatment recommendations that were made by World Health Organization (WHO) Technical Consultation Team regarding intervention for the prevention of pre-eclampsia and eclampsia includes, Magnesium Sulphate, Calcium supplements and antihypertensive treatment. Furthermore, WHO recommended evidenced informed policies, which need to be utilised worldwide (WHO 2011:4).

Early intervention and prompt referral during antenatal care can reduce infant and maternal mortality. This can be done by midwives who are keen to make observations and prompt decisions in using lifesaving procedures and refer patients at the right time, to the right place (Manirathnamma & Lakshmmamu 2013:9).

This chapter presents the overview of the research study, background to the research problem; research problem; research purpose; research objectives; significance of the study; definition of terms; overview of the South African health system; research design and method; scope of the research study and structure of the dissertation.

1.2 BACKGROUND INFORMATION ABOUT THE RESEARCH PROBLEM

1.2.1 The source of the research problem

After the first democratic election in South Africa in 1994, the new South African Constitution recognised the importance of the rights to health and the health for women

and children, which led to the serious consideration of high maternal and prenatal mortality statistics in South Africa. According to the Saving Mothers' Report 2002-2004, compiled by the National Committee for Confidential Enquiry into Maternal Death, complications of hypertensive disorders have contributed towards the high rate of maternal deaths (South Africa 2006:7).

Hypertensive disorders of pregnancy are the commonest medical complications in pregnancy and remain commonest direct cause of maternal mortality in South Africa (Moodley 2010:717). Pre-eclampsia is the third highest cause of maternal death in South Africa according to Saving Mother Report (South Africa 2011-2013). This is of concern, as it is a preventable condition, which is associated with avoidable factors and substandard care.

1.2.2 Background to the research problem.

Guidelines on management of hypertensive disorders have reduced maternal and neonatal complications occurring because of poor management of hypertensive disorders during pregnancy. According to WHO Technical Consultation, Magnesium Sulphate, Calcium supplements and antihypertensive treatment was included in the management of hypertensive disorders in pregnancy (WHO 2011:4).

The Society of Obstetric Medicine of Australia and New Zealand developed a new health policy in 2008 on guidelines of hypertensive disorders of pregnancy. A number of drugs have been used to lower the blood pressure on a patient with pre-eclampsia including first time drugs such as Methyldopa, Labetalol and Oxprenolol, and second line agents which are Hydralazine and Prazosin (New South Wales Government 2011:64). According to NSW policy directive, calcium supplementation was discovered as a drug that reduces the risk of pre-eclampsia. The policy directive recommended that institutions monitor and review the outcome data for using guidelines and rigorous data collection is required to ensure reliability of repeated results on the use of guidelines (NSW Government 2011:10).

Hypertensive disorder in pregnancy remains one of the causes of maternal death in the United Kingdom (UK) (National Institute for Clinical Excellence (NICE) 2010:3). The guidelines for management of hypertensive disorders in UK explains the key interventions

in reducing the risk of the condition, which includes advising the woman at risk to take 75mg of aspirin daily from the 12th week of pregnancy until the birth of the baby. Women who are taking angiotensin converting enzyme (ACE) inhibitors or angiotensin II receptor blockers need to be warned of the increased risk of having congenital abnormalities. Women should be advised to discuss increase of the treatment of hypertension with the healthcare professionals responsible for managing hypertension before pregnancy (NICE 2010:6).

According to NICE (2010:10), the following pharmaceutical agents must not be used to prevent hypertensive disorders; nitric oxide donors, progesterone, diuretics and low molecular weight heparin. The nutritional supplement which are also not recommended for preventing hypertensive disorders are magnesium, folic acid, antioxidants (Vitamin C and E) fish oils and garlic (NICE 2010:10).

Hypertension in pregnancy is an important cause of direct maternal death in Sri Lanka (Sri Lanka 2014:31). The use of Aspirin 75 mg daily from 12 weeks until delivery was included in clinical guidelines recommended for those women who were at risk of developing pre-eclampsia and risk factors were provided in the guideline (Sri Lanka 2014:31). The oral anti- hypertensive drug may be used when blood pressure is more than 180/110 mmHg, monitored quarterly. If it remains high, the use of intravenous antihypertensive treatment is an option. The guideline also includes the use of labetalol 20 mg intravenous over two minutes, blood pressure recorded every 10 minutes and that the women be treated according to blood pressure recording. Hydralazine 5-10 mg should be used intravenously accompanied with bolus of fluid. Oral Nifedipine 10 mg should be given, and then it should be repeated at 20 minute intervals up to a maximum of 40 mg (Sri Lanka 2014:22). Magnesium Sulphate is recommended as the anti-eclampsia drug of choice (Sri Lanka 2014:33).

According to Durbridge (2009:266), magnesium sulphate injection has proven to save lives and has been included among the recommendations to prevent complications of pre-eclampsia. In addition, a team of researchers in Uganda did a quality assurance project on case management map and Diazepam was recommended as the drug of choice in cases of fitting or convulsion (Kerstiens, Akii, Mbona, Zzicowa & Eason 2004:6).

In South Africa, Southern Africa Hypertension Society and Nelson Mandela School of Medicine working group recommended that the comprehensive management of hypertension, making use of calibrated equipment, correct size of cuff and correct positioning of the patient be implemented. Smoking, age and diabetes mellitus are indicated as major pre-disposing factors to hypertension (Seedat & Rayner 2012:60). The routine investigations of parameters such as patient's weight, height, urine testing and blood testing including antihypertensive drugs such as sodium nitroprusside, labetalol and Nifedipine are recommended.

In addition, Seedat and Rayner (2012:60) found out that despite the similarities in prevalence of hypertension between blacks and whites, when adjusted for age and gender, whites were 44% less likely to have hypertension than blacks. They recommended availability of Magnesium Sulphate and the method of administration to all antenatal clinics. Furthermore, the use of the correct cuff of the blood pressure machine, and correct positioning whenever taking blood pressure was also recommended to reduce child mortality and to improve maternal health (Seedat & Rayner 2012:61). The Saving Mothers Report from the National Committee on Enquiry into Maternal Death recommended that the guidelines or protocols to manage pre-eclampsia be put in place (South Africa 1999-2001:9).

According to South Africa Department of Health Saving Mother Report of 2008-2010 guidelines for managing hypertensive disorders includes the fact that all maternity facilities must provide calcium supplementation to all women throughout antenatal care (South Africa 2008-2010:30). Health care providers need to ensure that there is early detection and timely delivery of women with hypertension in pregnancy (South Africa 2010:30). Administration of Magnesium Sulphate to prevent convulsions, administration of rapid acting agents to lower severely raised blood pressure and offering family planning services to women must be done.

The health care provider must recognise pre-eclampsia by looking at systolic blood pressure more than 160 and diastolic pressure of 110 as indicated on the Essential Steps in Management of severe pre-eclampsia and eclampsia. Signs and symptoms such as proteinuria, headache, epigastric pain, upper abdominal pain, hyperreflexia, jittery, breathlessness, reduced urine output, puffy and swollen face should be observed and reported (South Africa 2007:11). In the principles of management, the following

antihypertensive agents are to be used to treat hypertension: Hydralazine, Nifedepine, Labetalol and Aldomet. Magnesium Sulphate needs to be administered in all cases of eclampsia and imminent eclampsia.

Msimango (2009:101) conducted a survey on guidelines for the management of pregnancy-induced hypertension (PIH) at level 1 clinics in the Eastern Cape. It was noted from the survey that some women who were referred to a level 3 hospital for increased BP (diagnosed as PIH), did not have transport arranged for them at the level 1 facility as stipulated in the guidelines. It was also established that some women who referred themselves to the tertiary hospital with signs and symptoms of PIH were identified at level 2 hospitals while they were missed by the midwives at a level 1 care facility (Msimango 2009:101). In addition, the same author discovered that the midwives working at Amatole District of Eastern Cape province misinterpreted the referral system. This is based on the discovery that the patients who had increased BP were not managed as per guideline (Msimango 2009:134).

It is recommended in the Saving Mothers Report that hypertensive patients were to be reviewed in 2-3 days, and hypertensive treatment commenced (South Africa 1999-2001:51). According to Seedat and Rayner (2012:67), modification of lifestyle remains the cornerstone of managing hypertension.

According to Moodley (2010:718), clinical guidelines for management of hypertensive disorder of pregnancy and in particular, management of obstetric emergencies have been widely distributed to all hospitals and clinics, but are perhaps not reaching all health professionals or not utilised. The knowledge of clinical guidelines for the management of pre-eclampsia by the midwives is important in proper management of the condition as well as referral of a patient to the high level of care in order to reduce maternal and neonatal mortality. Eclampsia is a condition peculiar to pregnant or post-delivery patients, characterised by convulsions associated with elevated blood pressure (WHO 1996:4).

A research study that has been conducted by Ngwekazi (2010:74) at Eastern Cape found out that midwives lack knowledge on the management of pre-eclampsia. Out of 11464 maternal deaths nationally, KZN has the highest number of maternal deaths, which is 385 compared to other provinces in 2010 (South Africa 2012:2). Hence, there is need to evaluate implementation of guidelines by the clinicians in order to improve maternal

health. According to 2016 Regional Hospital reports and statistics from Facility Information Officer there were 5 maternal deaths which were associated with the complications of hypertensive disorders. During the Perinatal Mortality Morbidity meeting these deaths were discussed and there was an indication of delayed referral from the Clinics that are referring to Regional Hospital.

Pre-eclampsia is the main cause of maternal and neonatal health problems and is a leading cause of maternal and prenatal mortality worldwide (WHO 2011:4). According to the Department of Health Republic of South Africa Saving Mothers Report (South Africa 2011-2013:61) there were 640 deaths due to hypertension in the last triennium in South Africa as compared to V12 **2011:214; 2012:221; 2013:203**. Figure 2.1 indicates maternal deaths rate per province due to hypertension.

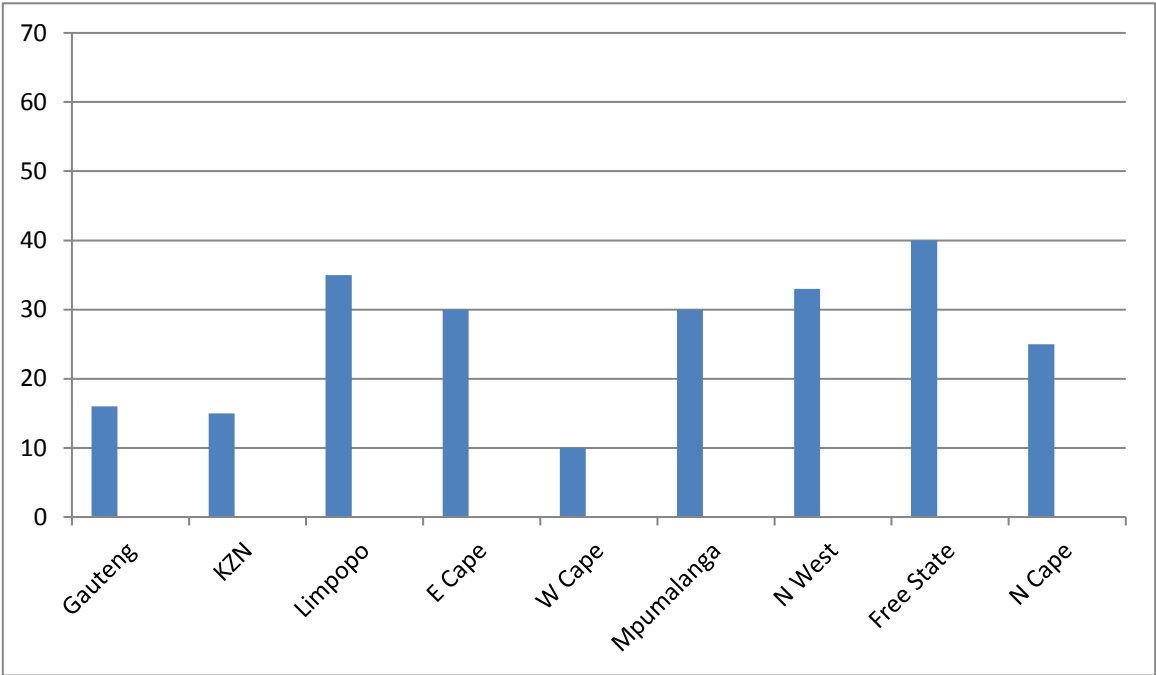


Figure 1.1 Maternal deaths per province due to hypertension
(South Africa 2011-2013:15)

The National Committee for Enquiry into Maternal Death reported that there is a decline in the maternal death rate due to hypertension. The Western Cape Province has approximately (12.78%) the lowest and the Free State Province having the highest (33.25%) (South Africa 2011-2013:16).

1.3 RESEARCH PROBLEM

There has been an increased number of maternal deaths despite the development and availability of guidelines for managing pre-eclampsia (South Africa 2012:2). In KZN Province, the working group in Nelson Mandela School of Medicine recommended that comprehensive management of hypertension be implemented by the doctors and midwives (Seedat & Rayner 2012:60). Despite the guidelines in place, there is still a number of maternal deaths because of complications of hypertensive disorders in the province (South Africa 2012:8). In KZN, 27.3% maternal deaths occurred because of hypertension (South Africa 2012:8). Furthermore, in 2011, severe complications of PIH led to increased incidences of maternal deaths of 110/100 000 live births. In addition, hypertension was listed as one of the major causes of deaths in the district (UMgungundlovu District Municipality Integrated Plan Review 2013:122).

The knowledge of clinical guidelines for the management of pre-eclampsia by midwives is important in enabling them to manage pregnant women well and to refer them early to the regional or tertiary level for further management. However, the study that has been conducted by Ngwekazi (2010:74) at Eastern Cape Clinics found out that midwives lack knowledge on the management of pre-eclampsia. The researcher intends to assess the knowledge of midwives on the implementation of clinical guideline on the management of a woman with pre-eclampsia in UMgungundlovu District 22 of KwaZulu-Natal Province.

1.4 AIM OF THE STUDY

The research purpose, objectives and questions are presented in this subsection.

1.4.1 Research purpose

The purpose of the study is to determine the knowledge of midwives on implementation of clinical guidelines for the management of pre-eclampsia with the aim of improving midwifery practice and preventing maternal and neonatal death due to pre-eclampsia.

1.4.2 Objectives

The objectives of the study are to:

- Assess the level of knowledge midwives have on implementation of clinical guidelines for management of pre-eclampsia during antenatal care in UMGungundlovu District 22 of KwaZulu-Natal Province.
- Analyse the relationship between the demographic factors and the level of knowledge that the midwives have on implementation of clinical guidelines for the management of pre-eclampsia

1.4.3 Research questions

The above objectives translate into the following research questions:

- What is the level of knowledge that the midwives have regarding the implementation of clinical guidelines for the management of pre-eclampsia?
- What is the relationship between midwife's demographic factors and their knowledge on implementation of clinical guidelines for the management of pre-eclampsia?

1.5 SIGNIFICANCE OF THE STUDY

The fact that in South Africa women continue dying from avoidable or preventable complications, especially hypertensive disorder as indicated in the fifth South African Saving Mother Report (South Africa 2008-2010:2), prompted the researcher to conduct the study. The study findings may assist in improving maternal care, improve neonatal outcome in addressing Sustainable Development Goal 3. The number of maternal deaths due to hypertensive disorders can be reduced if the guidelines are implemented correctly. Hence, gaps identified during the study may assist in improving implementation of clinical guidelines for management of pre-eclampsia. The results of the study will be fed back to the policy makers, nurse educators and clinicians such as doctors and midwives in the form of recommendations. The implementation of guidelines may improve if the midwives are receiving proper training and support. This will also improve the referral pattern and avoid the delay in referring mothers. Mothers with hypertensive disorders during pregnancy may receive prompt treatment thus avoiding complications.

1.6 DEFINITION OF TERMS

1.6.1 Guidelines

Guidelines are principles put forward to set standards (*Collins Dictionary* 2008:342). In this research study, guidelines refer to clinical guidelines from the South African National Department of Health that are used in the management of pre-eclampsia.

1.6.2 Knowledge

Knowledge is facts or experiences known by a person (*Collins English Dictionary* 2008:427). In the current proposed study, knowledge mean midwives' knowledge of guidelines on management of pre-eclampsia.

1.6.3 Midwife

A midwife is a woman who attends women in childbirth. It also refers to the title and legal description of a person, either man or woman who is certified under the Midwives Act and registered with the South African Nursing Council of South Africa (*Blackwell's Nursing Dictionary* 2003:422). According to International Confederation of Midwives (ICM) (2014) the definition of a midwife is a person who has successfully completed a midwifery education programme that is recognised in the country. ICM further defines a midwife as having partnership with the women to promote self-care and the health of mothers, infants and families. ICM states that a midwife must be having a licence to practise after the registered qualification. In this research study, a midwife is a registered nurse with a midwifery qualification implementing clinical practice guidelines for the management of pre-eclampsia.

1.6.4 Pre-eclampsia

Pre-eclampsia, according to Marshall and Rayner (2014:246) is defined as a hypertension presenting after 20 weeks of pregnancy and there is significant proteinuria.

1.6.5 Maternal deaths

According to the South Africa Saving Mothers Report, maternal deaths are defined as deaths of women while pregnant or within 42 days of termination of pregnancy or its management but not from accidental or incidental causes (South Africa 1999-2001:vii).

1.6.6 Direct cause of maternal death

Direct cause of maternal death is death resulting from obstetric complications of the pregnancy, labour and puerperium or from interventions, omissions, incorrect treatment or from a chain of events resulting from any of the above (South Africa 1999-2001:vii).

1.7 RESEARCH DESIGN AND METHOD

1.7.1 Research design

A quantitative, cross sectional, correlational and descriptive design was used in this research study.

1.7.1.1 Quantitative design

Burns and Grove (2011:20) describe quantitative research as a: “formal, objective, systematic process in which numerical data are used to obtain information about the world”. This study utilised quantitative research because numerical values were collected from midwives in order to assess the level of knowledge, attitude and practical implementation of the guidelines for management of hypertensive disorders during antenatal care. This design was used because of its ability to control the study from imposing conditions on the study situation so that biases are minimised and validity is maximised (Polit & Beck 2012:13).

1.7.1.2 Cross-sectional design

Cross sectional design involves collection of data once the phenomena under study are captured during a single period of data collection (Polit & Beck 2012:183). In this study

the data was collected from various clinics during the months of December 2015 to January 2016.

1.7.1.3 Correlational research

According to Burns and Grove (2011:35), correlational research is the systematic investigation of the relationships between the variables. The relationship between knowledge, age, and experience, level of education and implementation of the guidelines for management of hypertensive disorders was described.

1.7.1.4 Descriptive design

A descriptive design is used to gain more information about characteristics within a particular field of study, to develop a theory, identify problems with current practice, justify current practice, make judgments, or determine what others in similar situations are doing (Burns & Grove 2011:256). The researcher identified problems with current implementation of guidelines in management of pre-eclampsia, which contributed towards maternal and neonatal deaths that are preventable.

1.7.2 Research methods

Research method is a way or technique used by the researcher to structure a study, collect and analyse information with the aim or purpose of achieving the objective (Polit & Beck 2008:15). The following section describes and discusses the following components of the research method employed in this study: setting, population, sampling, sample size, method of data collection and data analysis.

1.7.2.1 Research setting

Burns and Grove (2011:40) describe the setting as the location in which a study is conducted. The study was conducted in KwaZulu-Natal Province UMgungundlovu District's, 22 clinics and community health care centres that are rendering maternity services, and that are referring to Regional Hospital.



Figure 1.2 KZN Map of UMgungundlovu District
(KZN District Map)

1.7.2.2 Population

A population is all the individuals or objects with common, defining characteristics (Polit & Beck 2012:59). The target population was all midwives in UMgungundlovu District's 22 institutions attending to maternity cases during antenatal care visits and who are willing to participate in the research study.

1.7.2.3 Sample and sampling technique

Burns and Grove (2011:290) describe the sampling as a procedure that involves selecting a group of people, events, behaviours or other elements with which the study will be conducted. In this research study, the researcher used non-probability convenience sampling technique, which entails using the most conveniently available people as participants (Polit & Beck 2012:276). Midwives that are allocated in maternity section and

attend or render services to antenatal care clients in the clinics and CHCs, and who refer their clients to the districts or regional hospital were selected.

1.7.2.4 *Sample size*

According to Polit and Beck (2012:284), it is recommended that the researchers use the largest sample for quantitative study. It is likely to represent the population under study. In this research study, the number of midwives as estimated by the primary health coordinators was 150 in the area where the study was to be conducted. The number of questionnaires that were distributed was 150 to the various clinics depending on the size of the clinic. The total sample was 100 midwives.

1.7.2.5 *Data collection methods and procedures*

1.7.2.5.1 *Data collection instrument*

A self-designed questionnaire was used to collect data from midwives. Questionnaires are self-administered and they are described as a printed self-report form designed to obtain information through response from subjects (Burns & Grove 2011:353). The questionnaire was developed with the help of a statistician and was based on the information obtained from guidelines and other related research studies, and it was then presented to the statistician.

1.7.2.5.2 *Data collection*

Data was collected using a self-designed questionnaire in order to assess the knowledge of midwives on the implementation of guidelines for the management of pre-eclampsia. The questionnaire included questions on demographic aspects of midwives, training of midwives on guidelines, referral system, equipment, identification of risk factors, medications and health education that is provided to pregnant mothers. The letter to the respondent (Annexure A) by the researcher which explained to the study respondent what the study is about, their rights and the consent (Annexure B) as well as the questionnaire were hand delivered to various feeder clinics and community health care centres that are referring to the Regional Hospital. A total of 150 questionnaires were delivered and left in

the hands of the clinic operational managers in January 2016. The questionnaire was distributed to 17 clinics in total. The data was collected from January to July 2016.

1.7.2.5.3 Data management

A statistician was requested to assist in analysing the data. The data was coded so that the data set comprised of numbers only with all response categories given specific codes. The data was originally captured in Excel which is easily available and later converted into an IBM-SPSS Version 23 dataset for analysis. Before the data was analysed it was checked for errors by running frequency tables and checking unusual responses. Since each questionnaire was numbered (serialised) and these serial numbers captured together with the data, it was easy to trace the source of any errors and check them against the source questionnaire. This allowed for data correction during data editing and cleaning. The target population had more than 100 respondents and there were 100 questionnaires returned for the study sample.

1.7.2.5.4 Data analysis

The data was summarised using frequency tables, chi-square tests and analysis of variance. The research objectives will have to be translated into hypothesis, which will be tested using the statistical techniques described above. Since the questionnaire was divided into sections each addressing a specific research objective, it was easy to decide on which statistical technique to use depending on the nature of the data in the sections. Non-parametric tests like the chi-square tests, regression analysis and correlation were used to quantify relationships between variables (Parahoo 2006:53). Data was presented by making use of tables, charts and graphs.

The researcher used frequency distribution tables to outline the general patterns of responses to questions by the respondents. Analysis of variance (ANOVA) was also used to evaluate how any dependent variable responded to various independent variables, especially the demographic variables.

1.8 VALIDITY AND RELIABILITY

1.8.1 Validity

Validity refers to the extent that the instrument measures what it is supposed to measure (Polit & Beck 2012:336). The data collection instrument was presented to the statistician before it was used for data collection. The specialists who are dealing with maternal, child and women's health at district level including facilitators for maternal and child health care programmes reviewed the questionnaire and gave inputs on the objectivity of the questions in relation to the purpose.

1.8.2 Internal validity

Internal validity is defined, as the extent to which the effects detected in the study are a true reflection of reality rather than the result of extraneous variables (Burns & Grove 2008:222). Pre-testing of the questions was conducted before the actual data gathering to ensure that the instrument was reliable. The statistician reviewed the questions that were included in the questionnaire to ensure that they would yield what the researcher intended to research on.

1.9 ETHICAL CONSIDERATIONS

The permission to conduct the study was obtained from the Ethical Committee of the University of South Africa (Annexure D). Permission was also granted by the KZN Head of the Department of Health and by the district office (Annexures E and F). The permission to collect data was also granted by the relevant supervisors and chief executive officers of the community health centres (Annexure E).

The following ethical principles were adhered to:

Anonymity

Anonymity is described as a most secure means of protecting confidentiality wherever the researcher cannot link the participant to their data (Burns & Grove 2011:117). The researcher assign identification numbers to the questionnaires and avoid using names of

the midwives. The information that was collected was always kept in a locked filing cabinet in the maternity office.

Confidentiality

Confidentiality is described as protection of study participants so that data is not divulged (Polit & Beck 2012:162). The names of the midwives were not written on the questionnaire; hence, the information obtained was not linked to a specific participant.

Informed consent

Informed consent means that the participants are well informed of the study as well as their freedom of choice to participate in the research study (Polit & Beck 2012:157). The researcher explained the purpose and the data collection method clearly to the midwives including their freedom of choice to participate or not to participate. The midwives were then requested to sign the consent form.

Beneficence

The researcher ensured that harm is minimised and aims of producing benefits for participants (Polit & Beck 2012:152). The participants were provided with the envelopes, which were sealed and handed directly to the researcher. The recommendations may assist midwives in addressing specific gaps identified in the research findings.

Non-maleficence

The researcher avoided unnecessary risks for the discomfort or any harm to the participants (Polit & Beck 2012:152). The participants were not put under pressure to avoid psychological harm.

Justice

Justice includes respondents' right to fair treatment and to privacy (Polit & Beck 2012:112). The respondents were selected according to the reasons directly related to the study, not for any other benefits. The researcher used numbers instead of names for each script of questionnaire starting with 01 to 150 in order to ensure anonymity.

Autonomy

The researcher treated participants as autonomous agents, who have freedom to conduct their lives as they choose without external controls (Burns & Grove 2011:110), hence they were given “informed consent” and information indicating that they have a right to choose to participate or not to participate in the study.

1.10 SCOPE OF THE STUDY

The study was conducted at one hospital in KZN and purposive sampling was used. Hence, the study cannot be generalised to all the hospitals in the KZN province.

1.11 STRUCTURE OF THE DISSERTATION

Chapter 1: Orientation to the study

Chapter 2: Literature search

Chapter 3: Research methodology

Chapter 4: Data presentation, analysis and discussion

Chapter 5: Summary, Conclusion, limitations and recommendations

1.12 CONCLUSION

This chapter presents the orientation to the study. Chapter 2 focuses on literature review based on the research title and objectives.

CHAPTER 2

LITERATURE REVIEW

2.1 INTRODUCTION

In chapter one an introduction was given to the overall research contents. This chapter presents the literature review. According to Burns and Grove (2011:44) literature review is conducted to generate understanding of what is known about a particular situation and the knowledge gaps that exist. The researcher reviewed literature that are relevant to the guidelines for the management of pre-eclampsia, implementation and the knowledge of these guidelines. Literature review provides information on the topic under study including what others have done regarding the study.

2.2 OVERVIEW OF HYPERTENSIVE DISORDERS IN PREGNANCY

According to Cronje, Cilliers and Pretorius (2012:536), hypertensive disorders in pregnancy are contributing to maternal and perinatal morbidity and mortality. Hypertension can occur for the first time in pregnancy or it may be secondary to an underlying disorder. The key in managing hypertension in pregnancy is early detection and proper management in order to prevent complications.

Hypertension is a high blood pressure of 140/90 mmHg or higher in two occasions (South Africa 2001:24). Hypertensive disorders in pregnancy is one of the five major causes of maternal mortality in South Africa.

2.2.1 Classification of hypertensive disorders in pregnancy

Hypertensive disorders of pregnancy include chronic hypertension, pre-eclampsia and eclampsia.

2.2.1.1 Chronic hypertension

Chronic hypertension is regarded as the high blood pressure of 140/90 mmHg or higher on two occasions at least 6 hours apart before 20th weeks of gestation without the presence of protein in the urine (Cronje et al 2012:536).

2.2.1.2 Pre-eclampsia

Hypertension with the presence of protein in urine after the 20 weeks of pregnancy indicates a diagnosis of pre-eclampsia. The excretion of 300 mg or more of protein in urine over 24 hours in pregnancy is called proteinuria (Cronje et al 2012:537).

Pre-eclampsia is graded as follows:

- Mild pre-eclampsia - a diastolic pressure of 90-109mmHg with 1+ or 2+ proteinuria.
- Severe pre-eclampsia - a diastolic pressure of 110 with 1+ or 3+ proteinuria.
- Imminent pre-eclampsia - signs and symptoms of severe headache, blurry vision, epigastria pain, dizziness, hyperreflexia fainting and vomiting will be noted.

According to the South African National Department of Health Guidelines for Maternity Care (Department of Health 2015:83), pre-eclampsia is defined as hypertension with significance proteinuria, detected after 20 weeks of pregnancy. Pre-eclampsia is a condition in which blood pressure is elevated with proteinuria or oedema both induced by pregnancy after the onset of 20 weeks of gestation (James 2004:640).

During pregnancy, a physiological oedema is expected which is described as accumulation of fluid in the tissues with obvious swelling that is limited to the ankles. If the swelling is generalised including the face, hands, ankles and the entire body, it becomes an abnormal sign and dangerous especially if it is accompanied by pre-eclampsia which may lead to eclampsia (Cronje et al 2012:538).

2.2.1.3 Eclampsia

Eclampsia is characterised by generalised tonic-clonic seizures after 20 weeks of gestation. Seizures can also occur after delivery. Eclampsia is the presence of convulsions/seizures on a woman with pre-eclampsia (Cronje et al 2012:547).

2.2.1.4 HELLP syndrome

The last classification will be the HELLP syndrome, which is the presence of haemolysis, elevated liver enzyme and low platelet count (Fraser, Cooper & Nolte 2010:374).

2.2.2 Causes and predisposing causes of hypertensive disorders of pregnancy

According to Sellers (2013:240), there are aetiological factors that predispose to hypertensive disorders in pregnancy. These factors are described as:

- Nutritional deficiencies, protein and calories, calcium iron and vitamins.
- The client with a history of her mother having suffered from hypertension.
- Falling pregnant for the first time and having a new husband.
- Age of less than 18 years and those that are more than 35 years.
- Smoking although there are few incidences amongst smokers.
- It is also associated with placental pathology, multiple pregnancy and diabetes mellitus (Sellers 2013:240).

2.3 INTERNATIONAL AND NATIONAL GUIDELINES AND PROTOCOLS

2.3.1 Guidelines formulated by WHO

The World Health Organization's technical consultation team formulated the guidelines for prevention and treatment of pre-eclampsia and eclampsia and 23 recommendations were made (WHO 2011:01). Table 2.1 indicates guidelines that form part of the WHO's recommendations model (WHO 2011:2).

Table 2.1 Guidelines that form part of WHO recommendations model

Recommendations	Quality of evidence	Strength of recommendation
Calcium supplementation where calcium intake is low	Moderate	Strong
Aspirin 75mg to be given where Acetylsalicylic acid is low	Moderate	Strong
Antihypertensive treatment to be given to women with severe hypertension	Very low	Strong
Choice and route of an antihypertensive drug to depend primarily on the prescribing clinician's experience with that particular drug, its cost and is availability	Very low	Weak
Magnesium sulphate to be given to prevent Eclampsia in women with severe pre-eclampsia	High	Strong
Magnesium sulphate for treatment of Eclampsia	Moderate	Strong
Primary Health Care (Clinics) Magnesium sulphate leading dose to be given and then transfer women to a higher level of care	Very low	Weak
Induction of labour was recommended for women with severe pre-eclampsia for non-viable foetus	Very low	Strong
In the absence of foetal distress, increased maternal organ dysfunction and uncontrolled hypertension women can be monitored and a policy of expectant management is recommended for a viable foetus, applicable to 34-36 weeks gestational age	Very low	Weak
Severe pre-eclampsia at term delivery is recommended	Low	Strong
Mild pre-eclampsia or mild gestational hypertension at term induction of labour is recommended	Moderate	Weak
If antihypertensive drugs were given during antenatal care it is recommended to continue during postpartum care	Very low	Strong
Severe postpartum hypertension antihypertensive drugs to be given	Very low	Strong
Resting at home for women at risk is not recommended as primary prevention	Low	Weak
Strict bed-rest is not recommended to improve pregnancy outcome	Low	Weak
Restriction of salt intake not recommended to prevent complications	Moderate	Weak
Vitamin D supplementation not recommended to prevent complications	Very low	Strong
Vitamin C and E supplementation not recommendation to prevent complications	High	Strong
Diuretics not recommended to prevent complications	Low	Strong
Corticosteroids for treating HELLP syndrome not recommended	Very Low	Weak

The decision was taken to disseminate these recommendations through a broad network of international partners and other stakeholders around the world (WHO 2011:30). It was also recommended that implementation should be done in each country and should be adapted to meet the specific needs of each country.

Monitoring and evaluation was done through clinical auditing (WHO 2011:30). Hence, countries developed guidelines for the management of hypertensive disorders during pregnancy.

2.3.2 Guidelines formulated by the United Kingdom National Institute for Health and Clinical Excellence (NICE)

In the United Kingdom (UK) the NICE (2010:3) reported that hypertension in pregnancy remained one of the leading causes of maternal deaths and also caused risk for babies, with a perinatal mortality report of 1 in 20 (5%) stillbirths that occurred to women with pre-eclampsia. Half of these women had severe pre-eclampsia and gave birth to preterm babies.

Guidelines were developed in UK for management of hypertensive disorders. The details on management were divided according to severity of pre-eclampsia (NICE 2010:16).

Table 2.2 UK clinical guidelines for the management of pregnancy with gestational hypertension

Degree of hypertension	Mild hypertension (140/90 to 140/99 mmHg)	Moderate hypertension 150/100 to 159/109mmHg	Severe hypertension (160/110 mmHg or higher)
Admit to hospital	No	No	Yes, until blood pressure is 159/109mmHg or lower
Treat	No	Oral labetalol first line diastole 80-100mmHg systole 150mmHg	Oral labetalol first line diastole 80-100mmHg systole 150mmHg
Measure blood pressure	Once a week	At least twice a week	Four times a day
Test for proteinuria	Every visit using automated agent strip	Every visit	Check urine daily
Blood tests	Check routine blood tests for antenatal care	Take blood test to check kidney function Electrolytes, full blood count transaminases, bilirubin No proteinuria No subsequent blood test	Blood test to monitor kidney function full blood count, transaminases bilirubin

According to NICE (2010:9), women should be advised to be aware of signs and symptoms of pre-eclampsia and seek medical assistance timeously. Health providers were expected to inform the women about severe headache, blurring of vision, epigastric pain, vomiting and sudden swelling of face, hands and feet during antenatal care to prevent further complications resulting from hypertensive disorders.

Women who are at risk need to be advised to take 75 mg of aspirin daily from 12 weeks. Salt restriction in the diet is not recommended. Magnesium sulphate is recommended as an anticonvulsant for women with pre-eclampsia and need to be admitted in a critical care setting (NICE 2010:27). Furthermore, antihypertensive drugs such as Labetalol

hydralazine and Nifedipine orally are recommended. According to the guidelines, the following antihypertensive drugs have no adverse effects on the breastfed babies during postnatal period; Labetalol, Nifedipine, Enalapril, Captopril, Atenolol and metoprolol (NICE 2010:31).

2.3.3 Guidelines and protocols formulated by Australia and New Zealand

In Australia, all New South Wales (NSW) public health organisations providing maternity services and emergency services were also expected to have guidelines and protocols for the management of hypertensive disorders of pregnancy (NSW Policy Directive 2011:1). The NSW government health procedures were reviewed in 2016. The document consists of details on how to manage hypertensive disorders, blood investigations that are supposed to be done and health education, which needs to be given to women. The emphasis in the guideline is put on correct cuff size that is an inflatable bladder covering 80% of the arm circumference that needs to be used for accurate measuring of blood pressure (Society of Obstetric Medicine of Australia and New Zealand 2011:3).

The newly diagnosed women with hypertension after 20 weeks should be assessed for signs and symptoms of pre-eclampsia, which are headache, severe hypertension epigastric pain or nausea and vomiting (Society of Obstetric Medicine of Australia and New Zealand 2011:7).

According to the guidelines the following investigations are to be performed:

- Urine testing
- Full blood count
- Test urea, ureatinine, electrolytes
- Liver function test
- Ultrasound to monitor foetal growth, amniotic fluid volume and umbilical artery Doppler flow (A Society of Obstetric Australia and New Zealand 2011:7)

Table 2.3 Summary of guidelines for selecting antihypertensive drug treatment in pregnancy

Drug	Dose	Action	Contra-indication	Practice points
Methyldopa	250-75 mg TDS	Central	Depression	Slow onset act over 24 hours Dry mouth, sedation, depression, blurring of vision
Clonidine	75-300 mg TDS			Withdrawal effect with clonidine
Labetalol	100-400 mg TDS	B blocker with alpha vasodilator effect	Asthma, chronic airways limitation	Bradycardia, bronchospasm, headache, nausea
Oxprenolol	20-160 mg TDS	B blocker with ISA	Heart block	
Nifedipine	20 mg-5 mg TDS	A blocker		Flushing, headache, nausea etc

Magnesium sulphate is recommended for seizures and monitoring of its toxicity is emphasised.

2.3.4 Guidelines for management of hypertensive disorders in African countries

Tanzanian guidelines on management of pre-eclampsia and eclampsia are planned according to the level of care (Maembe 2012:8). At a primary level (clinics) the aim is to stabilise and refer the patient to the next level of care. Loading dose using Magnesium sulphate intramuscularly 5mg in each buttock is given, airway checked for patency and ensuring that the patient is haemodynamically stable (Maembe 2012:8).

Maembe (2012:9) also reported that due to poor infrastructure in Tanzania there is delayed referral to hospital hence it is important to give magnesium sulphate early to reduce maternal morbidity and mortality. The blood pressure is lowered by giving antihypertensive treatment (Maembe 2012:9). The knowledge of guidelines for management of hypertensive disorders by healthcare workers is crucial in reducing maternal and neonatal deaths (Maembe 2012:10). Mungati, Manangazira, Tukundwa, Gombe, Rusakanike and Tshimanga (2014:19) conducted a study in Zimbabwe on factors affecting diagnosis and management of hypertension in Mazowe district and

reported that health workers were not properly trained in measuring blood pressure correctly. Recommendations were made that health workers need on the job training and mentorship in management of hypertension. The drugs that are used such as Nifedepine, Captopril and Digoxin were not available during the study period (Mungati et al 2014:19).

In Uganda a quality assurance project for improving the management of obstetric emergencies was done through case management maps. The case management map for pre-eclampsia was also formulated to manage patients well. Kerstiens, Akii, Mbona, Zziwwa and Edson (2004:22) drew the map as follows.

On admission, the following general information should be included:

- Blood pressure to be checked three times a day
- Foetal heart checked three times a day
- Convulsions if present + sign to be written if not – sign to be written
- Critical event if fits/convulsions are present
- Weight and the presence of oedema checked daily:
 - No oedema (-)
 - Oedema up to the ankle (+)
 - Oedema ankle and tibia (++)
 - Oedema of the face (+++)
- Urine testing done every morning
- The reflexes to be checked for hyperreflexia
- Patient medication to be given as per prescription
- Inderal and Diazepam drugs to be given on admission
- Blood pressure checking was to be shaded after 2 days if there is no change in blood pressure readings and Aldomet to be added in treatment
- Counselling of the patient on diet, salt restriction and bed rest on the left side to be given

Important aspects to be considered when measuring the blood pressure:

It is important to measure the blood pressure correctly in order to obtain the correct reading and act promptly. Table 2.4 indicates the most important aspects to be considered when measuring the blood pressure.

Table 2.4 Important aspects to be considered when measuring the blood pressure

- | |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <ul style="list-style-type: none">• Positions that are acceptable right, left lying semi/lateral and sitting up• Lying on the back not to be done after 24 weeks• The correct cuff size must be used• The cuff level must be level of the heart• Diastolic blood pressure should be taken at the point where sound disappear |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

2.4 SOUTH AFRICAN GUIDELINES AND PROTOCOLS FOR THE MANAGEMENT OF HYPERTENSION

The Policy Guidelines for Saving Mothers in South Africa were formulated by the “Collaborative Guidelines Group” and institutions were expected to have these policy guidelines, implement them appropriately, and audits were to be done to ensure utilisation of policies correctly (South Africa 2001:2). The policy on management of hypertensive disorders in South Africa according is similar to the guidelines for maternity care in South Africa (Department of Health 2015).

According to the 1999-2001 Saving Mothers Report (South Africa 1999-2001:09 IX) guidelines on management of conditions that cause maternal death in South Africa were to be displayed in all the institutions delivering women. The relevant maternity sections were expected to display protocols on the management of hypertensive disorders. According to the policy and management guidelines for common causes of maternal deaths in South Africa (2001:2) guidelines are just principles and protocols are written in detail. Collins Dictionary (2008:427) describes the guidelines as principles put forward to set standards. Patients are managed according to the grading of the pre-eclampsia.

2.4.1 The grading of pre-eclampsia

According to guidelines for maternity care in South Africa (Department of Health 2015:83), pre-eclampsia is graded as follows:

- Mild pre-eclampsia a diastole BP 90-109 mmHg with 1+ 0 2+ proteinuria.
- Severe pre-eclampsia a diastolic BP \geq 110 mmHg and proteinuria.
- Imminent eclampsia signs and symptoms severe headache, visual disturbances, epigastric pain, hyperreflexia, dizziness, fainting and vomiting (guidelines for maternity care in South Africa) (Department of Health 2015:84).
- Eclampsia convulsions generalised after 20 weeks of pregnancy and within seven after delivery.
- HELLP syndrome presence of haemolysis, elevated liver enzyme and low platelets in the presence of hypertension and proteinuria.

2.4.2 Guidelines for the management of hypertensive disorders at the clinic

Guidelines for the management of Pre-eclampsia, Gestational Hypertension, Mild Pre-eclampsia, Severe Pre-eclampsia, Imminent Eclampsia and Eclampsia are indicated.

2.4.2.1 Guidelines for the management of pre-eclampsia

According to guidelines for maternity care in South Africa (Department of Health 2015:86), measures to reduce pre-eclampsia must be taken by giving Calcium supplementation to all pregnant women. Calcium Carbonate 168 mg/2 tablets orally with food. A low dose of aspirin 75 mg taken daily from the 12th week until 34 weeks of pregnancy should be prescribed for those who had pregnancy loss previously due to pre-eclampsia (Department of Health 2015:86).

2.4.2.2 Guidelines for the management of gestational hypertension

Patient must be advised on bed rest, Methyldopa needs to be prescribed and the blood pressure to be reviewed in 2 or 3 days. The woman must be advised to return immediately

if there are symptoms such as headache, vomiting and visual disturbance (South Africa 2015:86).

2.4.2.3 Guidelines for the management of mild pre-eclampsia

Methyldopa 1g stat and 500mg 8hourly orally must be prescribed and the woman need to be referred to hospital on the same day or next day if she is less than 34 weeks pregnant (South Africa 2015:86).

2.4.2.4 Guidelines for the Management of Severe Pre-eclampsia, Imminent Eclampsia and Eclampsia

Emergency boxes for management of these conditions should be prepared and kept at all health institutions that manage pregnant women (South Africa 2007:86). Magnesium sulphate should be administered or given as follows:

- Intramuscularly, 5 mg in each buttock or intravenously, 4 g diluted in 200 ml of Ringers Lactate given over 20 minutes.
- Observations to be done before continuing with magnesium regime
- Magnesium Sulphate needs to be stopped if:
 - patellar reflexes are absent
 - the respiratory rate is less than 16 breaths per minute
 - scanty urinary output is less than 25ml per hour
 - The antidote to be given is Calcium Gluconate 10% 10 ml into the vein (intravenously) slowly (South Africa 2007:86)

2.4.2.4.1 Management of severe pre-eclampsia

According to the guidelines for maternity care in South Africa (Department of Health 2015:86), the following must be performed:

- Ringer Lactate 200-250ml must be given intravenously over 20 minutes
- An indwelling urinary catheter should be inserted

- Magnesium Sulphate initiation 4 capsules added into 200 ml of Ringers Lactate to run over 20 minutes
- Blood pressure must be controlled
- The patient must be transferred urgently from the community health care centre to the hospital
- Foetal condition must be monitored using a machine known as CTG machine
- Ultrasound to estimate the size of the foetus must be done
- Steroids must be given to speed up or accelerate maturity of the foetal lungs (South Africa 2007:82)

2.4.3 Guidelines for the management of a woman with hypertension during antenatal care

It is important to advise the women on lifestyle modification such as exercise, stop smoking and alcohol, high fibre diet, unrefined carbohydrates and low fat diet as well as salt restriction (Maternity Guidelines South Africa 2007:88). The following recommendations are considered:

- Routine admission is not required.
- Baseline blood urea and creatinine level to be taken at the first antenatal visit.
- A stable chronic hypertensive woman must visit the clinic every 2 weeks.
- Mothers' weight to be checked for checking of weight gain, oedema and proteinuria.
- Antihypertensive treatment needs to be given to lower the blood pressure.
- If the blood pressure is 160/110mmHg or more, the woman should be admitted to the hospital.

Health care providers should do the following examination on women during ante-natal period:

- Full clinical assessment
- Take history to check signs of imminent eclampsia
- Check the pressure of vaginal bleeding
- Oedema, its severity

- Check pallor and jaundice
- Examination of heart and lungs
- Repeat blood pressure measurement after 20 minutes (South Africa 2007:87).

2.4.4 Guidelines for the management of a woman with hypertension during labor

The management of stages of labour is also explained in policy and guidelines (South Africa 2001:29). It is stated in the guidelines that the health care workers working in primary health care centres should be able to deliver the patients with hypertensive disorders in the clinics.

2.4.4.1 Guidelines for the management of a woman with Hypertension during the first stage of labor

The following guidelines for the management of a woman with hypertension are indicated on the 2001 Policy and Management Guidelines for Common Causes of Maternal Deaths in South Africa (South Africa 2001:29):

- Blood pressure to be monitored every ½ hour
- Check urinary output hourly
- Check foetal heart every ½ hourly
- Ensure that good pain relief is given
- The partogram should be kept accurate
- Emergency equipment such as oxygen, suction machine, airway apparatus, Calcium Gluconate must be available and ready
- The health care worker to watch for mental state
- If the labour is progressing poorly the woman must be transferred to the hospital
- The advice from the referral centre must be obtained

2.4.4.2 Guidelines for the management of a woman during second stage of labor

The following specific guidelines are indicated for the management of a woman with pre-eclampsia during the second stage of labour:

- The blood pressure is checked every 15 minutes.
- Foetal heart rate must be checked with each contraction.
- Progress must be good. If there is poor progress the woman must be assisted by vacuum extraction and transferred to the hospital.
- Ergometrine or Syntometrine must not be given (South Africa 2001:30).

2.4.4.3 Guidelines for the management of a woman with pre-eclampsia during third stage of labor

- The 3rd stage of labour should be managed actively to prevent or control postpartum bleeding.
- Blood pressure should be measured immediately after delivery, it should be controlled between 140/90 and 150/100 mmHg.
- Magnesium sulphate regime should be given continuously for 24 hours (Director General for National Health Department (Policy and Management Guidelines for Common Causes of Maternal Deaths (Director General for National Health Department 2001:30).

2.4.4.4 Guidelines for the management of a woman with pre-eclampsia during the puerperium stage (post-delivery)

Health education on family planning should be given and women who are over 30 years should be encouraged to do tubal ligation prior discharge. Dates for follow up visits should be given after 6-12 weeks and antihypertensive treatment must be given if necessary (South Arica 2001:30).

2.4.5 Indications for referral to the next level of care

According to Policy and Management Guidelines for causes of maternal deaths in South Africa (2001:30), there should be indications before referring to level three care which is tertiary and central hospitals. Indications for referral include the following:

- The woman should be in a coma, semi-coma and if there are signs of central nervous system damage.
- The signs of poor coagulation (clotting of blood).
- In the presence of abruption placenta or antepartum haemorrhage.
- If there are signs of prematurity, pulmonary oedema and underlying cardiac diseases.
- It is also stated that the transport facilities must be arranged.

The South African guidelines for maternity care (Department of Health 2007) and policy and management guidelines for hypertension in pregnancy (South Africa 2001:24) are implemented in KwaZulu-Natal and the health care providers are expected to follow these guidelines and policies.

2.4.6 Dissemination of guidelines to the Institutions

The maternal child and women health coordination, working with the provincial team for saving mothers, together with the district team of specialists are responsible for communicating all protocol either at national or provincial level. They conduct the workshops together with the district based specialists. the programme managers, operational managers, obstetricians, and the PHC coordinators get invited to the workshops in order to be informed about protocol. All these parties are expected to communicate, distribute and explain protocol.

2.4.7 Midwifery training

The midwife is registered freely by South African Nursing Council after successfully completing the midwifery curriculum as laid down the SANC R254. According to the South African Nursing Council R254 a candidate qualifies to be trained as a midwife if there is proof of registration with SANC.

The duration of the course shall be two years unless prescribed otherwise in Regulation 7 (SANC R254:4). The mission statement for midwives is to strengthen Midwives Association and Advanced midwifery profession globally by promoting autonomous midwives. (International Confederation of Midwives [ICM] 2014). According to ICM, the mission aims at ensuring that all women receive and have access to midwifery care as this is taken by ICM as a key factor in reducing maternal mortality (MDGs).

The South African Nursing Council laid down the regulation on the conditions under which registered and enrolled midwives may carry on their profession. The Minister of National Department of Health and Population Development then worked on the recommendation made by SANC on regulations (R2488 October 1990).

According to Chapter 1 (R2488, 26 October 1990:1) definitions are clearly written for child confinement, registered person and specified officer. According to Chapter 2 (R2488 26 October 1990:1) the conditions under which the midwives can practice are explained in detail as well as the equipment and materials that a midwife shall prepare or use whilst attending the pregnant woman. The records should be clear and accurate for the progress of pregnancy, labour and puerperium and all actions taken shall be documented (SANC R2488 October 1990:1). During pregnancy the midwife is expected to advise the women to be examined by the medical officer if there are abnormalities (SANC R2488 October 1990:2).

2.5 CONCLUSION

Literature review on the policies and guidelines for the management of hypertension and pre- eclampsia were highlighted in this chapter. Chapter 3 presents the research methodology.

CHAPTER 3

RESEARCH DESIGN AND METHODS

3.1 INTRODUCTION

In Chapter 2, literature review was discussed including various guidelines in management of hypertensive disorders of pregnancy. The current chapter describes the approach used to assess knowledge and the implementation of guidelines for the management of pre-eclampsia by the midwives in KZN UMgungundlovu District clinics and community health care centres (CHCs). The chapter also includes description of research design, research method, sampling, data collection, data analysis, validity and reliability of the study, ethical consideration and the conclusion about the chapter.

3.2 RESEARCH DESIGN

Creswell (2014:3) describes research design as plans and the procedures for research that span the decisions from broad assumptions to detailed methods of data collection and analysis. According to Burns and Grove (2011:253), a research design is a blueprint for conducting the study and, maximises control over factors that could interfere with the validity of the findings. Polit and Beck (2012:741) describe research design as an overall plan for addressing a research question, including specifications for enhancing the study's integrity. According to LoBiondo-Wood and Haber (2010:159), quantitative research design has multiple, overlapping yet unique purposes that provide the plan, vehicle for testing research questions and hypothesis and involves structure and strategy. Quantitative, descriptive and cross-sectional research design was used to address the research topic.

3.2.1 Quantitative design

Burns and Grove (2011:20) describe quantitative research as a “formal, objective, systematic process in which numerical data are used to obtain information about the world”. The researcher employed quantitative research design and numerical values were used to assess the level of knowledge, attitude and practical implementation of the

guidelines for management of hypertensive disorders during antenatal care. This design was used because of its ability to control the study from imposing conditions on the study situation, so that biases are minimised and validity is maximised (Polit & Beck 2012:13). According to Creswell (2014:4), quantitative research is an approach for testing objective theories by relationship among variables and in turn these variables can be measured.

3.2.2 Descriptive design

A descriptive design was used to gain more information about characteristics within a particular field of study, and may be used to develop a theory, identify problems with current practice, justify current practice, make judgments, or determine what others in similar situations are doing (Burns & Grove 2011:256). Descriptive study enables the researcher to identify problems with current practice that contributes towards maternal and neonatal deaths that are preventable as indicated in Saving Mothers 2011-2013 Sixth Report on the Confidential enquires into Maternal Death in South Africa (South Africa 2011-2013:10). The study objectives enable the researcher to assess the knowledge of midwives on implementing clinical guidelines for the management of pre-eclampsia and make recommendations.

3.2.3 Cross-sectional design

Cross sectional design involves collection of data once the phenomena under study are captured during a single period of data collection (Polit & Beck 2012:183). In this research study, the data was collected from various clinics during the months of January 2016 to July 2016.

3.2.4 Correlational research

According to Burns and Grove (2011:35) correlational research is the systematic investigation of the relationships between the variables. This study will look at variables whether there is a relationship between knowledge, age, and experience, level of education and implementation of the guidelines for management of hypertensive disorders.

3.3 RESEARCH METHODS

Research method is a way or technique used by the researchers to structure a study, collect and analyse information with the aim or purpose of achieving the research objective (Polit & Beck 2012:12). According to Creswell (2014:16), research methods involve the forms of collecting data, analysis of data and interpretation that researchers propose for their studies. The following section describes and discusses the following components of the research method employed in this study: population, sampling sample size, method of data collection and data analysis.

3.3.1 Population

Burns and Grove (2011:290) describe population as a particular group of individuals or elements. According to Polit and Beck (2012:59), population is all the individuals or objects with common, defining characteristics. In this study, the midwives that are registered with the South African Nursing Council (SANC) after successfully completing the midwifery curriculum as laid down by the South African Nursing Council R254 were selected in uMgungundlovu district.

3.3.2 Sampling

Burns and Grove (2011:290) describes the sampling as a procedure that involves selecting a group of people, events, behaviours or other elements with which the study will be conducted. According to Polit and Beck (2012:274), sampling is further described as a process of selecting cases to represent an entire population so that inferences about the population are made. In this research study, sampling involved selecting midwives that were allocated in maternity section and who attend or render antenatal care services to clients in the clinics and CHCs and refer their clients to the district or regional hospital. It also involves selecting a group of events, behaviours, and people with which to conduct a study. Researchers select the study subjects from the sampling frame, which is the list of every member of the population using a sampling method (Burns & Grove 2011:290). Polit and Beck (2012:279) describe purposive sampling as judgmental which can be used by researcher by purposefully choosing the population, particularly knowledgeable on the issues under study. This study is purposive and non-probability sampling technique was used.

Inclusion criteria

- Midwives who are rendering maternity services and attending pregnant women during antenatal care.
- Midwives who are working in primary health care setting, that is, clinics and CHCs.

Exclusion criteria

- Midwives that are working in primary health care setting and CHC but are not attending to pregnant women.

3.3.2.1 Sampling procedures

A sampling plan is designed to increase representativeness and decrease systematic bias or variation (Burns & Grove 2011:298). The researchers used non-probability purposive sampling, which entails using the most conveniently available people as participants (Polit & Beck 2012:276). The researcher distributed research questionnaires to all clinics and CHCs that are referring their maternity cases to Edenvale Regional Hospital at uMgungundlovu District 22.

3.3.2.2 Sample size

According to Polit and Beck (2012:284), it is recommended that the researchers used the largest sample in quantitative study, which is likely to represent the population under study. In this research study, the number of midwives as estimated by the primary health coordinators was 150 in the area where the study was conducted.

The number of questionnaires that were distributed to various clinics depending on the size of the clinic was 150. In some clinics where midwives render maternity services only, a minimum of two midwives were available, and maternity cases were referred to CHC for delivery. The total number of midwives who participated in the study were 100, 15 scripts received from the respondents were incomplete, there were gaps and some answers were ticked twice hence the scripts were not analysed.

3.3.2.3 Ethical issues relating to sampling

3.3.2.3.1 Sampling bias

According to Polit and Beck (2012:275), sampling bias refers to the systematic over-representation or under-representation of a population segment on a characteristic relevant to the research question. This study included all the midwives that attend to pregnant women and are working in the clinics and CHCs that refer their patients to regional hospitals at UMgungundlovu District.

The researcher gave all the midwives questionnaires to assess the knowledge and skills for implementation of guidelines for management of hypertensive disorder. It was discovered during clinical audit that was conducted on a monthly basis in the hospital that the guidelines were not implemented correctly. Hence, the researcher is looking at the possible challenges that are causing poor implementation of the guidelines amongst other issues. Hence the researcher assessed midwives' level of knowledge on implementation of clinical guidelines for management of pre- eclampsia.

3.3.2.3.2 Anonymity

Anonymity is described as a most secure means of protecting confidentiality whenever the researcher cannot link the participant to their data (Burns & Grove 2011:117). The researcher assigned identification numbers to the questionnaire tool and avoided using names. The information that would be collected would be kept in a lockable area.

3.3.2.3.3 Voluntary participation

Information letter was prepared and distributed with the questionnaires. This letter informed the respondent that if they feel uncomfortable at any stage with the study, they had a right to withdraw from participation.

3.3.2.3.4 Informed consent

According to De Vos, Strydom, Fouché and Delport (2015:117), obtaining informed consent is described as having given the participants all possible or adequate information

on the goal of the investigation. In the current study, Annexure A is the information letter to the participant that contains adequate information about the study. The letter explained the purpose of the study, nature of the research being conducted, the implications of participating, the rights of participants and the use of data collection. The consent form was prepared, and signed by the participants before actual data collection (Annexure B).

3.3.3 Data collection

Polit and Beck (2012:725) describe data collection as “gathering of information to address a research problem”. According to Burns and Grove (2011:534), data collection is “identification of subjects and the precise systematic gathering of information that is relevant to the research purpose or the specific objectives, questions or hypothesis of the study”.

3.3.3.1 Data collection approach and method

A self-administered structured questionnaire (Annexure C) was developed specifically for this study in order to collect the data from the respondents. As stated by Burns and Grove (2011:544) “questionnaires are printed self-report form designed to elicit information that can be obtained through written or verbal responses of the subjects”. Questionnaires can be designed to determine facts about the subject or persons known by the subject, facts about events or situations known by the subject or beliefs, attitudes, opinions, levels of knowledge or intentions of the subject.

3.3.3.2 Development and testing of the data collection instrument

The data collection instrument was prepared in consultation with the maternal child women’s health co-ordinators, specialist doctor for obstetrics and gynaecology working in a regional hospital; a statistician and from information obtained from literature review. References to guidelines for maternity care in South Africa; a manual for clinics; CHs and district hospitals for 2007; WHO recommendations for prevention and treatment of pre-eclampsia and eclampsia 2011; and guidelines used by clinics and hospital around UMgungundlovu district were made.

Questionnaire

The questionnaire was pretested on eight experienced clinicians, two obstetricians, two advanced midwives, and two experienced midwives at an obstetrics and gynaecology outpatient clinic. Two clinical assessors (nurses) who render basic antenatal care were also involved in the pretesting. The shortcomings were identified, such as the fact that drugs that are not used in primary health care settings were removed; questions were corrected to specify the exact questions required.

3.3.2.3 Characteristics of the data collection instrument

A structured and self-administered questionnaire was designed for collecting data (Annexure C) of the study. The questionnaire comprised of the following eight sections:

Section A: Demographic questions

Under this section, gender, age, qualifications, experience and position occupied by the participant as a midwife was asked.

Section B: Training on guidelines

Questions on training specifically on guidelines were asked. The respondents were given ranking structure of five options: Agree - Strongly agree – Neither agrees or disagree – Disagree and Strongly disagree.

Section C: Awareness of the guidelines

In this section, respondents were requested to respond on whether they were involved in the formation of guidelines; if guidelines were easily accessible; clear and easy to follow, and if they perceived the guidelines as effective and necessary to implement.

Section D: Referral system

Respondents were tested if they were aware and knew how and when to refer the mother who was having hypertensive disorder in pregnancy.

Section E: Equipment

The knowledge on how to use and take care of equipment was tested.

Section F: Identification of risk

The knowledge on risk factors was determined.

Section G: Medications

The knowledge of prescription of medication as per guidelines was assessed.

Section H: Health education

Knowledge about health education was assessed.

3.3.2.4 Data collection process

Polit and Beck (2012:725) describe data collection as gathering of information to address the research problem. Questionnaires were printed together with the consent forms and a letter to respondents. The researcher discussed with the operational managers and the primary health care coordinators the issues around the research study after the perinatal meeting, which was held in November 2015. The above mentioned subjects were shown permission that was granted by the KZN Health Committee and the District Manager of uMgungundlovu.

Copies of questionnaires were distributed to 17 clinics. Attached to each questionnaire were the following documents: Annexure A, a letter to respondent; Annexure B, a consent form, and Annexure C, questionnaire copy. The total number of copies that were distributed to the clinics was 150. The issue of willingness to participate was discussed and midwives were not forced to fill in questionnaires, only the consenting parties filled in the questionnaire.

3.3.2.5 Ethical consideration related to data collection

According to Burns and Grove (2011:107), there are three ethical principles that are relevant to the conduct of the research involving human subjects; these are respect for persons, beneficence, and justice. Polit and Beck (2012:152) describe beneficence as imposing a duty on researchers to minimise harm and maximise benefits. The principles of ethical consideration were maintained through the study.

Informed consent was prepared for the participants who willingly agreed to participate. Information was given to participants about the study. The names were not used in the questionnaire; numbers were allocated for each script.

- **Rights of participants**

Ethical consideration was ensured through respecting the right of each participant to self-determination; consent was requested after reading the letter that was informing the participant about the study. The respondents' information was kept anonymous.

The study used a self-administered instrument with no risk imposed during data collection process. No harm was generated through the research process.

- **Institutional rights**

Ethical approval was obtained from both the Higher Degrees Committee of the Department of Health Studies at the University of South Africa (Annexure D). The UMgungundlovu District manager after requisition that was made to conduct study gave an approval letter (Annexure E). The KwaZulu-Natal Health Research Committee also gave approval for the study to be conducted (Annexure F).

Health facility administration was informed about the study and the purpose of the study was explained; permission to conduct the study including collection of data was produced as evidence from The KwaZulu-Natal Provincial Health Department.

3.3.4 Data analysis

Polit and Beck (2012:301) described Likert scale as a scaling technique that consists of several declarative items that express the viewpoint on a topic. The respondents were asked the degree to which they agree or disagree with the opinion that was expressed by the statement (Polit & Beck 2012:301). The Likert scale is designed to determine the opinions on attitude of the study subjects (Burns & Grove 2011:357). SPSS was used to analyse the data. The data was summarised using frequency tables and the testing of the hypothesis derived from the research objectives. Chi-square tests and analysis of variance were applied. The research objectives were translated into hypothesis, which was tested using statistical techniques.

3.4 CONCLUSION

This chapter described the research design used in this study, the research method, sampling, ethical issues, data analysis and data collection instrument. Chapter 4 discusses the analysis, presentation and description of research findings.

CHAPTER 4

DATA ANALYSIS, INTERPRETATION AND RESULTS

4.1 INTRODUCTION

In Chapter 3 the research design and method was described. This chapter discusses the data analysis, interpretation and the results for the study.

4.2 PURPOSE OF THE STUDY

The purpose of the study is to determine the knowledge of midwives on implementation of clinical guidelines for the management of pre-eclampsia with the aim of improving midwifery practice and preventing maternal and neonatal deaths due to pre- eclampsia.

4.3 OBJECTIVES OF THE STUDY

The objectives are:

- To assess the level of knowledge of midwives on implementation of clinical guidelines for management of pre-eclampsia in UMgungundlovu District 22 of KwaZulu-Natal Province
- To analyse the relationship between the demographic factors and the level of knowledge that the midwives have on clinical guidelines for the management of pre-eclampsia.

4.4 RESEARCH QUESTIONS

The above objectives translate into the following research questions:

- What is the level of knowledge that the midwives have regarding the implementation of guidelines for the management of pre-eclampsia?

- What is the relationship between midwife's demographic factors and their knowledge on implementation of clinical guidelines for the management of pre-eclampsia?

4.5 STATISTICAL ANALYSIS AND INTERPRETATION OF RESULTS

A total number of 150 questionnaires were distributed to all the feeder clinics and community health care centres that refer their clients to the regional hospital. A total of 115 questionnaires were brought back as response. The 15 of 150 questionnaires were not properly filled in as there were gaps and some were ticked twice under one option. The total number of questionnaires that were filled in correctly were 100, and the respondents consented. The response rate was 66, 2%.

4.6 DATA COLLECTION AND DATA MANAGEMENT

This subsection presents results on demographic variables; training of midwives; awareness of guidelines; knowledge of the referral system, equipment, identification of risk factors, medication and health education that needs to be given to a pregnant woman.

Data was collected using a self-designed questionnaire in order to assess the knowledge of midwives on the use of guidelines for the management of pre-eclampsia.

Section A: Demographic aspects of midwives

Section A includes gender, age, qualifications, years of experience in maternity and current position held by the midwife.

Section B: Training of midwives on guidelines

Section B includes the following information: whether the training was done for all midwives before using the guidelines, whether they received mentorship; whether the training was offered by a specialist; and if workshops were conducted on the implementation of these guidelines.

Section C: Awareness of the guidelines

Section C include the place where the information that is needed was obtained, if the midwives were involved in the formulation of the guidelines, how easy it was to access these guidelines, whether guidelines were clear and easy to follow and whether midwives view was as important to follow the guidelines on attending the clients or not. Responses to the questions assisted the researcher to assess the implementation of the clinical guidelines in reducing maternal deaths.

Section D: Referral system shared between clinics and hospitals

The purpose was to assess the knowledge of midwives on referral criteria for patients with pre- eclampsia.

Section E: Equipment

This section included questions on how to take care of the blood pressure machine, and the position, which was needed to be adopted when the blood pressure was taken in order to take the correct reading of blood pressure.

Section F: Knowledge that the midwives have in diagnosing or identifying risk factors

Midwives were asked if they were able to identify risk factors from the history that had been taken from the pregnant mother or not.

Section G: Medication

Section G was on medications necessary to be administered timeously. The calcium carbonate as a preventative measure was given to all women that were pregnant to prevent developing of high blood pressure. Magnesium sulphate was given timeously to avoid fitting when the client was having pre-eclampsia.

Section H: Health education

This section was aiming at assessing whether the midwife knew the necessary topics which needed to be included when educating the pregnant mother.

4.6.1 Demographic variables

The following demographic variables were recorded for the research participants: gender; age; highest nursing qualification; number of years working in maternity ward and current position held in the maternity ward.

4.6.1.1 Gender of the respondents

The study consisted of 90 (90%) female respondents with only 10 (10%) males making up part of the study sample.

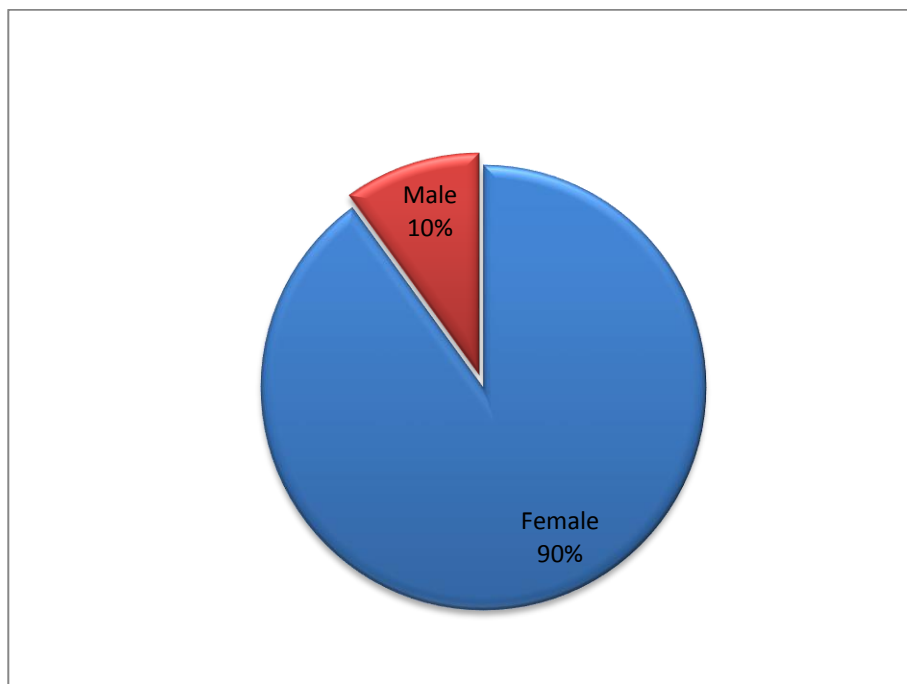


Figure 4.1 Gender distribution of research respondents

The gender composition of the study sample makes it a female dominated study hence the views expressed in this study will be predominantly of those female members of the population of the study.

4.6.1.2 Age distribution of the respondents

As far as the age distribution of the study sample was concerned, the age groups of 31 to 40 (n=40, 40%) and 41 to 50 years (n=34, 34%) constituted the largest number of the study sample. These findings are supported by Elkhalifa and Kuppusway (2014:130) who found age to be related to better experience and skills do to longer period/years spent on midwifery practice.

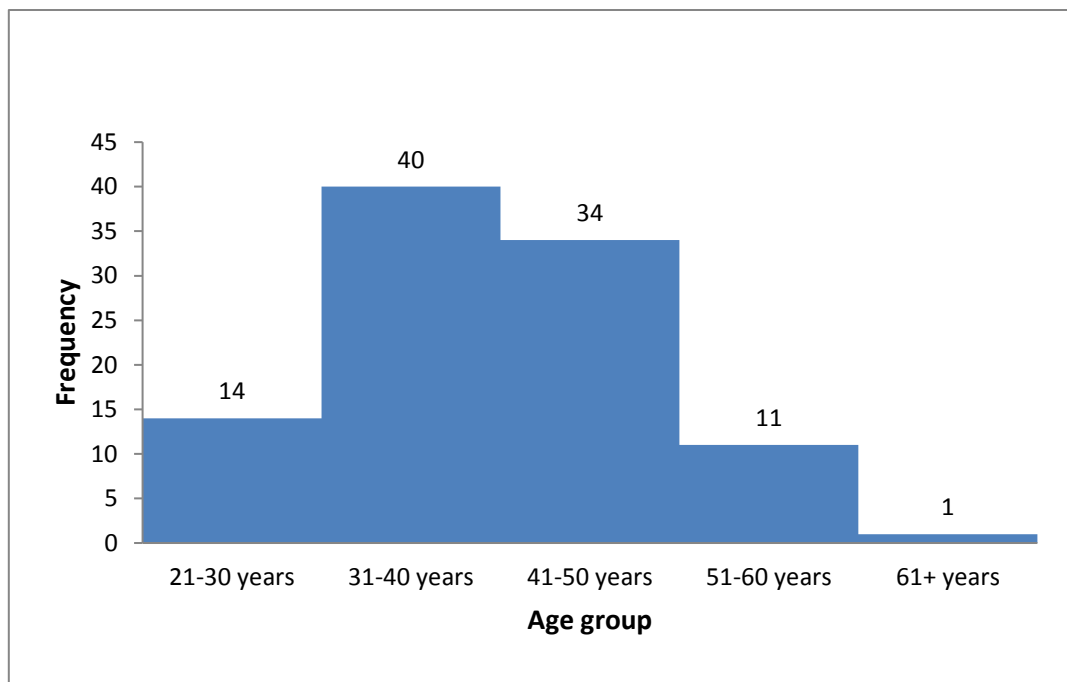


Figure 4.2 Age distribution of research respondents

There were only 11 (11%) respondents aged between 51 and 60 years with only one (1%) respondent older than 61 years. This was to be expected as people over 61 years are more likely to be retired. Only 14 (14%) of the respondents were very young, that is, between 21 and 30 years. The average age for the study sample was 40 years which is indicative of a study sample comprising of mature or fairly experienced respondents.

4.6.1.3 Distribution of nursing qualifications of the respondents

Most of the respondents had diplomas in nursing and midwifery 70 (70%), only 5 (5%) had degrees in nursing and 25 (25%) had postgraduate diplomas. These findings on knowledge of midwives about hypertensive disorders during pregnancy are supported by Stellenberg and Ngwekwazi (2016:7) who found that those that have the 1 year course

duration in midwifery were capable of providing quality and safe midwifery practice. In addition, Elkhalfa and Kuppusway (2014:130) showed that a high percentage (75%) of midwives who have undergone secondary school education and were considered literate provided quality midwifery practice.

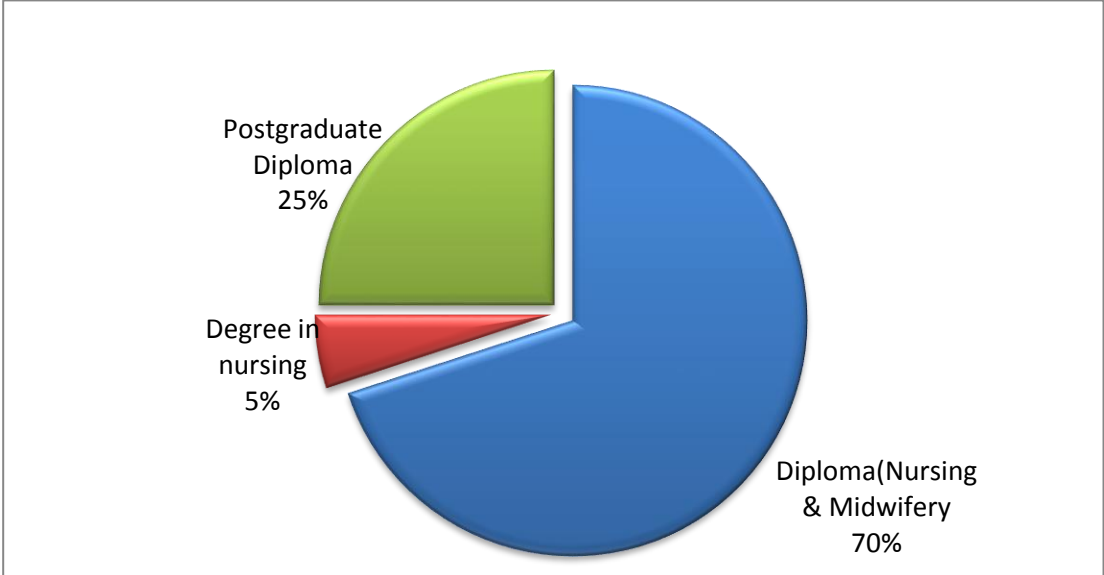


Figure 4.3 Qualification distribution of research respondents

The results, as shown in Figure 4.3, indicate that all respondents had a basic qualification as a professional nurse, which is expected of them to understand the questions on the general principles.

4.6.1.4 Distribution of the number of years working in the maternity ward

The experiences of the research respondents in the field under study was best described by the number of years they have been working in the maternity ward and this is indicated in Figure 4.4 below.

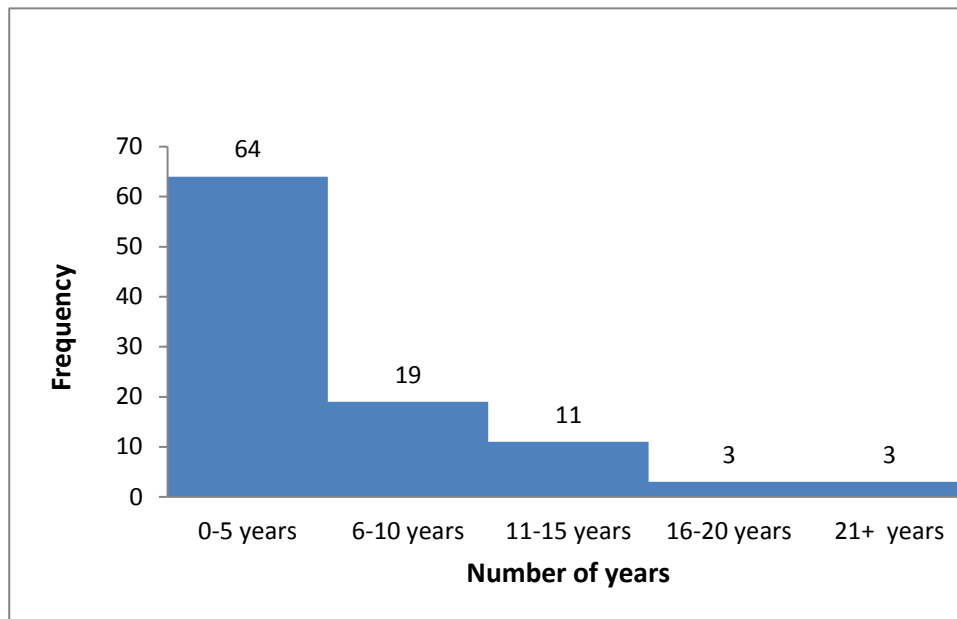


Figure 4.4 Distribution of the number of years working in maternity ward for research respondents

Figure 4.4 shows that most of the respondents, that is, 64 (64%) had only 0 to 5 years working in the maternity ward. This was indicative of overall minimal experience amongst the research respondents. Only 19 (19%) of the respondents had from 6 to 10 years of experience while 11 (11%) had been working in the maternity ward for between 11 and 15 years, 3 (3%) had between 16 to 20 years and another 3 had 21 or more years working in the maternity ward. The distribution of the number of years working in the maternity ward was inclined towards few years of experience, therefore, the study sample comprised of people who have a lot to learn and experience about practice in the maternity ward. Stellenberg and Ngwekazi (2016:6) who found that participants with more than 10 years' experience are regarded as experts in maternity support these results.

4.6.1.5 Distribution of positions of respondents

Figure 4.5 shows that 81 (81%) of the respondents were practicing as registered nurses while 6 (6%) were senior professional nurses, with 9 (9%) being chief professional nurses. Only 4 (4%) had other kinds of designations which they didn't specify. Elkhalifa and Kuppusway (2014:131) who found that midwifery skills rely more on the practical aspect rather than the theory aspect support these findings.

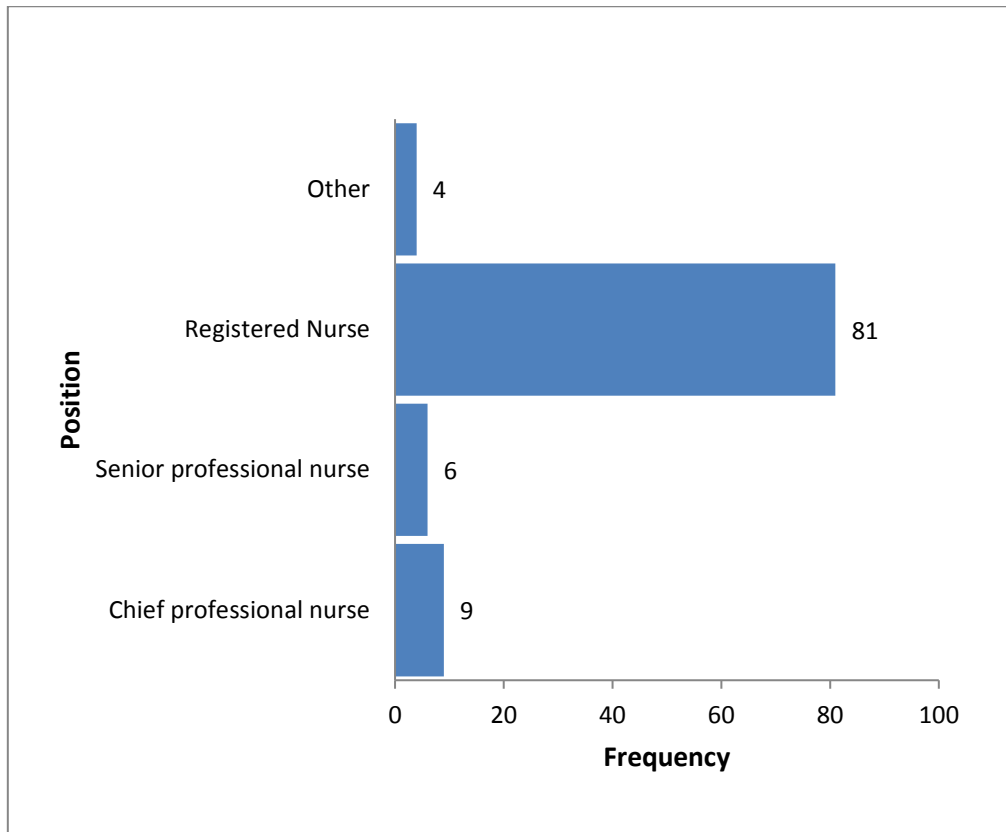


Figure 4.5 Distribution of positions of the research respondents

The results indicated that most of the respondents were registered nurses and few had senior positions in the maternity ward.

4.6.1.6 Summary of demographic variables of respondents

The summary of all demographic variables is presented in Table 4.1 below.

Table 4.1 Demographic distribution of the research sample (N=100)

Demographic variable	Category	n	Percentage
Gender	Female	90	90.0%
	Male	10	10.0%
Age	21-30 years	14	14.0%
	31-40 years	40	40.0%
	41-50 years	34	34.0%
	51-60 years	11	11.0%
	61+ years	1	1.0%
Highest nursing qualification	Diploma (Nursing and Midwifery)	70	70.0%
	Degree in nursing	5	5.0%
	Postgraduate Diploma	25	25.0%
Number of years working in maternity ward.	0-5 years	64	64.0%
	6-10 years	19	19.0%
	11-15 years	11	11.0%
	16-20 years	3	3.0%
	21+ years	3	3.0%
Current position in maternity ward	Chief professional nurse	9	9.0%
	Senior professional nurse	6	6.0%
	Registered Nurse	81	81.0%
	Other	4	4.0%

4.6.2 Training on guidelines for management of pre-eclampsia

This section assesses the level of training on clinical guidelines for clinicians at the institution under study. The frequency distribution of responses to questionnaire items that fell under the construct of “training on clinical guidelines for management of pre-eclampsia”, together with associated statistics, are presented in this section along with outlines of what the results mean. Summary statistics for the questionnaire items that addressed issues around training on clinical guidelines are also presented.

These findings are supported by Stellenberg and Ngwekazi (2016:7) that, midwives should be equipped with postgraduate qualification in advanced midwifery and neonatology so as to be able to manage unforeseen obstetrical complications.

4.6.2.1 Training of all midwives on clinical guidelines for management of pre-eclampsia

The results in Table 4.2 show that only 52 (52%) of the research respondents agreed or strongly agreed to the statement that all midwives are trained on clinical guidelines for the management of pre-eclampsia. There were 40 (40%) who neither disagreed nor strongly agreed with 8 (8%) being neutral. This shortfall in the number of midwives trained on the said clinical guidelines needs to be addressed in order to improve the understanding of issues around the management of pre-eclampsia. The mean score of 3.24, which was close to the neutral score of three, was indicative of the fact that there was no overwhelming evidence that most midwives were trained on the clinical guidelines for the management of pre-eclampsia. According to Elkhalifa and Kuppusway (2014:131), midwives working under supervision at the hospital are required to be competent, efficient and be able to work on their own.

Table 4.2 Training of all midwives on clinical guidelines for management of pre-eclampsia (N=100)

B6. All midwives are trained on clinical guidelines for management of pre-eclampsia		
Response	n	%
Strongly Disagree	18	18%
Disagree	22	22%
Neutral	8	8%
Agree	22	22%
Strongly Agree	30	30%
Agree + Strongly Agree	52	52%
Descriptive	Mean	3.24
	Std Dev	1.53

4.6.2.2 Importance of receiving mentorship on the use of guidelines

The results in Table 4.3 show that 99 (52%) of the research respondents agreed or strongly agreed to the Importance of receiving mentorship on the use of guidelines. Only 1 (1%) of the respondents strongly disagreed. This showed the willingness of the research respondents to be mentored on the use of guidelines. Therefore, while the results of Table 4.2 indicated lack of training, there was willingness to be mentored as indicated in Table

4.3. The mean score was 4.76 on the Likert scale which was very close to the strongly agreed score of five.

Stellenberg and Ngwekazi (2016:7) who indicated that midwives should be updated on clinical skills in order to ensure competence support these findings. This is also supported by Elkhailifa and Kuppusway (2014:131) that midwifery skills are more practical than theoretical.

Table 4.3 Importance of receiving mentorship on the use of guidelines

B7. It is important to receive mentorship on the use of guidelines		
Response	n	%
Strongly Disagree	1	1%
Disagree	0	0%
Neutral	0	0%
Agree	20	20%
Strongly Agree	79	79%
Agree + Strongly Agree	99	99%
Descriptives	Mean	4.76
	Std Dev	0.55

4.6.2.3 Provision of in-service training by maternity specialist on use of clinical guidelines for management of pre-eclampsia

The results in Table 4.4 show that only 46 (46%) of the research respondents agreed or strongly agreed to the fact that maternity specialists give in-service training concerning the use of clinical guidelines for the management of pre-eclampsia. The results also indicated that 10 (10%) were neutral, 22 (22%) strongly disagreed and 22 (22%) disagreed. Therefore, there was no overall agreement on the provision of in-service training concerning the use of clinical guidelines for the management of pre-eclampsia by maternity specialists. The mean score of 3.06, which was close to the neutral score of three, indicated that there was strong evidence in support of the existence of such training.

In support of these findings, Stellenberg and Ngwekazi (2016:7) recommended attendants of compulsory workshop, conferences and refresher courses in obstetrics and midwifery.

Table 4.4 Provision of in-service training by maternity specialist on use of clinical guidelines for management of pre-eclampsia

B8. Maternity specialist give in service training concerning use of clinical guidelines for management of pre-eclampsia		
Response	n	%
Strongly Disagree	22	22%
Disagree	22	22%
Neutral	10	10%
Agree	20	20%
Strongly Agree	26	26%
Agree + Strongly Agree	46	46%
Descriptive	Mean	3.06
	Std Dev	1.54

4.6.2.4 The conducting of workshops on the implementation of the guidelines

The results in Table 4.5 show that only 46 (46%) of the research respondents agreed or strongly agreed to the fact that workshops on the implementation of the clinical guidelines for the management of pre-eclampsia are conducted. The results also indicated that 10 (10%) midwives were neutral, 18 (18%) strongly disagreed and 26 (26%) disagreed. In general, there was no overall agreement that workshops on the implementation of the clinical guidelines were conducted as sizeable percentages as midwives still see no evidence of such workshops. These results are supported by Stellenberg and Ngwekazi (2016:7) who found that though the continuous professional points in terms of the Nursing Act 33 of 2005 has not been implemented, conducting workshops should be compulsory.

Table 4.5 Workshops on the implementation of the guidelines are conducted

B9. Workshops on the implementation of the guidelines are conducted		
Response	n	%
Strongly Disagree	18	18%
Disagree	26	26%
Neutral	10	10%
Agree	21	21%
Strongly Agree	25	25%
Agree + Strongly Agree	46	46%
Descriptives	Mean	3.09
	Std Dev	1.48

4.6.2.5 Summary of training on clinical guidelines

Figure 4.6 below is a graphical summary of how the study respondents responded to the questionnaire items that addressed issues around training on clinical guidelines. The percentages were for those who agreed or strongly agreed to the statements that were listed.

These results are supported by the research that was conducted by Stellenberg and Ngwekazi (2016:2) who identified gaps in the knowledge of midwives about hypertensive disorders of pregnancy. This raised a major concern as hypertension contributed to 16.5% of maternal deaths in South Africa. Hence, there is a need for training of the midwives. In addition, a study conducted by Sheikh et al (2016:2) found that there was lesser knowledge regarding management of pre-eclampsia due to lack of refresher training and written guidelines.

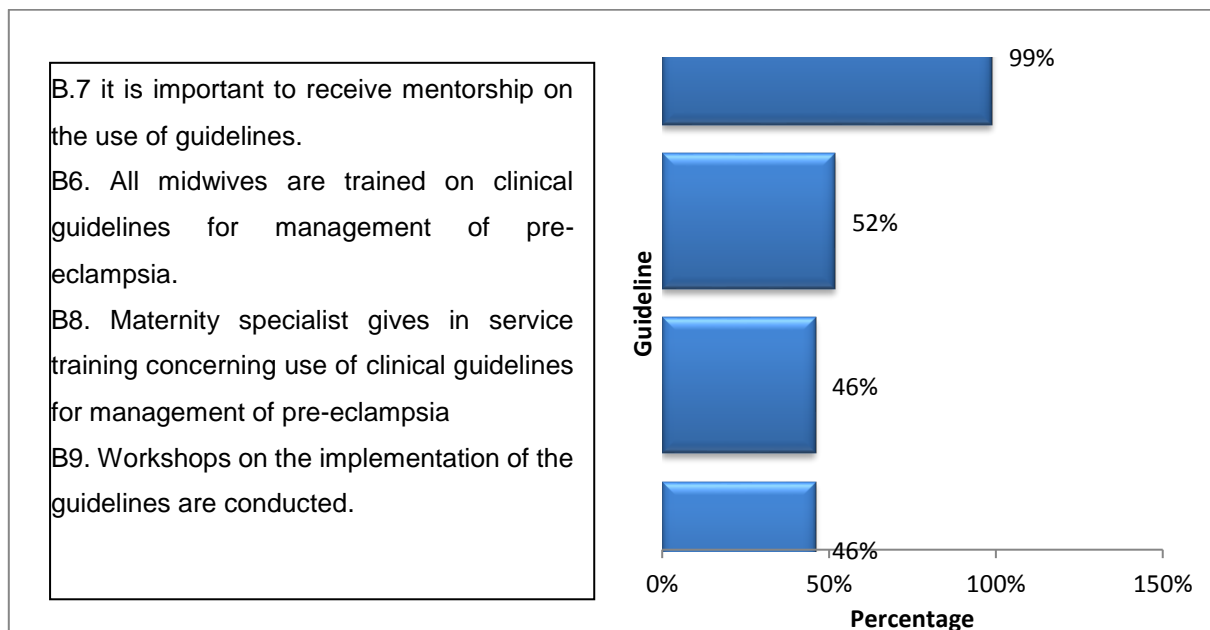


Figure 4.6 Summary of items under training on clinical guidelines items

The graph indicates that the respondents felt it was important to receive mentorship on the use of guidelines as 99% agreed or strongly agreed. Only 52% agreed or strongly agreed that all midwives were trained on guidelines, only 46% agreed or strongly agreed that maternity specialists gave in-service training and only 46% indicated that workshops

on the implementation of guidelines were helpful. This summary shows that there was a gap in training on guidelines.

4.6.3 Awareness of clinical guidelines for management of pre-eclampsia

Apart from training on clinical guidelines, respondents were also asked for their awareness on issues around clinical guidelines for the management of pre-eclampsia. Results for the awareness of issues around clinical guidelines for the management of pre-eclampsia were presented in this section. There were five items under the construct of awareness of issues around clinical guidelines for the management of pre-eclampsia and these were presented in the five subsections that follow.

4.6.3.1 Involvement of midwives in the formulation of clinical guidelines

The results presented in Table 4.6 show that only 13 (13%) of the respondents agreed or strongly agreed that all midwives were involved in the formulation of clinical guidelines, 14 (14%) were neutral, 36 (36%) disagreed while 37 (37%) strongly disagreed.

Table 4.6 All midwives are involved in the formulation of clinical guidelines

C10. All clinicians are involved in the formulation of clinical guidelines		
Response	n	%
Strongly Disagree	37	3%
Disagree	36	10%
Neutral	14	14%
Agree	10	36%
Strongly Agree	3	37%
Agree + Strongly Agree	13	13%
Descriptive	Mean	1.96
	Std Dev	1.22

The results presented in Table 4.6 showed that there was room for improvement as far as the involvement of stakeholders in the formulation of guidelines was concerned.

4.6.3.2 Accessibility of guidelines

As shown in Table 4.7, there was general agreement that the guidelines were easily accessible as 67 (67%) agreed and strongly agreed. Twelve percent of the respondents (n=12) were neutral, 9 (9%) disagreed and 12 (12%) strongly disagreed.

Table 4.7 Guidelines are easily accessible

C11. Guidelines are easily accessible		
Response	n	%
Strongly Disagree	12	12%
Disagree	9	9%
Neutral	12	12%
Agree	38	38%
Strongly Agree	29	29%
Agree + Strongly Agree	67	67%
Descriptive	Mean	3.94
	Std Dev	1.09

The results showed that the availability of guidelines was not a big problem but, as indicated in the previous section, the awareness and training in the use of such guidelines was of concern.

3.6.3.3 Clarity of guidelines

The results in Table 4.8 showed that the guidelines were well understood by 95 (95%) of the respondents. Only 2 (2%) disagreed, indicating that they did not find the guidelines clear while 3 (3%) were neutral.

Table 4.8 Guidelines are clear and easy to follow

C12. Guidelines are clear and easy to follow		
Response	n	%
Strongly Disagree	0	0%
Disagree	2	2%
Neutral	3	3%
Agree	23	23%
Strongly Agree	72	72%
Agree + Strongly Agree	95	95%
Descriptives	Mean	3.63
	Std Dev	1.32

The results overwhelmingly showed that the guidelines were clearly written and could be understood by most midwives.

4.6.3.4 Adherence to guidelines

The respondents indicated that they understood the necessity of adhering to clinical guidelines whenever attending to antenatal clients (93%) agreed or strongly agreed. Only 1 (1%) disagreed with 6 (6%) being neutral. The mean of 4.65 was very close to a score of 5 which stands for strong agreement.

These results are supported by the Guidelines of Maternity in South Africa, Department of Health (2016:14) that in the absence of a functioning system of primary healthcare and without guidance for clinical management than maternal deaths and ill health will continue.

Table 4.9 It is necessary to adhere to clinical guidelines whenever attending to antenatal clients

C13. It is necessary to adhere to clinical guidelines whenever attending to antenatal clients		
Response	n	%
Strongly Disagree	0	0%
Disagree	1	1%
Neutral	6	6%
Agree	21	21%
Strongly Agree	72	72%
Agree + Strongly Agree	93	93%
Descriptives	Mean	4.65
	Std Dev	0.64

The results show that most midwives were willing to adhere to the clinical guidelines and they viewed them as important.

4.6.3.5 Implementation of clinical guidelines and reduction of maternal death

Results in Table 4.10 were very similar to those in Table 4.9 with 93 (93%) agreeing or strongly agreeing. This showed that the respondents value the adherence and implementation of the guidelines. According to Stellenberg and Ngwekwazi (2016), lack

of protocol for the management of eclampsia and failure to follow clinical protocols of care contributed towards maternal deaths.

Table 4.10 Effective implementation of clinical guidelines for managing maternity client can reduce maternal death

C14. Effective implementation of clinical guidelines for managing maternity client can reduce maternal death		
Response	n	%
Strongly Disagree	0	0%
Disagree	1	1%
Neutral	6	6%
Agree	21	21%
Strongly Agree	72	72%
Agree + Strongly Agree	93	93%
Descriptives	Mean	4.64
	Std Dev	0.64

Only 6 (6%) were neutral with only 1(1%) disagreeing that effective implementation of clinical guidelines for managing maternity clients can reduce maternal death.

4.6.3.6 Graphical presentation of item on awareness of clinical guidelines for management of pre-eclampsia

Figure 4.7 summarised the issues about awareness of clinical guidelines for the management of pre-eclampsia

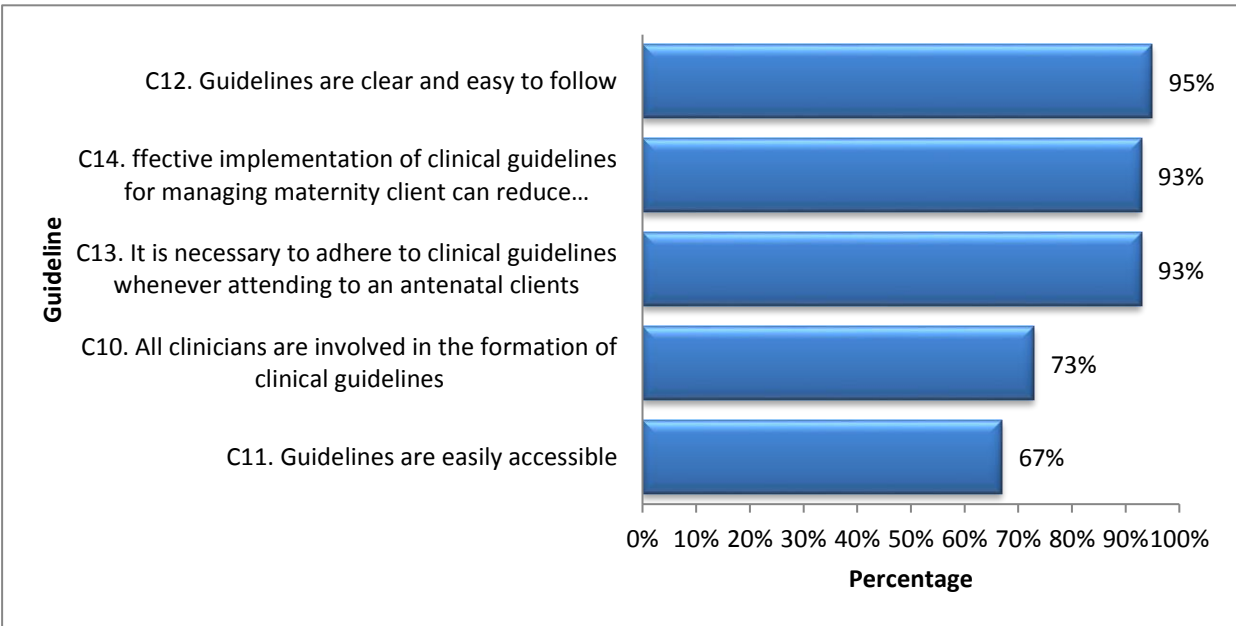


Figure 4.7 Awareness of on clinical guidelines items

Figure 4.7 showed that easy accessibility of the guidelines was a bit of an issue as compared to the other aspects around the awareness of the clinical guidelines. Figure 4.7 also clearly showed that the respondents scored the highest approval rating to the clarity of the guidelines and the lowest approval rating to the accessibility of the guidelines.

In an effort to ensure that there is awareness on clinical guidelines, there was continuous global commitment from major role players in addressing causes of maternal and perinatal deaths, and formulation of guidelines for Maternity Care in South Africa by the South African National Department of Health (Department of Health, 2016:12).

4.6.4 The referral system

Results for the referral system in the management of pre-eclampsia were presented in this section with a sub-section for each of the questionnaire items analysed.

4.6.4.1 *Existence of a clear referral criteria for pre-eclampsia*

According to results in Table 4.11, most of the respondents (88%) indicated that they had clear referral criteria at their workplace with only 7% disagreeing, 2% disagreeing strongly and 3% being neutral.

Table 4.11 Existence of a clear referral criteria

D15. There is a clear referral criteria for pre-eclampsia		
Response	n	%
Strongly Disagree	2	2%
Disagree	7	7%
Neutral	3	3%
Agree	36	36%
Strongly Agree	52	52%
Agree + Strongly Agree	88	88%
Descriptives	Mean	4.29
	Std Dev	0.97

A mean of 4.29, which was on the agreeing side, meant that there was overwhelming agreement to the existence of a clear referral criteria.

Stellenberg and Ngwekazi (2016:5) supported these findings by indicating the importance of midwives having the required knowledge and skills in order to function independently and be able to refer to the next level of care when necessary.

4.6.4.2 Existence of an emergency number for the senior specialist or senior doctor to discuss the referral case

Results in Table 4.12 showed that only 57% of the respondents agreed or strongly agreed that there was an emergency number for the senior specialist and the senior doctor to discuss referral cases with 8% being neutral, 26% disagreeing and 9% strongly disagreeing. According to the Saving the Mothers Report (South African 2008-2010:36) more attention must be given to ensure that there is implementation of referral patterns and overcoming barriers to referral. According to the study result, the fact that 43% are not aware of the emergency number for the senior doctor raises concerns as to what they do in case they want to refer hence this may lead to delay in referring to the next level.

Table 4.12 There is an emergency number for the senior specialist or senior doctor to discuss the referral case

D16. There is an emergency number for the senior specialist or senior doctor to discuss referral cases		
Response	n	%
Strongly Disagree	9	9%
Disagree	26	26%
Neutral	8	8%
Agree	24	24%
Strongly Agree	33	33%
Agree + Strongly Agree	57	57%
Descriptives	Mean	3.46
	Std Dev	1.41

In general, there was no overwhelming evidence to indicate that such an emergency number existed or if it did, a sizeable percentage of the clinicians were not aware of it.

4.6.4.3 A client that has a blood pressure of 140/90 mmHg x3 occasions during antenatal care requires referral to a medical officer or an obstetrician

Results in Table 4.13 showed that most of the respondents agreed or strongly agreed that a client that had a blood pressure of 140/90 mmHg on three occasions during antenatal care required referral to medical officer or to an obstetrician, while 3% were neutral, 6% disagreed and 12% strongly disagreed.

A study conducted by Stellenberg and Ngwekazi (2016) showed that blood pressure control during pregnancy is crucial as midwives were found to be unable to manage maternal deterioration showed by the signs of marked changes in vital signs such as blood pressure.

Table 4.13 A client that has a blood pressure of 140/90 mmHg x3 occasions during antenatal care requires referral to a medical officer or an obstetrician

D17. A client that has a blood pressure of 140/90mmHg x3 occasions during antenatal care requires referral to a medical officer or an obstetrician		
Response	n	%
Strongly Disagree	12	12%
Disagree	6	6%
Neutral	3	3%
Agree	22	22%
Strongly Agree	57	57%
Agree + Strongly Agree	79	79%
Descriptives	Mean	4.06
	Std Dev	1.39

In general, most of the respondents agreed that a client that had a blood pressure of 140/90mmHg on three occasions during antenatal care required referral to medical officer or obstetrician.

4.6.4.4 A blood pressure of 140/90 mmHg during the first ante-natal clinic visit does not necessarily need referral to medical officer

There was no consensus on whether a blood pressure of 140/90 mmHg during the first ante-natal clinic visit did not necessarily need referral to a medical officer as only 37%

agreed or strongly agreed and 59% disagreed or strongly disagreed with 14% being neutral.

Table 4.14 A blood pressure of 140/90 mmHg during the first ante natal clinic visit does not necessarily need referral to a medical officer

D18. A blood pressure of 140/90 mmHg during the first ante natal clinic visit does not necessarily need referral to a medical officer		
Response	n	%
Strongly Disagree	28	28%
Disagree	21	21%
Neutral	14	14%
Agree	20	20%
Strongly Agree	17	17%
Agree + Strongly Agree	37	37%
Descriptives	Mean	2.77
	Std Dev	1.48

It seemed like the respondents were not sure of what action to take when a woman had a blood pressure of 140/90 mmHg during the first visit.

Lawe, Bowyser, Lust, McMahon, Morton, North, Paech and Said (2014:3) conducted a study and find that there is no available evidence that if the blood pressure reaches 140/90 mmHg is a risk but an indication of close monitoring.

4.6.4.5 Graphical summary of the referral system for the management of pre-eclampsia

Figure 4.8 is a graphical summary of the four items that represented the opinions of respondents on the issues around the referral system.

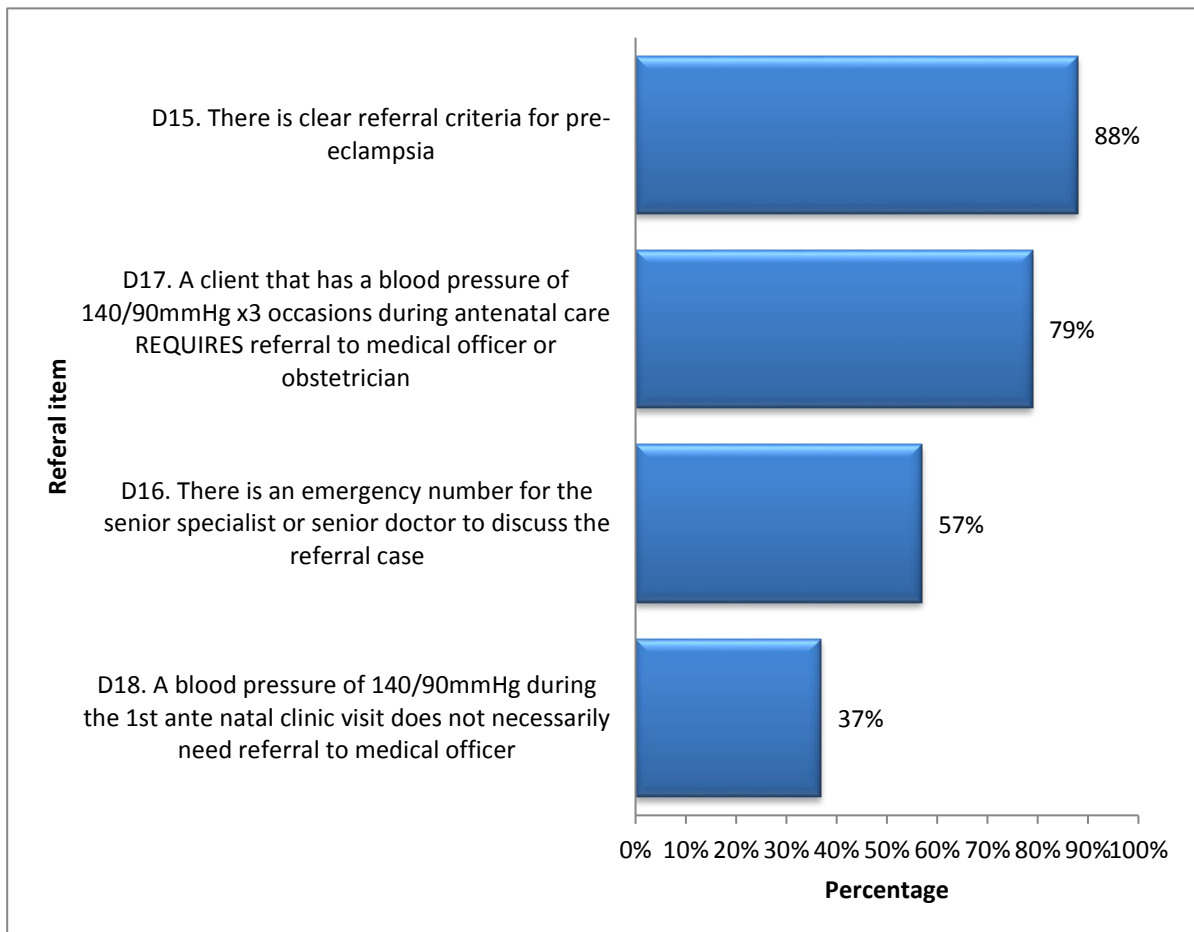


Figure 4.8 Ranking of the referral system items based on percentages agreeing/strongly agreeing

Most of the respondents (88%) indicated that there were clear referral criteria for pre-eclampsia (question D15) while only 57% indicated that there was an emergency number for the senior specialist or senior doctor to discuss referral cases (question D16). As a way of checking the clinicians' knowledge of the referral system, the respondents were asked if a client that had a blood pressure of 140/90mmHg on three occasions during antenatal care required a referral to a medical officer or an obstetrician, and 79% indicated that they did. This showed a general understanding of the referral system. About 37% of the respondents indicated that a blood pressure of 140/90mmHg during the first ante natal clinic visit did not necessarily need a referral to a medical officer. Figure 4.8 showed the ranking of the issues about the referral system.

4.6.5 Equipment

This section looked at the clinicians' knowledge of the hospital equipment. The responses to the questions in this section indicated the clinicians' knowledge of their equipment hence their preparedness to deal with issues around the management of pre-eclampsia by appropriate equipment usage. There were four questionnaire items on issues around equipment which were presented in the sub-sections that followed.

4.6.5.1 Importance of using the correct size of the cuff when checking blood pressure in order to get accurate recordings

All respondents (100%) were in agreement that it was important to use the correct size of the cuff when checking blood pressure in order to get accurate recordings. This response was expected as all clinicians received such clinical basic training.

In the Guidelines for Maternity Care in South Africa (2016/17) the use of correct cuff size in order to get the correct readings of the blood pressure was mentioned.

Table 4.15 It is important to use the correct size of the cuff when checking blood pressure in order to get accurate recordings

E19. It is important to use the correct size of the cuff when checking blood pressure in order to get accurate recordings.		
Response	n	%
Strongly Disagree	0	0%
Disagree	0	0%
Neutral	0	0%
Agree	20	20%
Strongly Agree	80	80%
Agree + Strongly Agree	100	100%
Descriptives	Mean	4.80
	Std Dev	0.40

4.6.5.2 Servicing of blood pressure machine will not assist in getting correct blood pressure recording

Results in Table 4.16 showed that only 25% of the respondents agreed or strongly agreed that servicing of blood pressure machine would not assist in getting correct blood pressure recording. There was need to train these few on the need for servicing of blood

pressure machines as this indeed assists in getting correct blood pressure recordings. However it was encouraging that 48% strongly agreed and 27% agreed.

Table 4.16 Servicing of blood pressure machine will not assist in getting correct blood pressure recording

E20. Servicing of blood pressure machine will not assist in getting correct blood pressure recording.		
Response	n	%
Strongly Disagree	48	48%
Disagree	27	27%
Neutral	0	0%
Agree	2	2%
Strongly Agree	23	23%
Agree + Strongly Agree	25	25%
Descriptives	Mean	2.25
	Std Dev	1.61

4.6.5.3 When using the blood pressure machine, the correct recording of the blood pressure is influenced by the patient's position

Results in Table 4.17 showed that 74% of the respondents agreed or strongly agreed that when using the blood pressure machine, the correct recording of the blood pressure was influenced by the patient's position, while 16% strongly disagreed, 9% disagreed and 1% were neutral. Stellenberg and Ngwekazi (2016:5) also emphasise that the position of the patient is one of the factors that influence correct reading of the patient.

Table 4.17 When using the blood pressure machine, the correct recording of the blood pressure is influenced by the patient's position

E21. When using the blood pressure machine, the correct recording of the blood pressure is influenced by the patient's position		
Response	n	%
Strongly Disagree	16	16%
Disagree	9	9%
Neutral	1	1%
Agree	36	36%
Strongly Agree	38	38%
Agree + Strongly Agree	74	74%
Descriptives	Mean	3.71
	Std Dev	1.46

4.6.5.4 The blood pressure machine and accessories must be serviced and calibrated on an annual basis

Results in Table 4.18 showed that the majority of respondents (98%) agreed or strongly agreed to the fact that blood pressure machines and accessories must be serviced and calibrated on an annual basis, with 1% being neutral and only 1% strongly disagreeing.

Table 4.18 The blood pressure machine and accessories must be serviced and calibrated on an annual basis

E22. The blood pressure machine and accessories must be serviced and calibrated on an annual basis.		
Response	n	%
Strongly Disagree	1	1%
Disagree	0	0%
Neutral	1	1%
Agree	31	31%
Strongly Agree	67	67%
Agree + Strongly Agree	98	98%
Descriptives	Mean	4.63
	Std Dev	0.61

4.6.5.5 Graphical summary of equipment items

Figure 4.9 was a summary of the four equipment items and how the research subjects responded to the questions.

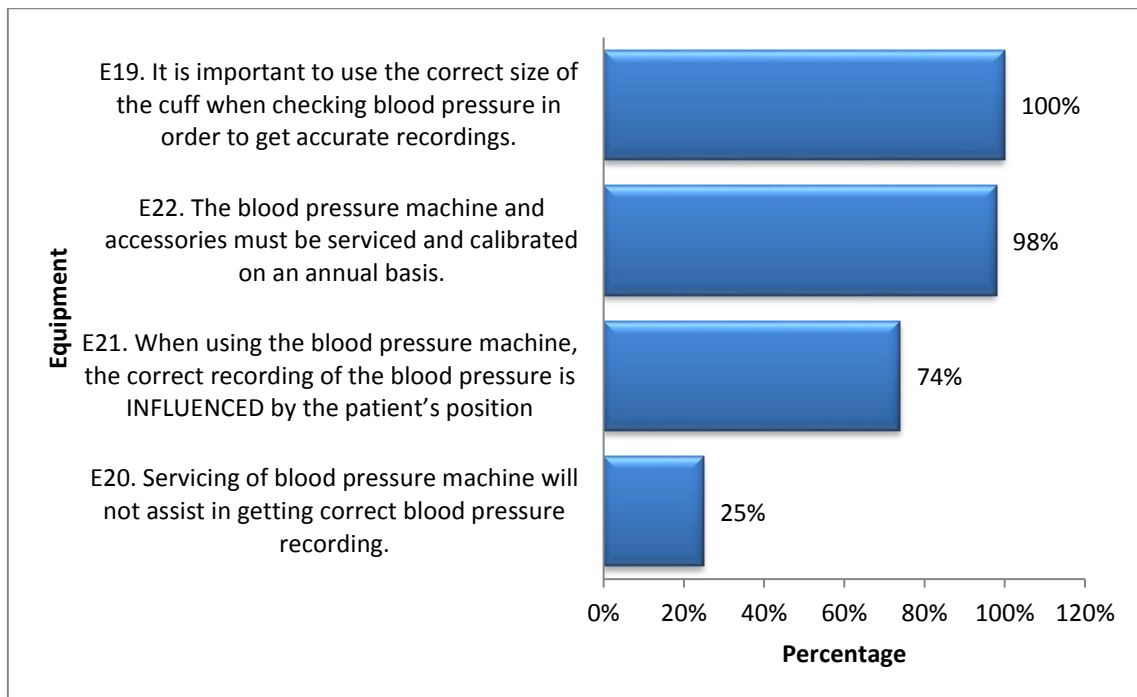


Figure 4.9 Summary of knowledge of equipment items

Figure 4.9 showed that generally most clinicians knew how to deal with equipment as indicated by the high percentages of those who agreed or strongly agreed. However, there was need to re-educate the 25% who still believed that servicing of blood pressure machine would not assist in getting correct blood pressure recording.

These findings are supported by Lawe et al (2014:4) that health care providers must ensure that equipment for measuring the blood pressure is properly validated, maintained and frequently recalibrated as per manufacturer's instructions.

4.6.6 Identification of risk factors

The analysis of the identification of risk factors was carried out in this section. The seven items that fell under the identification of risk factors were presented in the seven subsections that follow with a summary sub-section at the end.

4.6.6.1 Taking family history from patients assists in screening those that are at risk of developing pre-eclampsia

Table 4.19 Taking family history from patients assists in screening those that are at risk of developing pre-eclampsia

F23. Taking family history from patients assists in screening those that are at risk of developing pre-eclampsia		
Response	n	%
Strongly Disagree	0	0%
Disagree	1	1%
Neutral	0	0%
Agree	21	21%
Strongly Agree	78	78%
Agree + Strongly Agree	99	99%
Descriptives	Mean	4.76
	Std Dev	0.49

The analysis of the importance or taking of history was carried out in this section. This showed that 99% agreed that taking family history from the patients assisted in screening those that are at risks of developing pre-eclampsia. It indicated that a history of elevated blood pressure in a family may be an indicator that the client/ patient was at risk of developing pre-eclampsia.

In the Guidelines for Maternity Care in South Africa (2016:71), it has been indicated that most susceptible women at risk for development of pre-eclampsia are those who had Pre-eclampsia in their previous pregnancy.

4.6.6.2 It is necessary to weigh clients during alternate visits

Table 4.20 It is necessary to weigh clients during alternate visits

F24. It is necessary to weigh clients during alternate visits.		
Response	n	%
Strongly Disagree	19	19%
Disagree	22	22%
Neutral	0	0%
Agree	20	20%
Strongly Agree	39	39%
Agree + Strongly Agree	59	59%
Descriptives	Mean	3.38
	Std Dev	1.62

This showed that 59% were agreeing that weighing client could be done alternate visit. The 41% disagreed with alternate weighing of clients during antenatal visit. There was a need to educate midwives strongly especially the 59% as it was necessary to weigh the client per visit to ascertain whether the baby was growing or not.

These findings are supported by Stellenberg and Ngwekwazi (2016: 5) in their study which showed that 43.6% midwives did not associate obesity as a risk factor. This raises concerns as the results for the study conducted by a researcher showed that 41% were in agreement with alternate weighing and 59% did not know the importance of weighing. Elkhailifa and Kuppusway (2014:135) also indicate that checking of the weight for the pregnant women is important at every visit for detecting problems early.

4.6.6.3 The height of patients must be measured at each and every visit

Table 4.21 The height of patients must be measured at each and every visit

F25. The height of patients must be measured at each and every visit.		
Response	n	%
Strongly Disagree	33	33%
Disagree	39	39%
Neutral	8	8%
Agree	7	7%
Strongly Agree	13	13%
Agree + Strongly Agree	20	20%
Descriptives	Mean	2.28
	Std Dev	1.34

This showed that 72% midwives disagreed and strongly disagreed knowing that measuring will not make much of a difference for an adult, hence it was not really necessary to measure height of the patients each and every visit. There was a need to educate about measuring height.

4.6.6.4 Abdominal obesity must be measured at each and every visit

Table 4.22 Abdominal obesity must be measured at each and every visit

F26. Abdominal obesity must be measured at each an every visit.		
Response	n	%
Strongly Disagree	1	1%
Disagree	8	8%
Neutral	5	5%
Agree	29	29%
Strongly Agree	57	57%
Agree + Strongly Agree	86	86%
Descriptives	Mean	4.33
	Std Dev	0.96

This showed that 86% knew that measuring abdominal obesity must be done at each and every visit. This was important to measure growth of the baby. There was a need to educate 14% of the respondents that were not aware of this important assessment.

4.6.6.5 The urinalysis must be done at each and every visit

Table 4.23 The urinalysis must be done at each and every visit

F27. The urinalysis must be done at each and every visit		
Response	n	%
Strongly Disagree	2	2%
Disagree	0	0%
Neutral	0	0%
Agree	16	16%
Strongly Agree	82	82%
Agree + Strongly Agree	98	98%
Descriptives	Mean	4.76
	Std Dev	0.65

This showed that 98% of the midwives had the knowledge of how important it was to test urine for the patient who was pregnant on each visit. The presence of protein in the urine indicates severity of pre-eclampsia and this means immediate referral to the doctor, who will review the treatment of the patient. There was a need to educate 2% of the respondents who do not know that a woman who has protein in the urine should be referred.

Lowe et al (2014:11) recommended that urine dipstick must be done.

4.6.6.6 *Smoking twice a day does endanger the life of the baby in utero*

Table 4.24 Smoking twice a day endangers the life of the baby in-utero

F28. Smoking twice a day does endanger the life of the baby in utero.		
Response	n	%
Strongly Disagree	6	6%
Disagree	0	0%
Neutral	2	2%
Agree	16	16%
Strongly Agree	76	76%
Agree + Strongly Agree	92	92%
Descriptives	Mean	4.56
	Std Dev	1.01

This showed that 92% of the midwives knew that smoking could endanger the unborn baby's life. There was 6% who needed to be educated on this section.

4.6.6.7 *Weight loss is not necessary when the mother is pregnant and is diagnosed with pre-eclampsia*

Table 4.25 Weight loss is not necessary when a mother is pregnant and is diagnosed with pre-eclampsia

F29. Weight loss is not necessary when the mother is pregnant and is diagnosed with pre-eclampsia as long as she is taking medication correctly		
Response	n	%
Strongly Disagree	25	25%
Disagree	30	30%
Neutral	9	9%
Agree	7	7%
Strongly Agree	29	29%
Agree + Strongly Agree	36	36%
Descriptives	Mean	2.85
	Std Dev	1.59

This showed that 36% knew that a mother, who loses weight, may indicate that the baby was not growing well due to pre-eclampsia. The 64% did not know that the mother must gain weight although not excessively to show that the baby was growing. There was a need to educate 64% of the clinicians who did not know that the mother must gain weight.

4.6.6.8 Graphical summary of the identification of risk factors

As shown in Figure 4.10, most of the respondents (99%) indicated that taking family history from patients assisted in screening those that were at risk of developing pre-eclampsia (question F23) while 59% indicated that it was necessary to weigh clients during alternate visits (question F24). Only 20% believed that the height of patients must be measured at each and every visit (question F25) and 86% indicated that abdominal obesity must be measured at each and every visit (question F26). The majority of the clinicians (98%) indicated that the urinalysis must be done at each and every visit (question F27) and 92% indicated that smoking twice a day endangered the life of the baby in utero (question F28). Only 36% indicated that weight loss was not necessary when a mother was pregnant and diagnosed with pre-eclampsia as long as she was taking medication correctly (question F29).

These findings are supported by Elkhalifa and Kuppusway (2014:132) that the failure to recognise the danger signs can lead to serious consequences for mother and the unborn baby.

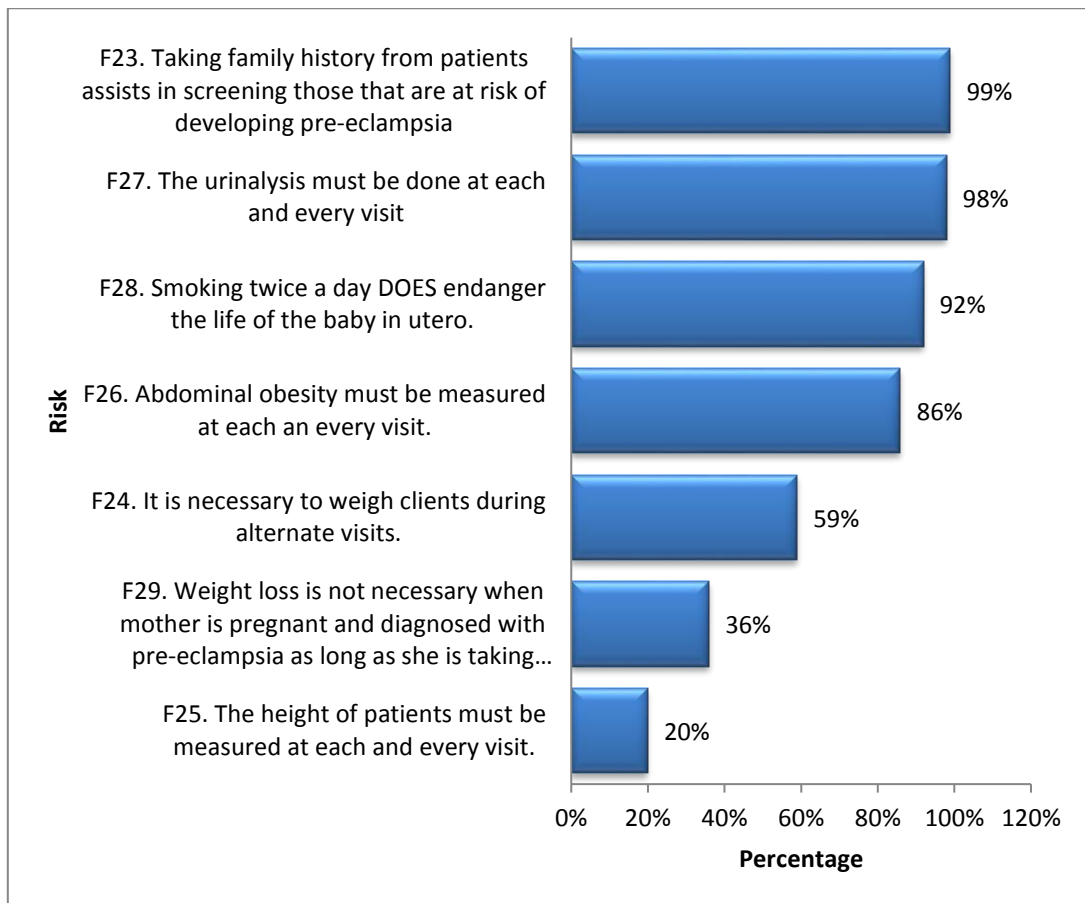


Figure 4.10 Summary of identified risk factor items

The items that addressed the identification of risk factors were presented in Figure 4.10 above which showed that taking family history from patients in order to assist in screening those that were at risk of developing pre-eclampsia was the most recognised clinical practice in order to identify risk factors.

4.6.7 Medication

Only two items on knowledge of medication were asked to the research respondents and the responses were summarised in the two sub-sections that follow.

4.6.7.1 *Calcium Carbonate is provided as a supplementation only for women with a history of hypertension in their families.*

Table 4.26 Calcium Carbonate is provided for as a supplementation for women with a history of hypertension in their families only

G30. Calcium Carbonate is provided as a supplementation only for women with a history of hypertension in their families		
Response	n	%
Strongly Disagree	57	57%
Disagree	32	32%
Neutral	1	1%
Agree	1	1%
Strongly Agree	9	9%
Agree + Strongly Agree	10	10%
Descriptives	Mean	1.73
	Std Dev	1.17

This results show that 89% knew that Calcium Carbonate Supplementation must be given to all pregnant women irrespective of whether they had a history of hypertension or not. There was a need to educate 11% who did not know that Calcium Carbonate supplementation must be given to all pregnant women irrespective of whether they have a history of hypertension or not.

Elkhalifa and Kuppusway (2014:133) found that the significant number of midwives preferred calcium carbonate as supplement for women with the history of hypertension in their families, which support these findings.

4.6.7.2 Magnesium Sulphate is only given for eclamptic patients

Table 4.27 Magnesium Sulphate is only given for eclamptic patients

G31. Magnesium Sulphate is only given for eclamptic patients		
Response	n	%
Strongly Disagree	29	29%
Disagree	19	19%
Neutral	4	4%
Agree	24	24%
Strongly Agree	24	24%
Agree + Strongly Agree	48	48%
Descriptives	Mean	2.95
	Std Dev	1.60

This showed that 48% knew how to use Magnesium Sulphate. There was a need to educate 52% who did not know.

These findings are supported by Lowe et al (2014:19) that Magnesium Sulphate should be given to women with Pre-eclampsia to Eclampsia.

The study conducted by Sheikh, Qureshi, Khowana, Salamy, Vidler, Sawchuck, Dadelszer, Zaidi and Bhutta (2016:1) found that only doctors were aware that Magnesium Sulphate is recommended for eclampsia prevention and management. Midwives lack knowledge on how and when to use Magnesium Sulphate.

Graphical summary of medication

Figure 4.11 provided a graphical summary of how the respondents agreed or strongly agreed to the statements posed in the questionnaire.

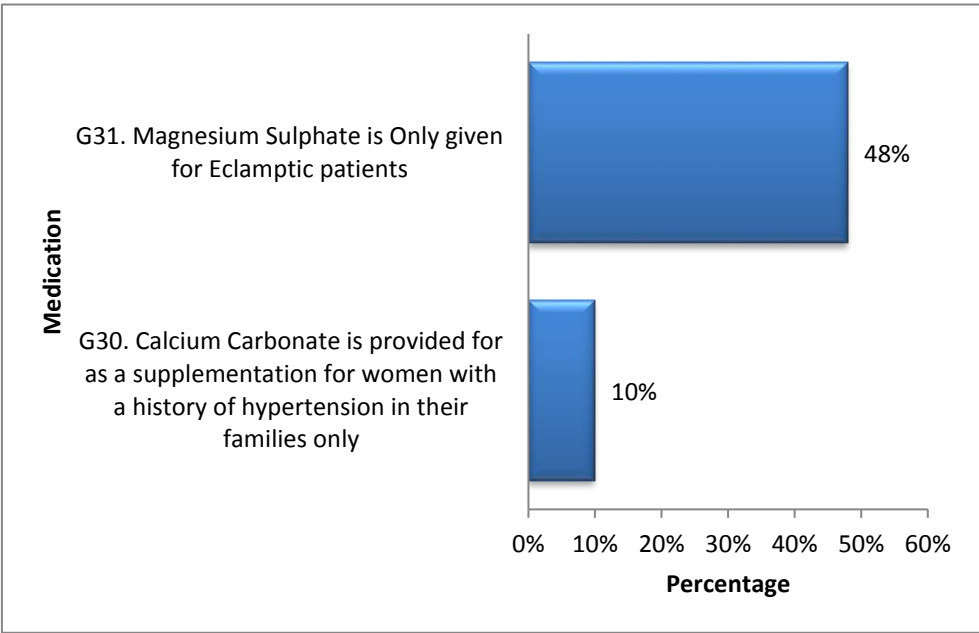


Figure 4.11 Summary of knowledge of medication

A higher percentage of respondents agreed or strongly agreed to the fact that Calcium Carbonate was provided for as a supplementation for women with a history of hypertension in their families only (48%) than those who agreed to the fact that Magnesium Sulphate was only given for eclamptic patients (10%). There is a need to educate 52% of midwives who did not know how to use Magnesium Sulphate.

This is supported by the results for the study that was conducted by the Stellenberg and Ngwekwazi (2016), whereby only 26.7% of the respondents responded correctly on the usage of Magnesium sulphate.

4.6.8 Health education

The analysis of responses related to health education was carried out in this section. The results for the four items that made up the construct of health education were presented in the four sub-sections that follow with a summary sub-section at the end.

4.6.8.1 *It is important to educate patients with hypertension about change of lifestyle*

Table 4.28 It is important to educate patients with hypertension about change of lifestyle

H32. It is important to educate patients with hypertension about change of lifestyle		
Response	n	%
Strongly Disagree	0	0%
Disagree	0	0%
Neutral	0	0%
Agree	22	22%
Strongly Agree	78	78%
Agree + Strongly Agree	100	100%
Descriptives	Mean	4.78
	Std Dev	0.42

This section was well known, the results showed 100%. This meant all midwives knew that it was important to give health education about change of lifestyle to hypertensive patients.

4.6.8.2 *It is vital to know the dietary intake and food resources in order to give proper health education*

Table 4.29 It is vital to know the dietary intake and food resources in order to give proper health education

H33. It is vital to know the dietary intake and food resources in order to give proper health education		
Response	n	%
Strongly Disagree	1	1%
Disagree	1	1%
Neutral	2	2%
Agree	35	35%
Strongly Agree	61	61%
Agree + Strongly Agree	96	96%
Descriptives	Mean	4.54
	Std Dev	0.69

Table 4.29 showed that 96% knew that it was important to give health education to patients regarding dietary intake. There was a need to educate 4% who did not know.

In support of these findings, Elkhalfa and Kuppusway (2014:133) indicated that health education on encouraging the pregnant women to take food that with iron and calcium must be given.

4.6.8.3 Resting and exercising does necessarily help patients with pre-eclampsia

Table 4.30 Resting and exercising does necessarily help patients with pre-eclampsia

H34. Resting and exercising DOES necessarily help patients with pre-eclampsia		
Response	n	%
Strongly Disagree	20	20%
Disagree	12	12%
Neutral	7	7%
Agree	35	35%
Strongly Agree	26	26%
Agree + Strongly Agree	61	61%
Descriptives	Mean	3.35
	Std Dev	1.49

The results showed that 61 (61%) of the respondents knew that resting would help patients with pre-eclampsia. The most important thing to do was educate the patient about light exercises and that taking the treatment was the most important thing to do.

4.6.8.4 It is important to educate patients about the signs of elevated blood pressure

Table 4.31 It is important to educate patients about the signs of elevated blood pressure

H35. It is important to educate patients about the signs of elevated blood pressure		
Response	n	%
Strongly Disagree	1	1%
Disagree	0	0%
Neutral	0	0%
Agree	18	18%
Strongly Agree	81	81%
Agree + Strongly Agree	99	99%
Descriptive	Mean	4.78
	Std Dev	0.54

The results showed that 99 (99%) of the respondents indicated that it was important to educate patients about the signs of elevated blood pressure while only 1 (1%) strongly agreed.

4.6.8.5 Graphical summary of health education

As far as health education was concerned most of the respondents were in agreement of what needs to be taught to patients as indicated in Figure 4.12.

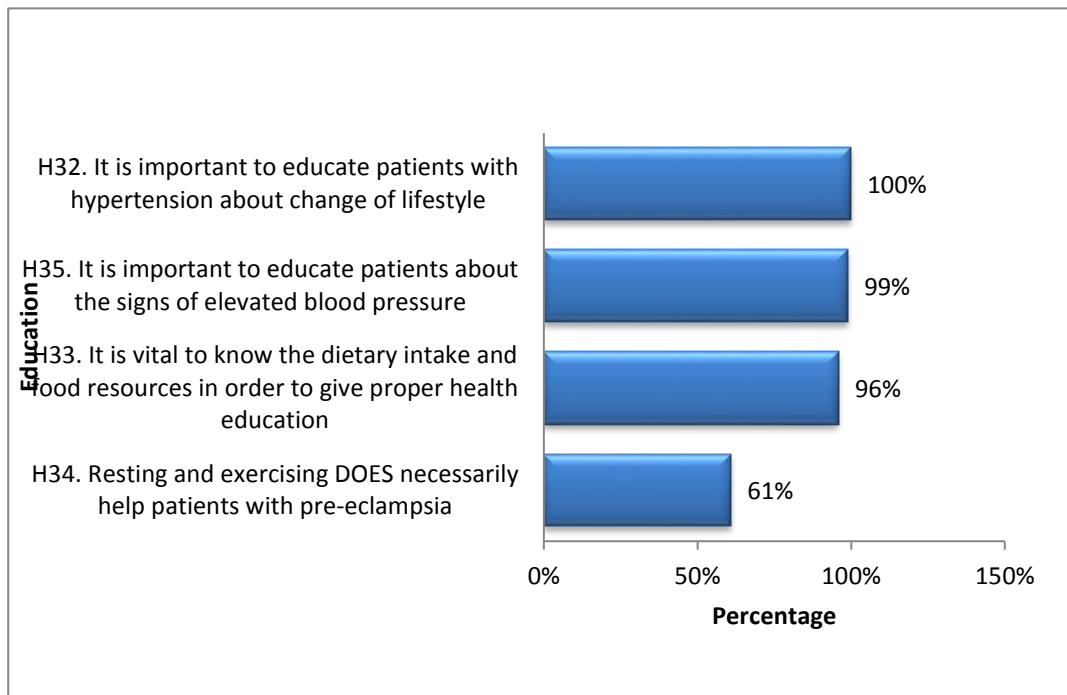


Figure 4.12 Summary of health education items

All respondents (100%) indicated that it was important to educate patients with hypertension about change of lifestyle (questions H32), while 96% indicated that it was vital to know the dietary intake and food resources in order to give proper health education (questions H33). A total of 99% of respondents indicated that it was important to educate patients about the signs of elevated blood pressure (questions H35). As far as resting and exercising was concerned 61% indicated that resting and exercising did help patients with pre-eclampsia (question H34).

4.6.9 Demographic factors affecting training of clinical guidelines

In order to further understand how training on clinical guidelines was affected by background factors (demographic factors), some statistical tests were conducted in this section. Looking at the questions addressing the training on clinical guidelines, we noted that one question addressed the need for mentorship while the other three questions actually evaluated the level of training. In order to measure the overall level of training, it was therefore important to find an average, based on principal components, of the three questions that directly measured the level of training. It was this average that would represent the overall measure of the level of training on clinical guidelines. An ordinary mean of questions B6, 7, 8 and 9 was used as an overall measure of training on clinical guidelines.

Table 4.32 Test for factors affecting training on clinical guidelines

Dependent variable: Training on Clinical Guidelines		N	Mean	Std. Dev.	ANOVA Tests				
					F	df1, df2	p-value	Comment	
Demographic factors	Gender	Male	90	3.02	1.26	7.41	1, 98	0.008	Significant
		Female	10	4.13	0.80				
	Age	21-30 years	14	2.88	1.13	1.367	4, 95	0.251	Not Significant
		31-40 years	40	2.95	1.29				
		41-50 years	34	3.42	1.27				
		51-60 years	11	3.03	1.26				
		61+ years	1	5.00	-				
	Highest nursing qualification	Diploma(Nursing and Midwifery)	70	2.92	1.23	3.412	2, 97	0.037	Significant
		Degree in nursing	5	3.73	1.74				
		Postgraduate Diploma	25	3.60	1.15				
	Number of years working in maternity ward	0-5 years	64	2.78	1.27	4.308	4, 95	0.003	Significant
		6-10 years	19	3.75	1.06				
		11-15 years	11	3.91	1.00				
		16-20 years	3	3.00	1.00				
		21+ years	3	4.00	0.88				
	Current position in maternity ward	Chief professional nurse	9	3.89	0.85	1.428	3, 96	0.239	Not Significant
Senior professional nurse		6	3.39	0.57					
Registered Nurse		81	3.02	1.31					
Other		4	3.33	1.61					

Tests for the effects of the background factors on the level of training on clinical guidelines were presented in Table 4.32. The results showed that there was a significant difference, between males and females, on their rating of training on clinical guidelines ($F=7.41$, $df_1=1$, $df_2=98$, $p\text{-value}=0.008$). Females, with a mean of 4.13, were more positive than males who scored a mean of 3.02. It would appear that females have had more understanding of training on clinical guidelines than males.

As far as age groups were concerned, there were no significant differences between the young and the old as far as their opinion on training on clinical guidelines was concerned ($F=1.367$, $df_1=4$, $df_2=95$, $p\text{-value}=0.251$). There were significant differences between different levels of nursing qualifications on their opinions on training on clinical guidelines ($F=3.412$, $df_1=2$, $df_2=97$, $p\text{-value}=0.037$). Those with a Diploma in Nursing and Midwifery had the lowest rating of training on clinical guidelines (mean=2.92) and compared with

those with a Degree in nursing (mean=3.73) and those with a Postgraduate Diploma (mean=3.60). It would appear that those with a Diploma in Nursing and Midwifery were the most affected by lack of training on clinical guidelines.

As far as the number of years of working in in maternity ward were concerned, those with the least number of years (0 to 5 years) scored the lowest on their rating of training on clinical guidelines (mean=2.78), closely followed by those with between 16 and 20 years (mean=3.00). The other groups scored higher than these two groups.

There were no significant differences among the four maternity ward positions ($F=1.428$, $df_1=3$, $df_2=96$, $p\text{-value}=0.239$). It could still be noted that the position of Chief Professional Nurse had the highest rating of training on clinical guidelines (mean=3.89) followed by Senior Professional Nurse (mean=3.39) and Others (3.33) with the registered nurse having the lowest rating (mean=3.02) although the ratings were not significantly different.

4.6.10 Demographic factors affecting awareness of clinical guidelines

Statistical tests for the effect of the background factors of the awareness of guidelines were carried out in this section using Analysis of Variance (ANOVA). The ANOVA results were presented in Table 4.33 below. The overall measure of awareness of Clinical Guidelines was calculated as a mean of the five items that made up the constructs.

The statistical test results in Table 4.32 showed that gender had no effect on the awareness of clinical guidelines ($F=0.04$, $df_1=1$, $df_2=98$, $p\text{-value}=0.845$). The results also showed that age does not significantly affect the awareness of clinical guidelines ($F=1.244$, $df_1=4$, $df_2=95$, $p\text{-value}=0.298$). Current position in the maternity ward also didn't affect awareness of guidelines ($F=1.843$, $df_1=3$, $df_2=96$, $p\text{-value}=0.144$). The factors that affected awareness of guidelines were the highest nursing qualification ($F=4.617$, $df_1=2$, $df_2=97$, $p\text{-value}=0.012$) with those having postgraduate diploma having the highest levels of awareness (mean=4.07). Those with diplomas in nursing and midwifery (mean=3.66) and those with degrees in nursing (mean=3.72) had lower levels of awareness but were still above a score of 3 which was the neutral score according to the Likert scales used in this study.

Table 4.33 Test for factors affecting awareness of clinical guidelines

Dependent variable: Awareness of Clinical Guidelines		N	Mean	Std. Dev.	ANOVA Tests				
					F	df1, df2	p-value	Comment	
Demographic factors	Gender	Male	90	3.76	0.63	0.04	1, 98	0.845	Not Significant
		Female	10	3.80	0.38				
	Age	21-30 years	14	3.84	0.61	1.244	4, 95	0.298	Not Significant
		31-40 years	40	3.75	0.61				
		41-50 years	34	3.69	0.60				
		51-60 years	11	3.82	0.61				
		61+ years	1	5.00	-				
	Highest nursing qualification	Diploma(Nursing and Midwifery)	70	3.66	0.59	4.617	2, 97	0.012	Significant
		Degree in nursing	5	3.72	0.73				
		Postgraduate Diploma	25	4.07	0.54				
	Number of years working in maternity ward	0-5 years	64	3.56	0.53	6.752	4, 95	<0.001	Significant
		6-10 years	19	4.14	0.56				
		11-15 years	11	4.13	0.68				
		16-20 years	3	3.87	0.12				
		21+ years	3	4.40	0.53				
	Current position in maternity ward	Chief professional nurse	9	4.20	0.58	1.843	3, 96	0.144	Not Significant
		Senior professional nurse	6	3.83	0.15				
		Registered Nurse	81	3.71	0.63				
		Other	4	3.80	0.28				

The number of years working in the maternity ward also affected awareness of the clinical guidelines (F=6.752, df1=4, df2=95, p-value<0.001). Those with the least number of years of working in the maternity ward (0 to 5 years) had the lowest awareness level (mean=3.56) with those between 16 to 20 years having the second lowest level of awareness (mean=3.87). The other three age groups had higher levels of awareness. This was consistent with the results for training presented in an earlier section.

4.6.11 Demographic factors affecting knowledge of the referral system

Statistical tests for the effect of the background factors on the knowledge of the referral system were carried out in this section using Analysis of Variance (ANOVA). The ANOVA results were presented in Table 4.33 below. The overall measure of knowledge of the referral system was calculated as a mean of the five items that made up the section.

The statistical test results in Table 4.33 showed that gender had no effect on the knowledge of the referral system ($F=0.101$, $df_1=1$, $df_2=98$, $p\text{-value}=0.751$). The results also showed that age did not significantly affect the knowledge of the referral system ($F=0.368$, $df_1=4$, $df_2=95$, $p\text{-value}=0.831$). Highest nursing qualification had no effect on the knowledge of the referral system ($F=1.243$, $df_1=2$, $df_2=97$, $p\text{-value}=0.293$). The number of years working in the maternity ward also did not have an effect on the knowledge of the referral system ($F=0.249$, $df_1=4$, $df_2=95$, $p\text{-value}=0.909$). Current position in the maternity ward also didn't affect the knowledge of the referral system ($F=2.388$, $df_1=3$, $df_2=96$, $p\text{-value}=0.074$).

Table 4.34 Test for factors affecting the knowledge of the referral system

Knowledge of the referral system			N	Mean	Std. Dev.	ANOVA Tests			
						F	df1, df2	p-value	Comment
Demographic factors	Gender	Male	90	3.64	0.59	0.101	1, 98	0.751	Not Significant
		Female	10	3.70	0.45				
	Age	21-30 years	14	3.79	0.69	0.368	4, 95	0.831	Not Significant
		31-40 years	40	3.63	0.52				
		41-50 years	34	3.63	0.60				
		51-60 years	11	3.57	0.60				
		61+ years	1	4.00					
	Highest nursing qualification	Diploma(Nursing and Midwifery)	70	3.69	0.59	1.243	2, 97	0.293	Not Significant
		Degree in nursing	5	3.75	0.35				
		Postgraduate Diploma	25	3.49	0.55				
	Number of years working in maternity ward	0-5 years	64	3.68	0.59	0.249	4, 95	0.909	Not Significant
		6-10 years	19	3.59	0.47				
		11-15 years	11	3.52	0.60				
		16-20 years	3	3.75	1.15				
		21+ years	3	3.58	0.38				
	Current position in maternity ward	Chief professional nurse	9	3.58	0.43	2.388	3, 96	0.074	Not Significant
Senior professional nurse		6	3.54	0.46					
Registered Nurse		81	3.62	0.58					
Other		4	4.38	0.48					

In general, the knowledge of the referral system did not depend on any background characteristic of the clinicians.

4.6.12 Demographic factors affecting the knowledge of equipment

The statistical test results in Table 4.35 showed that gender had no effect on the knowledge of equipment ($F=0.270$, $df_1=1$, $df_2=98$, $p\text{-value}=0.608$). The results also showed that age did not significantly affect the knowledge equipment ($F=1.606$, $df_1=4$, $df_2=95$, $p\text{-value}=0.179$). Highest nursing qualification had no effect on the knowledge of equipment ($F=0.528$, $df_1=2$, $df_2=97$, $p\text{-value}=0.591$). The number of years working in the maternity ward also did not have an effect on the knowledge of equipment ($F=0.286$, $df_1=4$, $df_2=95$, $p\text{-value}=0.887$). Current position in the maternity ward also did not affect the knowledge of equipment ($F=0.434$, $df_1=3$, $df_2=96$, $p\text{-value}=0.729$). In summary, none of the demographic factors affected the knowledge of equipment.

Table 4.35 Test for factors affecting the knowledge of equipment

Dependent variable: Knowledge of equipment		N	Mean	Std. Dev.	ANOVA Tests				
					F	df1, df2	p-value	Comment	
Demographic factors	Gender	Male	90	3.84	0.35	0.270	1, 98	0.608	Not Significant
		Female	10	3.90	0.17				
	Age	21-30 years	14	3.89	0.31	1.606	4, 95	0.179	Not Significant
		31-40 years	40	3.93	0.37				
		41-50 years	34	3.79	0.28				
		51-60 years	11	3.68	0.39				
		61+ years	1	4.00	-				
	Highest nursing qualification	Diploma(Nursing and Midwifery)	70	3.84	0.38	0.528	2, 97	0.591	Not Significant
		Degree in nursing	5	4.00	0.18				
		Postgraduate Diploma	25	3.84	0.24				
	Number of years working in maternity ward	0-5 years	64	3.82	0.38	0.286	4, 95	0.887	Not Significant
		6-10 years	19	3.89	0.32				
		11-15 years	11	3.89	0.17				
		16-20 years	3	3.92	0.14				
		21+ years	3	3.92	0.14				
	Current position in maternity ward	Chief professional nurse	9	3.83	0.18	0.434	3, 96	0.729	Not Significant
Senior professional nurse		6	3.75	0.39					
Registered Nurse		81	3.85	0.36					
Other		4	4.00	0.00					

4.6.13 Demographic factors affecting the identification of risk factors

The overall measure of the identification of risk factors was calculated as a mean of the seven items that made up the construct. Table 4.36 below contains the ANOVA tests for the factors affecting the identification of risk factors. The statistical test results in Table 4.36 showed that gender had no effect on the identification of risk factors ($F=0.090$, $df_1=1$, $df_2=98$, $p\text{-value}=0.765$). The results also showed that age did not significantly affect the identification of risk factors ($F=0.960$, $df_1=4$, $df_2=95$, $p\text{-value}=0.750$). Highest nursing qualification had no effect on the identification of risk factors ($F=0.308$, $df_1=2$, $df_2=97$, $p\text{-value}=0.736$). The number of years working in the maternity ward also did not have an effect on the identification of risk factors ($F=1.506$, $df_1=4$, $df_2=95$, $p\text{-value}=0.207$). Current position in the maternity ward also didn't affect the identification of risk factors ($F=0.439$, $df_1=3$, $df_2=96$, $p\text{-value}=0.725$). None of the demographic factors affected the identification of risk factors.

Table 4.36 Test for factors affecting the identification of risk factors

Dependent variable: Identification of risk factors		N	Mean	Std. Dev.	ANOVA Tests				
					F	df1, df2	P-value	Comment	
Demographic factors	Gender	Male	90	3.84	0.45	0.090	1, 98	0.765	Not Significant
		Female	10	3.89	0.35				
	Age	21-30 years	14	3.94	0.51	0.960	4, 95	0.750	Not Significant
		31-40 years	40	3.89	0.45				
		41-50 years	34	3.79	0.43				
		51-60 years	11	3.75	0.41				
		61+ years	1	3.86	-				
	Highest nursing qualification	Diploma(Nursing & Midwifery)	70	3.86	0.45	0.308	2, 97	0.736	Not Significant
		Degree in nursing	5	3.94	0.50				
		Postgraduate Diploma	25	3.79	0.41				
	Number of years working in maternity ward	0-5 years	64	3.84	0.42	1.506	4, 95	0.207	Not Significant
		6-10 years	19	3.76	0.47				
		11-15 years	11	4.12	0.43				
		16-20 years	3	3.62	0.33				
		21+ years	3	3.71	0.62				
	Current position in maternity ward	Chief professional nurse	9	3.76	0.46	0.439	3, 96	0.725	Not Significant
		Senior professional nurse	6	3.76	0.53				
		Registered Nurse	81	3.87	0.45				
		Other	4	3.68	0.24				

4.6.14 Demographic factors affecting knowledge of medication

The ANOVA tests presented in Table 4.37 below showed that none of the demographic factors significantly affected the knowledge of medication. In other words, the knowledge of medication was the same for all demographic groupings.

Table 4.37 Test for factors affecting the knowledge of medication

Dependent variable: Knowledge of medication		N	Mean	Std. Dev.	ANOVA Tests				
					F	df1, df2	p-value	Comment	
Demographic factors	Gender	Male	90	2.40	1.20	2.39	1, 98	0.125	Not Significant
		Female	10	1.80	0.79				
	Age	21-30 years	14	1.93	0.92	0.527	4, 95	0.716	Not Significant
		31-40 years	40	2.40	1.27				
		41-50 years	34	2.41	1.28				
		51-60 years	11	2.45	0.72				
		61+ years	1	2.00					
	Highest nursing qualification	Diploma(Nursing and Midwifery)	70	2.37	1.16	1.266	2, 97	0.287	Not Significant
		Degree in nursing	5	3.00	1.22				
		Postgraduate Diploma	25	2.12	1.19				
	Number of years working in maternity ward	0-5 years	64	2.42	1.18	0.426	4, 95	0.789	Not Significant
		6-10 years	19	2.08	1.26				
		11-15 years	11	2.32	1.21				
		16-20 years	3	2.67	0.58				
		21+ years	3	2.00	1.00				
	Current position in maternity ward	Chief professional nurse	9	2.22	1.30	0.067	3, 96	0.977	Not Significant
Senior professional nurse		6	2.50	0.63					
Registered Nurse		81	2.34	1.21					
Other		4	2.38	0.95					

4.6.15 Demographic factors affecting health education

The statistical test results in Table 4.38 showed that gender had no effect on health education ($F=0.080$, $df1=1$, $df2=98$, $p\text{-value}=0.772$). The results also showed that age did not significantly affect health education ($F=0.639$, $df1=4$, $df2=95$, $p\text{-value}=0.636$). Highest nursing qualification had a significant effect on health education ($F=3.319$, $df1=2$, $df2=97$, $p\text{-value}=0.040$). Those with postgraduate diplomas had the highest scores on health

education (mean=4.53) while those with diplomas in nursing and midwifery were second best (mean=4.32) with those having degrees in nursing scoring the lowest (mean=4.10).

The number of years working in the maternity ward did not have a significant effect on health education ($F=0.889$, $df_1=4$, $df_2=95$, $p\text{-value}=0.473$). Current position in the maternity ward also didn't have a significant effect on health education ($F=0.757$, $df_1=3$, $df_2=96$, $p\text{-value}=0.521$).

Table 4.38 Test for factors affecting health education

Dependent variable: Health Education			N	Mean	Std. Dev.	ANOVA Tests			
						F	df1, df2	p-value	Comment
Demographic factors	Gender	Male	90	4.36	0.44	0.080	1, 98	0.772	Not Significant
		Female	10	4.40	0.34				
	Age	21-30 years	14	4.38	0.44	0.639	4, 95	0.636	Not Significant
		31-40 years	40	4.33	0.41				
		41-50 years	34	4.38	0.43				
		51-60 years	11	4.39	0.52				
		61+ years	1	5.00	-				
	Highest nursing qualification	Diploma(Nursing and Midwifery)	70	4.32	0.43	3.319	2, 97	0.040	Significant
		Degree in nursing	5	4.10	0.45				
		Postgraduate Diploma	25	4.53	0.38				
	Number of years working in maternity ward	0-5 years	64	4.32	0.42	0.889	4, 95	0.473	Not Significant
		6-10 years	19	4.42	0.49				
		11-15 years	11	4.41	0.39				
		16-20 years	3	4.33	0.58				
		21+ years	3	4.75	0.25				
	Current position in maternity ward	Chief professional nurse	9	4.56	0.54	0.757	3, 96	0.521	Not Significant
		Senior professional nurse	6	4.29	0.64				
		Registered Nurse	81	4.34	0.40				
		Other	4	4.44	0.52				

4.7 CONCLUSION

This chapter discussed the data analysis and interpretation. Chapter 5 presents the conclusion and recommendations based on the findings of the research.

The results of this study indicated that midwives generally knew about the guidelines for managing patient with pre- eclampsia.

CHAPTER 5

SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.1 INTRODUCTION

The previous chapter presented research findings and discussions. This chapter discusses the summary of the whole study, which includes a brief description of the major findings, significance of the study and its limitations as well as researchers' recommendations for improving practice. The conclusion that the researcher has drawn from findings will also be discussed.

The title of the study is "Implementation of clinical guidelines for the management of pre-eclampsia by midwives in UMgungundlovu District of Kwazulu Natal".

The study was guided by the following objectives:

- To assess the level of knowledge of the midwives on implementation of clinical guidelines for the management of pre-eclampsia.
- To analyse the relationship between the demographic factors and the level of knowledge that midwives have on clinical guidelines for the management of pre-eclampsia.

The following research questions were formulated from the objectives:

- What is the level of knowledge that midwives have regarding the implementation of clinical guidelines for the management of pre-eclampsia?
- What is the relationship between midwives' demographic factors and their knowledge on implementation of clinical guidelines for the management of pre-eclampsia?

5.2 SUMMARY

A quantitative, descriptive and cross sectional research design was employed to assess knowledge of midwives on the utilisation of clinical guidelines for the management of pre-eclampsia, and to analyse the relationship of demographic factors in relation to the level of knowledge. The response rate was 66.2%, and a total of 100 questionnaires were completed by midwives working at community health centres and feeder clinics that refer their clients to the regional hospital.

5.2.1 Training of midwives on clinical guidelines for the management of pre-eclampsia

Just above half of the respondents agreed to the statement that all midwives were trained on clinical guidelines, eight were neutral and 40 disagreed or strongly disagreed that clinicians were trained on guidelines. The mean score of 3.24, which was close to neutral score of three, was indicative of the fact that there was no overwhelming evidence that most midwives were trained on clinical guidelines for the management of pre-eclampsia. However, there was willingness among midwives to be mentored with the mean score of 4.76, which was very close to the strongly agree score of 5. In support of these findings, there was no overall agreement on the provision of in service training concerning the use of guidelines for the management of pre-eclampsia by maternity specialists, with a mean score of 3.06, which was close to a neutral score of three. Furthermore, there was no overall agreement that workshops on implementation of clinical guidelines were conducted, as midwives still saw no evidence of such workshops.

5.2.1.1 Awareness of midwives in the formulation of clinical guidelines

The percentage of the respondents that agreed that they were involved in formation of guidelines was 73%. Ten disagreed and 14 were neutral. The mean score was 1.96. 72 respondents agreed that guidelines were clear and easy to follow. The mean score of 3.63 that was close to 4 for those who agreed. The number of 72 respondents agreed that whenever attending to antenatal clients, it is necessary to adhere to clinical guidelines. The mean was 4.65, which was very close to strongly agreed in a score of 5. However, the accessibility of guidelines is a bit of an issue compared to other issues of awareness.

5.2.1.2 *The referral system*

Overall 88 respondents out of 100 indicated that there was a clear referral criterion for the patients with pre-eclampsia. A mean of 4.29 just above the score of 4 for those who agreed. The emergency telephone number for contacting the doctors/specialist to discuss in use for referral was known by 57 respondents, (mean 3.46) just above neutral and this raised some concern, as all midwives should know the emergency telephone number. As a way of checking the midwives' knowledge of referral system, the respondents were asked if a client that had a blood pressure 140/90 mmHg on three occasions required referral to a medical officer, 79 indicated that they knew that it should be referred a (mean 4.06) slightly above agree which is a score of 4. Overall, the results showed that midwives generally understand the referral system. There is a need to train the 21 respondents that did not know.

5.2.1.3 *Equipment*

Generally, 100 respondents, meaning all of them agreed that the correct size of the cuff for blood pressure machine had an impact in getting the correct reading. The (mean 4.80) very close to 5 which is strongly agree. Midwives furthered displayed knowledge of the importance of servicing the blood pressure machine was necessary to correct reading. 25 midwives indicated that it was not necessary to service a (mean 2.25) close to disagree. The 98 respondents indicated that calibration and servicing was needed to get the correct reading with a mean of 4.63, which is close to 5. Generally, knowledge about equipment is good.

5.2.1.4 *Identification of risk factors*

Most of the respondents, 99 strongly agree that taking family history from clients assisted in the screening of those that are at risk of developing pre-eclampsia with a mean score of 4.76 which is close to 5. Furthermore, respondents agreed that measuring abdominal obesity was important to detect the risk of intra-uterine growth with a mean score of 4.33, which is slightly above 4. The 98 respondents strongly agreed that midwives should have knowledge of the importance of testing urine at each and every visit with a mean score of 4.76 which is close to 5. Smoking twice was a risk to the unborn baby with 92 respondents strongly agreeing to the statement having the mean score of 4.56 which is close to 5.

Generally risks are known although there is a need to train a few that were neutral and those that disagreed.

5.2.1.5 Medication

There were 90 respondents who knew that calcium carbonate was not supposed to be provided as a supplementation for women with a history of hypertension only. 10 were not aware that not only women that were having hypertension only should be provided with calcium carbonate supplementation. The use of magnesium sulphate was generally not known, 48 respondents stated that magnesium sulphate should be given to ecliptic patients only, (mean 2.95) close to 3 which is neutral. Generally, there is an urgent need to educate midwives about the use of medication.

5.2.1.6 Health education

The majority of midwives knew that health education was important to educate patients with hypertension about change of lifestyle. 22 agreed, 78 strongly agreed with a mean score of 4.78, which is close to 5. Almost all respondents strongly agreed to the importance of knowing dietary intake and food resources in order to give proper education with a mean score of mean 4.54, which is close to 5. Respondents agreed that resting and exercise is necessary with a mean score of 3.35 which is slightly above neutral. Lastly, under health education, 99 respondents strongly agreed that it was important to educate patients about signs of elevated blood pressure with a mean score of 4.78 which is close to 5.

5.2.2 Summary of demographic factors of midwives

5.2.2.1 Relationship to training on guidelines

The majority of respondents, 90 were females and 10 males. Males with a mean score of 4.13 were more positive than female who scored 3.02 close to neutral. It would appear that males have had more training on clinical guidelines. As far as age was concerned, there were no significant differences between young. There are significant differences between different levels of nursing qualifications on their opinions on training on clinical guidelines. It appeared that those with a Diploma in Nursing and Midwifery were mostly

affected by lack of training than those with Degree in Nursing science (mean=3.73 compared to mean=2.92) for those with Diploma. As far as the number of years of working in maternity ward were concerned, those with the least number of years 0-5 years scored the lowest on their rating of training in clinical guidelines (mean 2.78). The other group scored higher. There were no significant differences amongst the four maternity ward positions. The position of Chief Professional Nurse had the highest rating (mean=3.89), followed by Senior Professional Nurse (mean=3.39) and lowest rating was the registered nurse (mean=3.02). Generally, ratings were not significantly different.

5.2.3 Demographic factors affecting awareness of clinical guidelines

The statistical test results showed that gender has no effect on the awareness of clinical guidelines ($F= 0.04$, $DF1= 1$, $DF2= 98$, P value= 0.845). Age also did not significantly affect awareness of guidelines 21-30 years (mean=3.84), 31-40 years (mean=3.75), 41-50 years (mean=3.69), 51-60 years (mean=3.82). Current position in maternity ward also did not affect awareness of guidelines. The highest nursing qualifications affected knowledge on the awareness of guidelines with postgraduate having the highest level of awareness (mean=4.07). Those with Diploma in Nursing and Midwifery had lower levels of awareness of clinical guidelines. The number of years working in maternity ward affected the level of awareness of the clinical guidelines. Those respondents with the lowest number of years (0-5 years) (mean=3.56) had the lowest level of awareness, the second lowest level of awareness being 16-20 years (mean=3.87). The other groups had a higher level of awareness.

5.2.4 Demographic factors affecting knowledge of the referral system

Gender did not significantly affect knowledge of the referral system, females (mean=3.64), males (mean=3.70). Age also did not significantly affect knowledge of the referral system 21-30 years (mean=3.79), 31-40 years (mean=3.63), 41-50 years (mean=3.63), 51-60 years (mean=3.57).

Highest nursing qualifications did not significantly affect knowledge of the referral system. Diploma in Nursing and Midwifery (mean=3.69), Degree in Nursing (mean=3.75) and Post Graduate Diploma (mean=3.49). Number of years working in maternity did not significantly affect knowledge of guidelines 0-5 years (mean=3.68), 6-10 years

(mean=3.59), 11-15 years (mean=3.52), 16-20 years (mean=3.75 and 21 years + (mean=3.58). Current position in maternity ward also did not significantly affect knowledge of the referral system. Chief Professional Nurse (mean=3.58), Senior Professional Nurse (mean=3.54) and registered nurses (mean=3.54). Generally, the knowledge of the referral system does not depend on any background characteristics of the respondents.

5.2.5 Demographic factors affecting knowledge of equipment

Gender did not significantly affect the knowledge of equipment with mean=3.84 for females and mean=3.90 for males. Age also did not significantly affect the knowledge of equipment with mean=3.89 for 21-30 years, mean=3.93 for 31-40 years, mean=3.79 for 41-50 years and mean=3.68 for 51-60 years. The highest qualification does not significantly affect the knowledge of equipment. Diploma in Nursing and Midwifery (mean=3.84), Degree in Nursing (mean=4.00) and Post Graduate Diploma (mean=3.84). The number of years working in the maternity ward did not affect knowledge of equipment 0-5 years (mean=3.82), 6-10 years (mean=3.89), 11-15 years (mean=3.89), 16-20 years (mean=3.92) and 21 years + (mean=3.92). The current position did not affect knowledge of equipment. Chief Professional Nurse (mean=3.83), Senior Professional Nurse (mean=3.75) and Registered Nurse (mean=3.85). Generally, none of the demographic factors affects the knowledge of the equipment.

5.2.6 Demographic factors affecting the identification of risk factors

Gender did not have any significance in factors affecting the identification of risk factors, females (mean=3.84) and males (mean=3.89). Age of respondents also had no significance for factors affecting knowledge of the identification of the risk factors 21-30years (mean=3.94), 31-40 years (mean=3.89), 51-60 years (mean=3.75) and 61 years + (mean=3.86). The highest nursing qualification also had no significant factors affecting knowledge of risk factors, Diploma in Nursing and Midwifery (mean=3.86), Degree in Nursing (mean=3.94) and Post Graduate Diploma (mean=3.79). The number of years working in maternity ward did not have significant factors affecting the identification of risks factors. As well as the current position in maternity did not have significant factors affecting the identification of risk factors. Generally, demographic factors do not have significant factors affecting the knowledge of risk factors.

5.2.7 Demographic factors affecting the knowledge of medication

Gender did not significantly affect knowledge of factors affecting the knowledge of medication, females (mean=2.40), males (mean=1.80). Age also had no significance in factors affecting knowledge of medication 21-30 years (mean=1.93), 31-40 years (mean=2.40), 41-50 years (mean=2.41), 51-60 years (mean=2.45). The highest nursing qualification also did not have significance for factors affecting the knowledge of medication. The experience number of years working in maternity also did not have significant factors affecting the knowledge of medication. The current position in maternity also did not have significant for factors affecting the knowledge of medication. Chief Professional Nurse (mean=2.22), Senior Professional Nurse (mean=2.50) and Registered Nurses (mean=2.34). Generally, demographic factors do not affect midwives' knowledge of medication.

5.2.8 Demographic factors affecting health education

Gender had no effect of health education, males (mean=4.36), females (mean=4.40). The results also showed that age did not significantly affect health education. Highest Nursing qualification had a significant effect on health education. The Post Graduate Diploma (mean=4.53), Diploma in Nursing and Midwifery (mean=4.32) and those that had a Degree in Nursing (mean=4.10). The knowledge on how to give health education was higher to those that had done Post Graduate (Advanced Midwifery). The number of years working in maternity ward does not have a significant effect on health education as well as current position in the maternity ward also does not have a significant effect on health education.

5.3 CONCLUSION

This is evidence that the respondents to the study are aware and have knowledge of the clinical guidelines for management of pre-eclampsia. The distribution of guidelines through internet poses a challenge to the clinics. There is a need to provide in- service training although (mean 3.24) close to neutral is trained, it is expected to move towards 4-5 which is agreed for the patient to receive quality care. Continuous education especially for those with postgraduate diploma is also needed to improve knowledge and

skills. There is an overall agreement that workshops are needed to successfully implement the clinical guidelines for management of pre-eclampsia.

5.4 RECOMMENDATIONS ON THE IMPLEMENTATION OF THE GUIDELINES ON MANAGEMENT OF PRE-ECLAMPSIA

Overall, the results of this study revealed that midwives that are attending to pregnant mothers have good knowledge of clinical guidelines for management of pre-eclampsia. The study also revealed that there is still the need to improve communication of these guidelines from the National Department of Health to the province and to the districts. The reason behind this is that during distribution of questionnaires, all the clinics that refer to the regional clinic were using guidelines for maternity care in South Africa for 2007, yet 2015 was already available on the internet.

5.5 RECOMMENDATIONS

Looking at the study findings, some recommendations are suggested to ensure effective implementation of the clinical guidelines for management of pre-eclampsia. The gaps are highlighted and recommendations for further research on the knowledge of clinical guidelines for management of pre-eclampsia are suggested. There is a need to conduct workshop on guidelines as a general feel for all the respondents. There is an urgent need to educate midwives on medication to be used especially the use of Magnesium Sulphate to prevent complications of pre-eclampsia.

5.5.1 Knowledge and practice

The Ministry for Health together with the existing health partner organisations at uMgungundlovu District need to:

- Conduct training to improve midwives' knowledge on the updated recommendations on clinical guidelines for management of pre-eclampsia.
- Organise refresher courses and workshops to ensure that the clinicians understand the guidelines; especially to implement the guidelines correctly as in some questionnaires some respondents were neutral in responding.

- Distribute the updated national guidelines for maternity care in South Africa timeously to all Primary Health Care facilities to be used by the midwives as a reference.
- Monitor and follow up the actual implementation of guidelines for management of pre-eclampsia through providing onsite training, provision of supportive supervision and conducting clinical auditing of the maternal records.
- KwaZulu-Natal College of Nursing and universities to provide training, which includes guidelines for management of pre-eclampsia and to provide clinical support to the students whilst in training.

5.5.2 Further research

Finally, in order to answer fully the assessment of knowledge the midwives have in implementation of clinical guidelines for management of pre-eclampsia, further research needs to be conducted in all the Primary Health Care facilities in the Province of KwaZulu-Natal. The following study can be conducted:

- Assessing knowledge of midwives adding current recommendations.
- Review maternity records looking at the actual implementation and management of pre-eclampsia. In view of this, the maternity records for patients who ended up with pre-eclampsia may be selected for review.

5.6 CONTRIBUTIONS OF THE STUDY

The study contributes towards health care authorities to put systems in place of how to distribute guidelines besides using electronic systems. It also contributes towards improving effective implementation of these guidelines. Clinical audit of maternity records may assist in identifying gaps and a quality care project can be developed based on the findings.

5.7 LIMITATIONS OF THE STUDY

The study was conducted only in the selected clinics that were specifically referring to a regional hospital. The study results cannot be generalised to all clinics in KwaZulu-Natal.

5.8 CONCLUDING REMARKS

The present study assessed the knowledge midwives have on the clinical guidelines for management of pre-eclampsia. The findings and recommendations can assist in improving the implementation of guidelines timeously and correctly thus preventing further complications that may result from delay interventions on managing women with pre-eclampsia. The researcher believes this study may contribute significantly in opening doors for further research. In addition, the National Committee of Enquiry into Maternal Death may improve in finding effective ways of disseminating the information timeously, as midwives were still referring to 2007 guidelines for maternity Care in South Africa instead of the one published in 2015, which indicates that there is a delay in receiving guidelines at operational level in these clinics.

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ANNEXURES

Annexure A: Information letter to participant

Annexure A: INFORMATION LETTER TO PARTICIPANT

The title of the study is:-

UTILISATION OF CLINICAL GUIDELINES FOR THE MANAGEMENT OF PATIENTS WITH PRE-ECLAMPSIA.

Dear participant

The questionnaire form that is sent to you forms part of the study in partial fulfilment of the requirements for Master of Arts: Health studies.

The researcher seeks to assess knowledge of midwives on utilisation of clinical guidelines for management of pre-eclampsia and will propose recommendations regarding gaps identified.

NATURE OF RESEARCH

- The study will be undertaken at UMgungundlovu District hospitals and at a community health centre
- The permission to conduct the study will be requested from the Department of Health head office
- Questionnaires will be hand delivered and participants are free to answer questions honestly.

THE IMPLICATIONS OF PARTICIPATING AND RIGHTS OF THE PARTICIPANTS:

- Participation is voluntary
- The participant has a right to decline to respond to the questions
- The participant may withdraw from participating any time
- The participant will remain anonymous

USE OF DATA COLLECTED

The researcher, supervisor and the statistician will be the only people with access to the raw data that would have been collected.

The data will be analysed by the researcher and the statistician.

CONTACT DETAILS FOR ANY QUESTIONS ABOUT THE RESEARCH:

Mrs Sizile R Masemola

Advanced Midwife

KZN Department of Health

Address: P O Box 2257, Pietermaritzburg 3200

Tel: (W) 033 3954 018 (C) 082 3737 597

Email: Sizile.Masemola@kznhealth.gov.za

Thank you for participating in this research study.

Annexure B: Informed consent

ANNEXURE B,

CONSENT

I.....have been informed about the study entitled "Utilisation of Clinical guidelines for the management of patients with pre-eclampsia" by S.R Masemola

I understand the purpose and procedures of the study. I have been requested to wilfully fill in the questionnaire after I have read the Annexure A information letter to the participant.

I declare that my participation in this study is entirely voluntary and that I may withdraw at any time.

If I have any questions, concerns or queries related to the study I understand that I may contact the researcher (Sizile Masemola, Department of Obstetrics and gynaecology, Edendale Hospital, P.O. Box 2257, Pietermaritzburg 3200), e-mail: masemolasizile@kznhealth.gov.za

.....
SIGNATURE OF PARTICIPANT

.....
DATE

.....
SIGNATURE OF WITNESS

.....
DATE

Annexure C: Questionnaire on implementation of Clinical Guidelines for the management of patients with pre-eclampsia

ANNEXURE C

CODE NUMBER

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A QUESTIONNAIRE ON UTILISATION OF CLINICAL GUIDELINE FOR THE MANAGEMENT OF PATIENTS WITH PRE-ECLAMPSIA

Please fill the following questionnaire which consists of eight sections with questions on demographic factors, training on guideline, awareness on guidelines, referral system, and equipment, identification of risk factors, medications and health education.

SECTION A – DEMOGRAPHIC QUESTIONS

Please tick the appropriate response on the relevant row.

1. What is your gender

Female	1
Male	2

2. Your age is between

21-30	1
31-40	2
41-50	3
51-60	4
61+	5

3. What is your highest qualification in nursing?

Diploma in nursing and midwifery	1
Degree in nursing	2
Postgraduate diploma in advanced midwifery/nursing administration/critical care/community health/psychiatric nursing	3
Master's degree	4
Doctoral degree	5

4. How many years have you been working in the maternity ward?

0-5 years	1
6-10 years	2
11-15 years	3
16-20 years	4
21years and longer	5

5. Please indicate your current position in the maternity ward

Nursing Service Manager	1
Chief Professional Nurse	2
Senior Professional Nurse	3
Registered Nurse	4
Other	5

SECTION B- TRAINING ON GUIDELINES

Please indicate by means of a tick whether you strongly agree (5), agree (4), neither agree or disagree (3), disagree (2) or strongly disagree (1) to the following statements:

	Strongly agree	Agree	Neither agree or disagree	Disagree	Strongly disagree
6 All clinicians are trained on clinical guidelines for management of pre-eclampsia					
7 It is important to receive mentorship on the use of guidelines					
8 Maternity specialist give in service training concerning use of clinical guidelines for management of pre-eclampsia					
9 Workshop on the implementation of guidelines are conducted					

SECTION C – AWARENESS ON GUIDELINES

10 All clinicians are involved in formulation of guidelines					
11 Guidelines are easily accessible					
12 Guidelines are clear and easy to follow					
13 It is necessary to adhere to clinical guidelines whenever attending to an antenatal client					
14 Effective implementation of clinical guidelines for managing maternity client can reduce maternal death					

SECTION D – REFERRAL SYSTEM

	Strongly agree	Agree	Neither agree or disagree	Disagree	Strongly disagree
15 There is clear referral criteria for pre-eclampsia					
16 There is an emergency number for the senior specialist or senior doctor to discuss the referral case					
17 A client that has a blood pressure of 140/90 mmHg for three occasions during antenatal care does not necessarily require referral to the medical officer or obstetrician					
18 A blood pressure of 140/90 mmHg during the 1 st ante natal clinic visit does not necessarily need referral to the medical officer					

SECTION E - EQUIPMENT

19 It is important to use the correct size of the cuff when checking blood pressure in order to get accurate recordings					
20 Servicing of blood pressure machine will not assist in getting correct blood pressure recording.					
21 When using the blood pressure machine, the correct recording of the blood pressure is not influenced by the patient's position					
22 The blood pressure machine and accessories must be serviced and calibrated on annual basis.					
SECTION F- IDENTIFICATION OF RISK FACTORS					

	Strongly Agree	Agree	Neither agree or disagree	Disagree	Strongly disagree
23 Taking family history from patients assist in screening those that at risk of developing pre-eclampsia					
24 It is necessary to weigh client during alternate visits					
25 The height patients must be measured at each and every visit					
26 Abdominal obesity must be measured at each and every visit					
27 The urinalysis must be done at each and every visit					
28 Smoking twice a day does not endanger the life of the baby in utero					
29 Weight loss is not necessary when mother is pregnant and diagnosed with pre-eclampsia as long as she is taking medication correctly					
SECTION G – MEDICATIONS					
30 Calcium Carbonate is provided as a supplementation for women with a history of hypertension in their families only					
31 Magnesium Sulphate is only given for Eclamptic patients					

SECTION H – HEALTH EDUCATION

	Strongly agree	Agree	Neither agree or disagree	Disagree	Strongly disagree
32 It is important to educate patients with hypertension about change of lifestyle					
33 It is vital to know the dietary intake and food resources in order to give appropriate health education					
34 Resting and exercising does not necessarily help patients with pre-eclampsia					
35 It is important to educate patients about the signs of elevated blood pressure					
36 Any comment					

Thank you for filling in the questionnaire.

Annexure D: Ethical clearance certificate from Unisa



**UNIVERSITY OF SOUTH AFRICA
Health Studies Higher Degrees Committee
College of Human Sciences
ETHICAL CLEARANCE CERTIFICATE**

REC-012714-039

Date: 27 August 2014 HSHDC/333/2014
Student No: 3015-283-6
Project Title: Utilisation of clinical guidelines for the management of patients with pre-eclampsia.
Researcher: Sizile Rose Masemola
Degree: MA in Nursing Science Code: MPCHS94
Supervisor: Dr TG Lumadi
Qualification: D Litt et Phil
Joint Supervisor: -

DECISION OF COMMITTEE

Approved

Conditionally Approved

**Prof L Roets
CHAIRPERSON: HEALTH STUDIES HIGHER DEGREES COMMITTEE**

**Prof MM Moleki
ACADEMIC CHAIRPERSON: DEPARTMENT OF HEALTH STUDIES**

PLEASE QUOTE THE PROJECT NUMBER IN ALL ENQUIRES

Annexure E: Letter for permission to conduct the study on implementation of clinical guidelines for management of pre-eclampsia granted by UMgungundlovu District Manager



health

Department:
Health
PROVINCE OF KWAZULU-NATAL

UMGUNGUNDLOVU DISTRICT OFFICE
Private Bag X9124, Pietermaritzburg, 3200
171 Hoosen Haffajee Street, PMB 3201
Tel.: 033 342 0932
Email: Thule.kunene@kznhealth.gov.za:
www.kznhealth.gov.za

Enquiries: Mrs. N. M. Zuma-Mkhonza
13 November 2014

TO: MS SR MASEMOLA
PO BOX 2257
PMBURG
3200

Dear Ms Masemola

RE: LETTER OF SUPPORT TO CONDUCT THE STUDY ON AN EVALUATION OF IMPLEMENTATION OF CLINICAL GUIDELINES IN THE MANAGEMENT OF PRE-ECLAMPSIA

Your correspondence regarding the letter of support to conduct the study on an Evaluation of Implementation of Clinical Guidelines in the Management of Pre-Eclampsia refers:

I have pleasure in informing you that permission have been granted to you by the District Office to conduct investigation on examining the impact of pesticide exposure on the reproductive outcomes in pregnant women and the neurobehavioral outcomes of their offspring in South Africa investigation will be conducted in Umgungundlovu District.

PLEASE NOTE THE FOLLOWING

1. Please ensure that you adhere to all policies, procedures, protocols and guidelines of the Department of Health with regards to this research.
2. This research will only commence once this office has received the confirmation from the Provincial Health Research Committee in the KZN Department.
3. Please ensure that this office is informed before you commence your research.
4. The District Office will not provide any resources for this research.
5. You will be expected to provide feedback on your findings to the District Office.

Thank you,

MRS N.M. ZUMA - MKHONZA
DISTRICT MANAGER
UMGUNGUNDLOVU HEALTH DISTRICT

uMnyango Wezempilo . Departement van Gesondheid

Fighting Disease, Fighting Poverty, Giving Hope

Annexure F: Ethical clearance from KwaZulu-Natal Health Research Committee

Details - National Health Research Database
Page 1 of 2

The National Health Research Database

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RESEARCH PROPOSAL DETAILS: KZ_2015RP8_243

Research Committee

KWAZULU-NATAL HEALTH RESEARCH COMMITTEE

APPLICATION DETAILS

Title of Research Project
UTILISATION OF CLINICAL GUIDELINES FOR THE MANAGEMENT OF PATIENTS WITH PRE-ECLAMPSIA.

Status of Application
Approved

Status of Project
On-Going

Proposal Submission Date
2015/06/02

Comments
You will find a list of all comments made on the selected research application. The list below displays comments visible to both the Applicant and Research Committee

Comment	Comment Date	Comment By

Research Staff assigned to Project/Proposal

Title	Name	Surname	Role	Institution	E-Mail	Telephone No.	Mobile No.	CV/Resume
MRS	Sizile	Masemola	Researcher	UNISA	sizile.masemola@kznhealth.gov.za	+27333954911	+27735564346	No File

Aim and Objectives

The purpose of the study is to investigate the utilisation of a clinical guideline for the management of pre-eclampsia in KwaZulu-Natal province at uMgungundlovu District 22 in order to reduce maternal death occurring as a result of complications of pre-eclampsia. To assess the knowledge of midwives on clinical guidelines for management of pre-eclampsia To evaluate the implementation of the guideline on management of pre-eclampsia To make recommendations to address the knowledge gaps related to the research findings

Study Area(s)/Field(s)

Description
Clinical

Study Design(s)

Description
Descriptive

Data Collection Method(s)

Method Category	Method Description
QUANTITATIVE	Questionnaire

<http://nhrd.hst.org.za/Proposal/Details/6202>
06/11/2015



VIEW UPLOADED SUPPORT DOCUMENT LIST FOR: KZ_2015RP8_243

Here you will find a list of all the support documents you've uploaded for this research application. The list below displays documents visible to both the Applicant and Research Committee

Document Category	File Name	
APPROVAL LETTER	DoH Approval (Masemola).pdf	Download Document
DATA COLLECTION TOOL (QUESTIONNAIRE, INFO SHEETS, ETC.)	The Data Collection Instrument.doc	Download Document
RESEARCH ETHICS COMMITTEE (REC) APPROVAL DOCUMENT (SPECIFIC TO THIS PROPOSAL)	SR MASEMOLA - PERMISSION TO C.pdf	Download Document
RESEARCH PROPOSAL DOCUMENT	DoH Approval (Masemola).pdf	Download Document



Annexure G: List of study health facilities

NO.	FACILITY NAME	FACILITY SETTING	FACILITY TYPE	MIDWIVES ALLOCATED
1.	Richmond Clinic	Community Health Clinic	Public	15
2.	Imbalenhle Clinic	Community Health Clinic	Public	10
3.	Azalea Clinic	Community Health Clinic	Public	08
4.	Taylors Clinic	Community Health Clinic	Public	14
5.	Caluza Clinic	Community Health Clinic	Public	12
6.	East Boom Clinic	Community Health Clinic	Public	15
7.	Gomane Clinic	Community Health Clinic	Public	15
8.	Sondelani Clinic	Community Health Clinic	Public	06
9.	Cental Clinic PMB	Community Health Clinic	Public	05
10.	Sinathing Clinic	Community Health Clinic	Public	06
11.	Willowfountain Clinic	Community Health Clinic	Public	05
12.	Entembeni Clinic	Community Health Clinic	Public	08
13.	Mpumuza Clinic	Community Health Clinic	Public	08
14.	Mpilwenhle Clinic	Community Health Clinic	Public	06
15.	KwaPata Clinic	Community Health Clinic	Public	08
16.	Songonzima Clinic	Community Health Clinic	Public	10
17.	Nxamalala Clinic	Community Health Clinic	Public	10

Annexure H: Letter from the editor

163 Highveld
Kragbron
Sasolburg
1947

16 January 2018

TO WHOM IT MAY CONCERN

I hereby certify that I have edited Sizile Rose Masemola's Master's dissertation, **IMPLEMENTATION OF CLINICAL GUIDELINES FOR THE MANAGEMENT OF PRE-ECLAMPSIA IN UMGUNGUNDLOVU DISTRICT OF KWAZULU NATAL**, for language and content.

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Cell/Mobile: 084-778-4401
Email: blessingchemware@yahoo.com