

**TUBERCULOSIS SCREENING AMONG HUMAN IMMUNODEFICIENCY
VIRUS POSITIVE PREGNANT WOMEN IN LIMPOPO PROVINCE**

by

VIOLET MANONYANA CHEWE

submitted in accordance with the requirements

for the degree of

MASTER OF ARTS

In the subject

Health Studies

at the

UNIVERSITY OF SOUTH AFRICA

SUPERVISOR: DR SH KHUNOU

15 December 2021

DEDICATION

To my mother Sarah Seshibe, you always had faith in me.

*It was through your encouragement and love that I
completed my study.*

DECLARATION

I declare that **TUBERCULOSIS SCREENING AMONG HUMAN IMMUNODEFICIENCY VIRUS IN LIMPOPO** is my work and that sources that I have used or quoted have been indicated and acknowledged through complete references.

Signature: 

Date: 15 December 2021

Violet Manonyana Chewe

ACKNOWLEDGEMENT

Praises to my heavenly Daddy, for granting me the courage to conclude my study.

I would like to convey my appreciation to my supervisor, Dr Khunou, for the guidance that you provided throughout the study. It was through your effort and your ever-present support that the study became a success.

The Department of Health, Limpopo Province and Capricorn District, thank you for granting me an opportunity to conduct the study at the clinics.

Ms. Mafokwane, from Limpopo Nursing College, I appreciate the support and courage you provided when I felt hopeless about furthering my studies.

My manager, Ms. Mataba, you gradually filled me with courage and love for continuing with my studies, even though it was hard.

I would like to appreciate the support and courage I received from my family, my hubby-Maxyan, my kids - Cannimhambo, Dominic and Junior for your patience when I sometimes had to spend hours on my studies.

My little sister Mologadi Seshibe, you have been of great support throughout my studies.

Lastly, special thanks to all the midwives who took in this study, it was through your participation that the study succeeded.

TUBERCULOSIS SCREENING AMONG HUMAN IMMUNODEFICIENCY VIRUS POSITIVE PREGNANT WOMEN IN LIMPOPO PROVINCE

STUDENT NUMBER: 46451153

STUDENT NAME: VM CHEWE

DEGREE: MASTER OF ARTS (NURSING SCIENCE)

DEPARTMENT: HEALTH STUDIES, UNIVERSITY OF SOUTH AFRICA

SUPERVISOR: DR SH KHUNOU

ABSTRACT

Tuberculosis (TB) is one of the major global health crises, which contributes to high mortality in pregnant women. A qualitative descriptive research approach was used to conduct the study. The study was conducted at Polokwane East sub-district, Limpopo Province to explore the views and challenges faced by midwives in tuberculosis screening among human immunodeficiency positive (HIV) pregnant women in selected local area clinics. Nonprobability purposive sampling was used to select the participants. Semi-structured interviews with guide questions were used to collect data from the participants through digital channels. Analysis of data was done according to Tesch's eight steps. Findings revealed several challenges, which hinder midwives from providing quality TB screening to pregnant women, such as lack of resources, midwives related challenges and pregnant women related challenges. Recommendations were done based on the study findings for the department of health, PHC facilities, midwives, and future research studies.

KEY CONCEPTS

Human immunodeficiency virus; Midwives; Pregnant woman; Screening; Tuberculosis

TABLE OF CONTENT

DEDICATION	
DECLARATIION	
ACKNOWLEDGEMENT	
ABSTRACT	
TABLE OF CONTENT	i
LIST OF TABLES	viii
LIST OF FIGURES	ix
ANNEXURES	x
LIST OF ABBRIVIATIONS.....	xi
CHAPTER 1	1
ORIENTATION TO THE STUDY	1
1.1 INTRODUCTION	1
1.2 BACKGROUND INFORMATION ABOUT THE RESEARCH PROBLEM	2
1.3 RESEARCH PROBLEM	3
1.4 PURPOSE OF THE STUDY	4
1.4.1 Research purpose	4
1.4.2 Research objectives	5
1.4.3 Research question.....	5
1.5 SIGNIFICANCE OF THE STUDY	5
1.6 DEFINITION OF KEY TERMS.....	6
1.6.1 HIV positive	6
1.6.2 Midwife	6
1.6.3 Pregnant Woman.....	6
1.6.4 Screening	6
1.6.5 Tuberculosis	7
1.7 THEORETICAL FOUNDATION OF THE STUDY.....	7
1.7.1 Ontology	7
1.7.2 Epistemology	8
1.7.3 Methodology	8
1.8 RESEARCH METHODOLOGY AND RESEARCH DESIGN.....	8
1.8.1 Research Design	8

1.8.2	Research methods.....	9
1.8.2.1	Study setting.....	9
1.8.2.2	Target Population	9
1.8.2.3	Sampling and sample	9
1.8.2.4	Sample size	10
1.8.3	Data collection	10
1.8.4	Data analysis	10
1.8.5	Trustworthiness	11
1.9	ETHICAL CONSIDERATIONS	11
1.10	SCOPE OF THE STUDY.....	11
1.11	SUMMARY	11
	CHAPTER 2	13
	LITERATURE REVIEW.....	13
2.1	INTRODUCTION	13
2.2	WHAT IS A LITERATURE REVIEW?	13
2.2.1	The purpose of the literature review	13
2.3	VIEWPOINT OF HIV/TB CO-INFECTION IN PREGNANCY	14
2.4	THE RELATIONSHIP BETWEEN HIV AND TB.....	15
2.5	CO-INFECTION OF HIV/TB IN PREGNANCY	16
2.5.1	Vulnerability of HIV positive women to TB.....	16
2.5.2	Mother to child transmission of HIV/TB in pregnancy	16
2.5.3	Clinical manifestation of HIV/TB in pregnancy	17
2.5.4	The complications of TB in pregnancy.....	18
2.5.4.1	The pregnant woman.....	18
2.5.4.2	The Fetus	19
2.5.4.3	Congenital tuberculosis	19
2.6	MANAGEMENT OF HIV/TB IN PREGNANCY	19
2.7	THE IMPACT OF HIV/TB CO-INFECTION ON PREGNANCY	20
2.8	SCREENING OF TB IN PREGNANCY.....	21
2.8.1	The benefits of TB screening in pregnancy	21
2.8.1.1	To the pregnant woman.....	21
2.8.1.2	To the baby.....	22
2.8.2	Tuberculosis screening guidelines.....	22

2.8.3	The South African national guidelines	23
2.8.4	Tuberculosis screening and testing methods.....	23
2.8.5	The challenges concerning TB screening.....	26
2.9	SUMMARY	26
CHAPTER 3		27
RESEARCH DESIGN AND RESEARCH METHOD		27
3.1	INTRODUCTION	27
3.2	RESEARCH SETTING	27
3.3	RESEARCH DESIGN	28
3.3.1	Qualitative research approach.....	28
3.3.2	Characteristics of qualitative research approach	28
3.3.3	The benefits and rationale for using qualitative research qualitative research	30
3.3.4	Descriptive design	30
3.4	RESEARCH METHOD	30
3.4.1	Sampling.....	30
3.4.1.1	Population.....	30
3.4.1.2	Sampling.....	31
3.4.1.3	Ethical issues related to sampling.....	31
3.4.1.4	Sample	32
3.4.1.4.1	Eligibility criteria	32
3.4.2	Data collection	32
3.4.2.1	Data collection approach and method	33
3.4.2.2	Development and testing of the data collection instrument.....	33
3.4.2.3	Characteristics of the data collection instrument	34
3.4.2.4	Data collection process.....	34
3.4.2.5	Ethical considerations related to data collection	35
3.4.2.5.1	Ethical clearance	35
3.4.2.5.2	Ethical principles.....	35
3.4.2.5.3	Participant information.....	37
3.4.2.5.4	Informed consent.....	37
3.4.3	Data analysis	37
3.5	RIGOUR OF THE STUDY: TRUSTWORTHINESS	39

3.5.1	Credibility	39
3.5.2	Dependability	39
3.5.3	Confirmability	40
3.5.4	Transferability	40
3.6	SUMMARY	40
CHAPTER 4		41
ANALYSIS, PRESENTATION AND DESCRIPTION OF THE RESEARCH FINDINGS		41
4.1	INTRODUCTION	41
4.2	DATA MANAGEMENT AND DATA ANALYSIS	41
4.3	RESEARCH RESULTS	42
4.3.1	Demographic analysis of participants	42
4.4	OVERVIEW OF RESEARCH FINDINGS	43
4.4.1	Theme 1: Acknowledging screening of TB amongst pregnant women who are HIV positive	44
4.4.1.1	Category 1: Midwives' role and responsibilities regarding screening of TB amongst pregnant women who are positive for HIV	45
4.4.1.1.1	Sub-category 1.1: Adequate TB screening	45
4.4.1.1.2	Sub-category 1.2: Embracing proper implementation of TB guidelines	45
4.4.1.1.3	Sub-category 1.3: Counselling and health education	46
4.4.2	Theme 2: Challenges to a screening of TB among pregnant women among women who are HIV positive	47
4.4.2.1	Category 2.1: Lack of resources	47
4.4.2.1.1	Sub-categories 2.1.1: Shortage of working tools	48
4.4.2.1.2	Sub-category 2.1.2: Shortage of midwives and work overload	49
4.4.2.2	Category 2.2: Midwives' related challenges.....	50
4.4.2.2.1	Sub-category 2.2.1: Inadequate knowledge	50
4.4.2.2.2	Sub-category 2.2.2: Midwives' attitude towards TB screening.....	51
4.4.2.3	Category 2.3: Pregnant women related challenges	51
4.4.2.3.1	Sub-category 2.3.1: Withholding of TB information	52
4.4.2.3.2	Subcategory 2.3.2 Late presentation to a health facility	52
4.4.2.3.3	Sub-category 2.3.3: Language barrier	53

4.4.3	Theme 3: Negative impact of inadequate screening of TB screening amongst pregnant women who are HIV positive.	53
4.4.3.1	Category 3.1: Poor obstetric outcomes.....	54
4.4.3.1.1	Sub-category 3.1.1: Upsurge of neonatal complications and perinatal mortality	54
4.4.3.1.2	Sub-category 3.1.2 Increased maternal complications and maternal mortality	55
4.4.3.2	Category 3.2: Impact on midwives.....	56
4.4.3.2.1	Sub-category 3.2.1: Psychological impacts/ reaction.	56
4.4.3.2.2	Sub-category 3.2.2: Legal implications.....	57
4.4.4	Theme 4: Measures that can enhance screening of TB amongst pregnant women who are HIV positive	58
4.4.4.1	Category 4.1: Managerial strategies.....	58
4.4.4.1.1	Sub-categories 4.1.1: Appropriate delegation of duties	58
4.4.4.1.2	Sub-category 4.1.2: Consistent In-service training and workshops ...	59
4.4.4.1.3	Sub-category 4.1.3: Proper sorting of patients	60
4.4.4.1.4	Sub-category 4.1.4: Consistent auditing of records	61
4.4.4.1.5	Sub-category 4.1.5: Reliable TB screening tool.....	60
4.4.4.2	Category 4.2: Community mobilisation	61
4.4.4.2.1	Sub-category 4.2.1: Consistent health education and campaigns	61
4.5	SUMMARY	62
	CHAPTER 5	63
	INTERPRETATION AND DISCUSSION OF FINDINGS, CONCLUSIONS AND RECOMMENDATIONS	63
5.1	INTRODUCTION	63
5.2	RESEARCH DESIGN AND RESEARCH METHOD	63
5.2.1	Research purpose	63
5.2.2	Research objectives	64
5.2.3	Research question.....	64
5.3	SUMMARY AND INTERPRETATION OF THE RESEARCH FINDINGS.....	64
5.3.1	Acknowledging TB screening amongst pregnant women who are HIV positive.....	64

5.3.1.1	Midwives' role and responsibilities regarding screening of TB amongst pregnant women who are HIV positive	65
5.3.1.1.1	Adequate TB screening	65
5.3.1.1.2	Embracing proper implementation of TB guidelines	66
5.3.1.1.3	Counselling and health education.....	66
5.3.2	Challenges to the screening of TB among pregnant women who are HIV positive	67
5.3.2.1	Lack of resources	67
5.3.2.1.1	Shortage of working tools	67
5.3.2.1.2	Shortage of midwives and work overload	68
5.3.2.2	Midwives' related challenges	71
5.3.2.2.1	Inadequate knowledge	71
5.3.2.2.2	Midwives' negative attitude towards TB screening	71
5.3.2.3	Pregnant women related challenges.....	71
5.3.2.3.1	Withholding of TB information.....	71
5.3.2.3.2	Late presentation to a health facility	71
5.3.2.3.3	Language barrier	72
5.3.3	The negative impact of inadequate screening of TB in pregnant women who are HIV positive	73
5.3.3.1	Poor obstetric outcomes	73
5.3.3.1.1	The upsurge of neonatal complications and perinatal mortality	73
5.3.3.1.2	Increased maternal complications and maternal mortality	74
5.3.3.2	Impact on midwives	75
5.3.3.2.1	Psychological impact/ reaction	75
5.3.3.2.2	Legal implications	76
5.3.4	Measures that can enhance screening of TB screening amongst pregnant women who are HIV positive	77
5.3.4.1	Managerial strategies	77
5.3.4.1.1	Appropriate delegation of duties	77
5.3.4.1.2	Consistent In-service training and workshops	78
5.3.4.1.3	Proper sorting of patients.....	78
5.3.4.1.4	Consistent auditing of records	80
5.3.4.1.5	Reliable TB screening tool.....	80

5.3.4.2	Community mobilisation.....	81
5.3.4.2.1	Consistent health education and campaigns	81
5.4	CONCLUSIONS	81
5.5	RECOMMENDATIONS	81
5.5.1	Recommendations for the Department of health	81
5.5.2	Recommendations for primary health care facilities	81
5.5.3	Recommendations for the midwives	82
5.5.4	Recommendations for further research	82
5.6	CONTRIBUTIONS OF THE STUDY	82
5.7	LIMITATIONS OF THE STUDY	83
5.8	CONCLUDING REMARKS	83
	LIST OF SOURCES	84
	ANNEXURES	111

LIST OF TABLES

Table 3.1:	Kganya local area PHC clinics and total number of midwives	28
Table 4.1:	Demographic information per participant	43
Table 4.2:	Themes, categories and sub-categories	44

LIST OF FIGURES

Figure 1.1:	Structure of dissertation.....	12
Figure 2.1:	TB testing algorithm	25

ANNEXURES

Annexure A: Approval from the University	109
Annexure B: Letter seeking consent form from Limpopo DoH	111
Annexure C: Letter seeking consent from Capricorn District	112
Annexure D: Letter of approval from Limpopo DoH	113
Annexure E: Letter of approval from Capricorn District	114
Annexure F: Researcher acknowledgement	115
Annexure G: Interview guide	116
Annexure H: Request to participate in the study	117
Annexure I: Consent to participate in the study	121
Annexure J: Verbatim transcript	122
Annexure K: Co-coding certificate	134
Annexure L: Editorial Certificate	135

LIST OF ABBRIVIATIONS

AIDS:	Acquired immunodeficiency virus
ANC:	Antenatal care
BANC:	Basic antenatal care
CDC:	Centre for Disease Control
COVID19:	Corona virus disease 2019
DoH:	Department of Health
EDL:	Essential drug list
ENA:	Enrolled nursing assistant
HCT:	Healthcare worker-initiated counselling and testing
HIV:	Human immunodeficiency virus
HIV/TB:	Human immunodeficiency virus/Tuberculosis
INH:	Isoniazid
MDR-TB:	Multi-drug resistant tuberculosis
M&M:	Maternal and Mortality
MTB:	Mycobacterium tuberculosis
NPRIs:	Non pregnancy related infections
OH:	Obstetric haemorrhage
P:	Participant
PHC:	Primary health care
PMTCT:	Prevention from mother to child transmission
PTB:	Pulmonary tuberculosis
UNAIDS:	United Nations Programme on HIV/AIDS
RIF:	Rifampicin
SA:	South Africa
SANC:	South African Nursing Council
SDGs:	Sustainable development goals
SSA:	Sub-Saharan Africa
STI:	Sexually transmitted infection
TB:	Tuberculosis
TB-IRIS:	Tuberculosis-immune reconstitution inflammatory syndrome
TST:	Tuberculin skin test
WHO:	World Health Organisation

UNISA: University of South Africa

USAID: United States Agency for International Development

CHAPTER 1

ORIENTATION TO THE STUDY

1.1 INTRODUCTION

Tuberculosis (TB) is the most popular respiratory ailment ranking above the human immunodeficiency virus (World Health Organisation 2019:12). As of 24 March 2021, three billion people had already died from TB across the globe (Thobela FM. 2021. Morning drive show. 24 March 2021, 07:15). According to the National Department of Health South Africa, SA (2014:62), HIV increases the chances of TB infection in pregnancy. Furthermore, HIV infection complicated by TB remains the first indirect cause of maternal mortality (SA 2018:26).

TB screening statistics for pregnant women are not usually reported in SA, as such diagnosis of TB during pregnancy is a serious challenge (Mnqayi 2016:3). Several strategies for TB screening during pregnancy have been introduced thus far. The recommendation by WHO states that four-part strategies symptoms-based intensified case finding should be used for early detection of TB (Gebreegziabiher, Adane & Abebe 2017:46).

South Africa, like other countries, adopted sustainable development goals (SDGs) WHO (2018:11) to reduce the transmission of TB among the population. Additionally, the 90-90-90 strategy was also introduced in SA to achieve the UNAIDS “fast track” targets as the “End TB” strategy in December 2014 (Malaza, Smith, Mdaka, Haynes & Shezi 2016: 10). This includes the screening of 90% of people in the key populations, initiation of TB treatment to 90% of those diagnosed with TB and 90% of patients initiated complete their treatment. Furthermore, Odayar, Rangaka, Zerbe, Petro, McIntyre, Phillips, Abrams and Myer (2018:762) indicate that there is a need for strategies that will enhance TB prevention in childbearing women who are HIV positive. In addition, the need for investigation of common structural barriers to implementation of integrated antenatal care, which includes TB screening, was emphasised (Fowks, Draper, Hellard & Stooove 2016:6).

It was crucial for the researcher to explore the challenges faced by midwives regarding screening of TB among pregnant women who are positive for HIV in Limpopo Province.

1.2 BACKGROUND INFORMATION ABOUT THE RESEARCH PROBLEM

Research problems in most cases derive from the love, desire, and clinical experience of the researcher about the study topic (Polit & Beck 2012:74). The researcher always had a passion for the health of pregnant women and that of their unborn babies. According to the presentations from the maternal mortality and morbidity (M&M) meetings which the researcher regularly attends at the local hospital, HIV/TB co-infection in pregnancy, account for most of the maternal death in Limpopo Province, though it can be prevented and managed successfully.

Globally, the estimation of confirmed TB cases diagnosed among pregnant women was 200 000 in 2011 (Friedman & Tanoue 2014:3). According to Sugarman, Colvin and Oxlade (2014:710) the estimation of TB cases among pregnant women globally was said to be even more (216 500 in 2011), of which 41.3% of those cases were from the WHO African regions. In Sub-Saharan Africa, HIV/TB co-infection accounted for an estimation of 207 000 maternal deaths from 1990 to 2008 (Singer 2013:3).

The South African study by Khan, Pillay, Moodley and Connolly (2001:1860) which was done in Durban in 1997 and 1998, indicate that 93% of mothers diagnosed with TB were also HIV infected. Non-pregnancy related conditions, of which TB forms part, is ranked the third among the causes of maternal mortality in South Africa (SA 2018:5). According to SA (2018:5), the first direct cause is obstetric haemorrhage (OH) with 23%. The second direct cause is hypertensive disorders (HT) with 22%. The third is non-pregnancy-related infections (NPRIs) with 19%, of which is rated as the indirect cause. TB infections fall within these conditions (NPRIs) and are leading in terms of percentages. Among the top three conditions explained in this paragraph, NPRIs are the only cause of maternal mortality, which is not related to pregnancy, hence it is avoidable and manageable. Therefore, it was important for the researcher to explore the challenges faced by midwives regarding TB screening, as it is the leading complication of HIV infected pregnant women.

According to the knowledge of the researcher, there are no studies in Limpopo Province that addressed the challenges faced by midwives regarding TB screening in pregnancy which was conducted. Limpopo holds the third position in terms of maternal death of up to 181/100 000 live birth in SA, the first being Gauteng with 275/100 000 live births followed by KwaZulu-Natal with 245/100 000 live births (SA 2018:09).

Several studies about TB in pregnancy focused on the risks and threats concerning HIV/TB co-infection. For example, the study by El-Messidi, Czojoj-Shulman, Spence and Abenhaim (2016:797) indicate that HIV/TB constitute a great threat to pregnant women and their babies' lives. An increased risk for progression from latent to active TB in HIV pregnant women is also reported (McKenna, Frick, Lee, Namutamba, Smit, Theunissen, Vandavelde, Madoori, Snow & Seaworth 2017:1384). Screening of TB during antenatal care will assist with the exclusion of the infection in pregnant women who are HIV positive. Thus, the midwives will then be able to offer TB preventive drugs to pregnant women. According to SA (2016:26), maternal mortality can be reduced by TB screening and initiation of TB preventive therapy to pregnant women who are HIV positive during antenatal care. South Africa (2016:26) further indicated the importance of screening for TB in pregnancy as it may reduce mortality by less than 70/100 000 live births, which is recommended by WHO. The midwives must provide TB screening to all pregnant women during antenatal care to improve pregnancy outcomes.

Furthermore, early TB screening, mostly for the women who are HIV positive, is effective in maintaining healthy pregnancy (Khan et al. 2001:1862). Based on the lack of literature attention regarding TB screening during pregnancy, the researcher deemed it inevitable to explore the views and challenges faced by midwives.

1.3 RESEARCH PROBLEM

A worrying condition as a result of a gap in the scholarly literature that is important for the practice of nursing is a research problem (Grove, Gray & Burns 2015:131). Concerning screening of TB among pregnant women who are HIV positive, the World Health Organisation recommends that four-part strategies symptoms-based intensified case finding should be used for early detection of TB (Gebreegziabiher et al. 2017:46). Despite the effort by the National Department of Health, SA (2017:26), which recommends that

midwives should screen all HIV positive pregnant women for TB during routine antenatal care, Limpopo Province is still experiencing a high number of maternal death due to TB infection. According to SA (2017:12), Limpopo Province had 38 maternal deaths in 2016 due to HIV/TB associated complications. Of great concern is that eleven of these maternal deaths occurred in the Capricorn District, where the Kganya local area is situated. As far as early detection of TB amongst pregnant women who are positive for HIV is concerned, the researcher identified that most maternity case records of pregnant women do not reflect TB screening. The assertion is that lack of proper documentation amounts to an omission in screening for TB amongst pregnant women who are HIV positive. There is anecdotal evidence based on the experience possessed by the researcher as a midwife specialist and a neonatal specialist that assistant nurses in the observation area often perform TB screening to all patients, including pregnant women who are HIV positive. As a result, some important TB signs might be overlooked and not taken into consideration as the junior nurses may not understand the effect TB has on pregnancy, mostly to those women who are HIV positive. To attest to this, the Eswatini study conducted in 2020 revealed a high predominance of TB among women who are pregnant and HIV positive (Pasipamire, Broughton, Mkhontfo, Maphalala, Simelane-Vilane & Humba 2020:8). From the studies which were conducted regarding screening of TB in pregnant women who are HIV positive, challenges faced by midwives were given less attention. Hence, the researcher deemed it inevitable to investigate further.

1.4 PURPOSE OF THE STUDY

1.4.1 Research purpose

The research purpose clearly and concisely states the aim of the study by way of exploiting, describing, clarifying, or indicating an answer to an issue (Brink, van der Walt & Van Rensburg 2018:50).

The purpose of this qualitative study was to explore the views and challenges faced by midwives regarding TB screening among HIV positive pregnant women in Kganya local area, Limpopo Province. This was done to make recommendations for the effective implementation of available strategies regarding screening of TB among pregnant women who are HIV positive.

1.4.2 Research objectives

Research objectives, according to Bowling (2009:152), is a clear, simple, declarative statement which gives the study a direction. The study was guided by the following objectives:

- To explore the views of midwives regarding TB screening among HIV positive pregnant women in Kganya local area, primary health care (PHC) clinics in Limpopo Province.
- To describe the challenges faced by midwives regarding TB screening among HIV positive pregnant women in Kganya local area PHC clinics in Limpopo Province.

1.4.3 Research question

A simple inquisitive declaration that is conveyed to guide the study is a research question (Botma, Greeff, Mulaudzi & Wright 2016:147). This study aimed to answer the following questions:

- What are the views of midwives regarding TB screening among HIV positive pregnant women?
- What are the challenges faced by midwives concerning TB screening among HIV positive pregnant women?

1.5 SIGNIFICANCE OF THE STUDY

Significance explains how the audiences may benefit from using or reading the study (Creswell & Creswell 2018:250). The researcher asserts the view that the findings of the study will provide information that may guide future programme improvements. The findings will also inform the public health discipline curriculum, regarding screening of TB among pregnant women who are HIV positive, and the development of skills required. It will also assist with awareness of screening for TB in women who are pregnant and HIV positive at the PHC level to reduce maternal mortality. The quality of services rendered to HIV/TB co-infected women will be improved.

1.6 DEFINITION OF KEY TERMS

The conceptual and operational definitions of this study are:

1.6.1 Human immunodeficiency virus (HIV) positive

Human immunodeficiency virus positive is a test result that shows a reaction to indicate the presence of HIV (WHO 2015a:15).

Human immunodeficiency virus positive in this study means a pregnant woman who tested positive for HIV.

1.6.2 Midwife

A midwife is a registered nurse/accoucheur who is qualified and competent to independently practice midwifery in the manner and level prescribed by the South African Nursing Council (SANC) (SA 2005: s30).

In this study, a midwife shall mean health professional who is registered as a midwife in terms of Nursing Act, 33 of 2005 and working in Kganya local area PHC clinics providing antenatal care to HIV-positive women.

1.6.3 Pregnant Woman

A woman who is carrying a developing fetus/offspring in her uterus. Pregnancy lasts for 40 weeks (Fraser, Cooper & Nolte 2010:1054).

Pregnant woman in this study refers to a woman who is carrying growing baby in her uterus.

1.6.4 Screening

TB screening in pregnant women during antenatal period means identification of active TB disease by using examinations, tests or other rapid procedures (SA 2014:13).

Screening in this study means the process where a pregnant woman is being asked several questions regarding the TB disease using a screening tool.

1.6.5 Tuberculosis

An airborne respiratory disease of the lungs caused by mycobacterium tuberculosis (SA 2014:08).

Tuberculosis in this study is a disease of the lungs that can be transmitted from the pregnant woman to the baby.

1.7 THEORETICAL FOUNDATION OF THE STUDY

Theories are sets of organised ideas meant to describe how a particular study was done, useful in the organisation of knowledge, and establishment of what is already known about the study topic (Brink et al. 2018:16). The research paradigm is the guiding philosophy regarding building and supporting the study through the following assumptions: ontology, epistemology, and methodology.

This study followed the constructivist/naturalistic paradigm as it is associated with qualitative research, and it is used to understand the meaning of experiences as attached by participants (Brink et al. 2018:19). The constructivist/naturalistic depends on the participant and researcher's interaction to understand the word from the participant perspective (Grant & Osanloo 2014:13).

In this context, the researcher sought to explore the challenges faced by midwives regarding screening of TB among pregnant women who are HIV positive in Kganya local area (PHC) clinics of Limpopo Province. The philosophical assumption of the constructivist/ naturalist paradigm about this study are discussed below:

1.7.1 Ontology

According to Al-Ababneh (2020:90), with ontological assumptions, the reality is subjective and established socially of which multiple realities as perceived by participants exist. The ontological assumption of this study was that many realities exist about challenges faced by midwives when screening TB among pregnant women who are HIV positive.

1.7.2 Epistemology

Epistemology relies on knowledge as it informs research in which researchers interact with participants, giving attention to the details of a situation (Al-Ababneh 2020:90). In the constructivist/naturalist paradigm, the assumption is that the researcher engages with the participants and that findings are the creation of a two-way flow of information (Polit & Beck 2012:13). The epistemological assumption in this study was that interaction between the researcher and participants during the collection of data will allow the researcher to provide meaning to data collected either verbally or nonverbally.

1.7.3 Methodology

Qualitative methodology is inductive, provides guidance on how to obtain knowledge from participants and in-depth interview is done to a small sample (Al-Ababneh 2020:90). The methodological assumption for this study was that a qualitative research study has the potential to assist with gathering of in-depth information regarding challenges that the participants come across as they screen TB to pregnant women who are HIV positive by making use of the semi-structured interview.

1.8 RESEARCH METHODOLOGY AND RESEARCH DESIGN

The methodology is the skilful ways that are used to conduct the study (McNiff & Whitehead 2011:34). This study followed a qualitative descriptive research design.

Qualitative research is used to study the understanding and experience of participants in which the focus of attention is on their point of view about TB screening in HIV pregnant women (Brink et al. 2018:104). In this study, the researcher gathered data which was analysed, meaning attached and came up with the description of the experiences to encourage a profound understanding (Burns & grove 2011:73). This method was suitable for the study as it answered the research question best.

1.8.1 Research Design

According to Kumar (2011:110), a research design is a master plan, programme and procedure of inquiry employed to answer the research questions and to direct how a study is to be completed. The research design espoused for the study, TB screening among

HIV-positive pregnant women in Limpopo Province, was a qualitative descriptive design. A thorough expansion of the design is discussed in chapter 3.

1.8.2 Research methods

The procedure that is used by the researcher for collection and analysis of data, as well as interpretation of research findings, are referred to as research methods (Creswell & Creswell 2018:250). The researcher used the following methods to conduct this study:

1.8.2.1 Study setting

The study setting is the place or venue which will be used for the study (Streubert & Carpenter 2011:27). The study took place in Kganya local area, which is one of the three local areas that form the Polokwane East sub-district under Capricorn District, Limpopo Province. Furthermore, Kganya local area has seven PHC clinics that formed part of the study. Primary health care clinics were suitable for the study as it is usually the place where basic antenatal service is offered. All the seven clinics of Kganya local area were sampled for the study, due to a limited number of professional nurses who met the selection criteria. The study setting for this study is discussed fully in chapter 3.

1.8.2.2 Target Population

The population is all the people or units with characteristics and qualities, which are the focus of the study (Brink et al. 2018:116). The population, which was targeted in this study, included all midwives who were working at PHC clinics in Kganya local area, Capricorn District, Limpopo Province. The number of all midwives working at Kganya local area at the time of the study was 42. Detailed discussion on population, inclusion and exclusion criteria are in chapter 3.

1.8.2.3 Sampling and sample

The strategies, which are used by the researcher to obtain a sample for a research study is called sampling (Grove et al. 2015:511). Furthermore, a sample is a segment obtained to represent the population in a study (Brink et al. 2018:120). Non-probability purposive sampling was used for this study. Purposive sampling assisted the researcher in obtaining information regarding TB screening from midwives working at Kganya local area clinics.

The selection of participants was done according to their experience, preparedness, and willingness to participate. Inclusion criteria of participants were aged above 18 years, five-year and above of midwifery experience working at PHC with pregnant women. All seven clinics from Kganya local area were sampled for the study, due to a limited number of midwives who met the selection criteria.

1.8.2.4 Sample size

Sample size, according to Polit and Beck (2014:286), is the number of participants selected for a particular research study. A total number of 10 participants were interviewed for this study. The sample size was determined by data saturation. Saturation of data occurs when new information is no more yielded during the further interview process (Grove et al. 2015:274). For this study, participants were interviewed until further interviews yielded no new information. More details regarding sampling methods and sizes are discussed in chapter 3.

1.8.3 Data collection

The collection of data explains the way of answering the research question, which also entails an explanation of how data was collected (Maree 2016:320).

The method used for data collection in this study was a semi-structured individual interview with probing to gather more information from participants. During the interview, field notes were taken, and an audio recorder was used to record after obtaining the participants' permission. The researcher tested the functionality of the audio recorder a day before the scheduled appointments. In addition, the contents of the interview guide were piloted to the clinics, which were not forming part of the study a week before the interviews. Chapter 3 discusses a collection of data in detail.

1.8.4 Data analysis

The process in which research data is grouped, reduced, and provided with meaning is referred to as data analysis (Burns & Grove 2011:535). In qualitative research, data is non-numerical. The researcher-analysed data using eight steps of Tesch's as explained (Creswell 2014:198). Themes, categories, and sub-categories emerged from data

analysis. More details about the data analysis procedure are discussed in chapter 3.

1.8.5 Trustworthiness

Rigour is aiming for the best in research, which means one must have direction, the ability to achieve thoroughness and perfection (Gray, Grove & Sutherland 2017:36). To make certain the findings of this study are accepted as true reflection, the researcher ensured rigour through the following principles: credibility, dependability, confirmability, transferability, which are discussed fully in chapter 3.

1.9 ETHICAL CONSIDERATIONS

Ethics in research specify that human rights should be protected throughout the research study (Burns & grove 2011:110). Ethical clearance to conduct the study was granted by the University of South Africa (UNISA), Limpopo Department of Health, Capricorn district and clinic managers. Further details regarding ethics are elaborated on in chapter three.

1.10 SCOPE OF THE STUDY

This study was limited to screening of TB among women who are HIV positive. The study took place at Kganya Local area PHC clinics under Polokwane East sub-district, Capricorn District, Limpopo Province of South Africa. The participants were midwives who were stationed at those clinics. The research was restricted to midwives who consented to partake in the study. Midwives who did not give consent to partake in the study did not form part of the study.

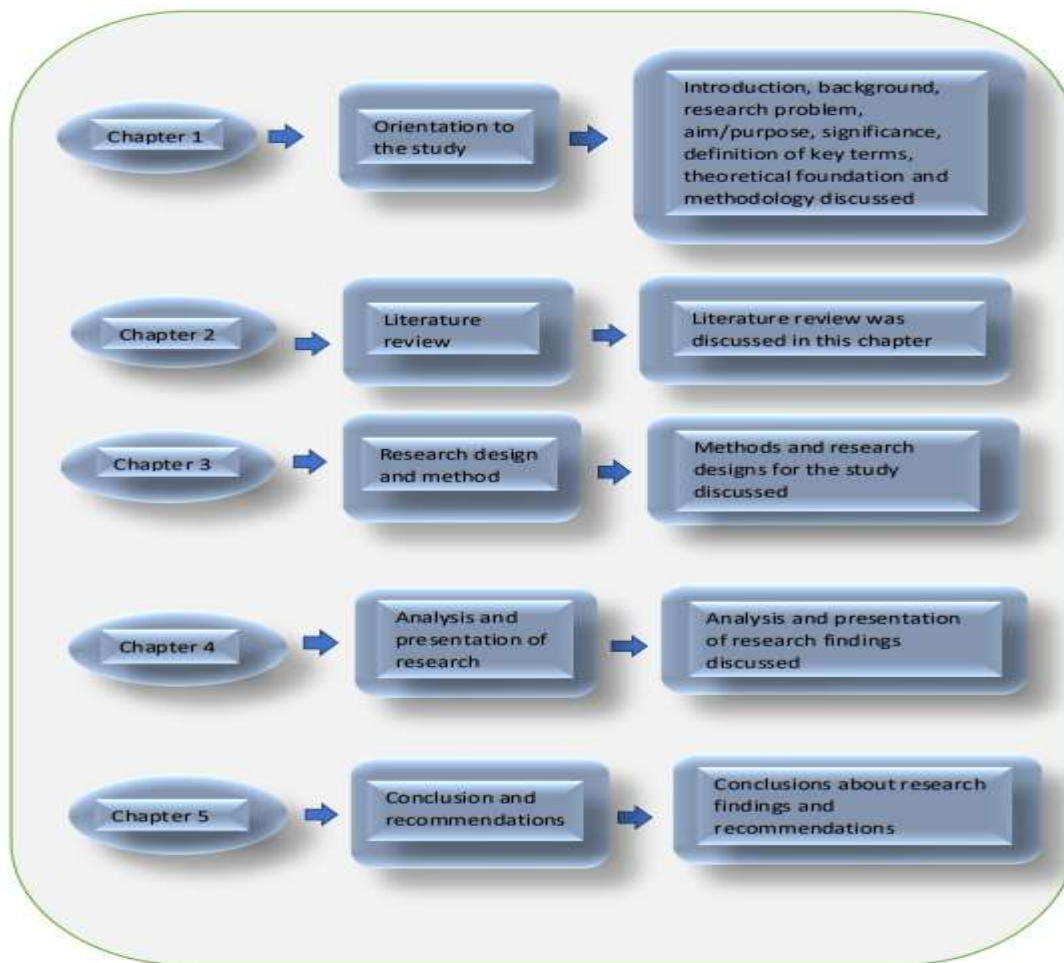


Figure 1.1 Structure of dissertation

1.11 SUMMARY

Introduction to the topic, TB screening among HIV positive pregnant women in Limpopo Province was done in this chapter. Discussion about the background information of the study was also provided. The objectives, purpose and research questions were also narrated. Furthermore, theoretical foundations, the definition of key terms, research methodology and design, ethical consideration and scope of the study were elaborated on. Literature review relevant to the study will be discussed in the next chapter.

CHAPTER 2

LITERATURE REVIEW

2.1 INTRODUCTION

The focus of this chapter is on the literature review. Studies related to screening of TB and HIV/TB co-infection in pregnancy were reviewed. Conducting of the literature review was done electronically and manually, in which key themes discussed in this chapter emerged. The key themes include the following: viewpoint of HIV/TB co-infection in pregnancy, the relationship between HIV and TB infections, HIV/TB co-infection in pregnancy, management of HIV/TB in pregnancy, Impact of HIV/TB infections on pregnancy, complications and screening of TB in pregnancy. Numerous studies related to the topic were consulted to put the study into context (Kumar 2011:112).

2.2 WHAT IS A LITERATURE REVIEW?

An academic document that communicates and incorporates the latest data with scholarly benefactions to a specific topic is referred to as a literature review (Galvin 2017:4). A literature review is further described by Yin (2011:57) as a systemic and direct approach to the identification, consultation of stored materials, and bibliographical management of independent studies.

2.2.1 The purpose of the literature review

Review of literature assists with the Identification of areas for future studies and location of the information about the topic (Taylor, Bogdan & Devault 2016: 124). With a literature review, the researcher can discover what is already known, not known, and put into context what is already known on the subject under study (Neuman 2014: 203). This research study was built on existing knowledge. The purpose for conducting a literature review in this study was to assist the researcher in setting the tone intended to discover the wider topic and to be informed of the existing knowledge about the research topic (Brink et al. 2018:59).

2.3 VIEWPOINT OF HIV/TB CO-INFECTION IN PREGNANCY

Tuberculosis continues to be the dominant source of death in persons diagnosed with HIV globally, WHO (2013:15b). According to WHO (2015b:2), a rated number of 1.2 million new HIV cases in 2015 were diagnosed with TB around the world. It is further stated by Obringer, Heald-Sargent and Hageman (2015:126), that every year 9 million TB cases are diagnosed, which makes it a global prevalent infection.

In sub-Saharan African (SSA) countries, Tuberculosis/ HIV co-infection is a major concern despite the effort done to control both pandemics (Adeizera, Abba & Okpapi 2014:11). According to Palombi and Moramarco (2018:12), HIV/TB co-infection during pregnancy poses a great health threat in the SSA countries claiming millions of lives every year. In Tanzania, mortality among HIV pregnant women who were co-infected with TB was 1.4 times higher than HIV-negative women in 2020 (Mollel, Todd, Mahande & Msuya 2020:5). However, Glaw, Williams, Soares, Magalhães, Gilks and Assefa (2019:7) indicated a decrease in co-infection of HIV/TB among women who are pregnant in SSA.

Screening of TB among antenatal women at PHC facilities should be strengthened by the integration of all antenatal care (ANC) programmes in high-burden areas (Bates, Ahmed, Kapata, Maeurer, Mwaba & Zumla 2014:126). Bates et al. (2014:126) further recommend that pregnant women from high epidemic areas should be provided with a facility where they can go for TB screening even if they did not come for ANC. In addition, Molina, Venkatesh, Schantz-Dunn, Meadows, Nour and Diouf (2016:1317), suggests that screening of TB should target women in countries like SA with a high prevalence of tuberculosis during prenatal. Furthermore, Bates, Ahmed, Chilukutu, Tembo, Cheelo, Sinyangwe, Kapata, Maeurer, O'Grady, Mwaba and Zumla (2013:1139) argued that high HIV/TB co-infection in SSA, calls for more proactive and rapid screening for pulmonary TB in primary health care facilities. The scarcity of literature that talks about integrated antenatal care with TB and HIV throughout pregnancy in SSA was also highlighted (Fowks et al. 2016:2).

In South Africa, NPRIs with TB being the most underlying disease are still the leading cause of maternal mortality (SA 2019:4). More still need to be done, regarding HIV/TB co-infection in pregnancy. According to Odayar et al.. (2018: 764), the infection of TB in

pregnancy remains high in SA, regardless of screenings done and the availability of treatment. South Africa followed by Nigeria is the most affected country in the SSA regions where HIV/TB co-infection is concerned (Adeizera et al. 2014:5). According to SA (2018:34), HIV/TB co-infection account for more than half of maternal deaths in SA, which occurs due non-pregnancy related infections.

Despite the screening of TB in pregnant women with HIV that are said to be taking place in PHC facilities, Limpopo is one of the provinces in SA, in which HIV/TB co-infection in pregnancy account for most of the maternal deaths (SA 2018:47). On that account, an increase in HIV/TB co-infection in pregnancy was noted in Limpopo province in the year 2013 (Limpopo Department of Health 2016/2017: 22). Hence, the researcher deemed it inevitable to investigate the challenges faced by midwives regarding screening of TB among pregnant women who are HIV positive in Limpopo Province.

2.4 THE RELATIONSHIP BETWEEN HIV AND TB

The presence of both HIV and TB in a person at the same time, in which TB can be latent or active is called HIV/TB co-infection (Kanabus 2017:1). The human immunodeficiency virus suppresses the pregnant woman 's immune system, making the woman more susceptible to developing active TB (Odendal 2013:2). Hence, the causative bacterium for TB is called mycobacterium tuberculosis. Therefore, HIV increases the chances for development and reactivation of latent TB to active TB in a pregnant woman (Odendal 2013:2). On the other hand, TB infection aggravates HIV to AIDS. Although both TB and HIV complement each other in the destruction of the immune system of the woman, one is bacterial, and the other is viral. Furthermore, both infections accelerate the deterioration of immunological functions. In other words, TB infection assists with the acceleration of HIV progression to AIDS (Bruchfield, Correia-Neves & Källenius 2015:3). Acquired immunodeficiency virus lower the body 's resistance to infections making it to be more susceptible to opportunistic infections such as TB (Oxford South African Dictionary 2006:13). The results are that when a pregnant woman is suffering from both HIV and TB there is an increased risk of death from TB (Odendal 2013:2). Both HIV and TB constitute the main burden of infectious diseases in resource-limited countries. In other words, people who are HIV positive, are most likely to develop TB than HIV-uninfected people

(Trinh, Nguyeni, Nguyeni, Nguyeni, Sintchenko & Marais 2015:172). The next sub-topic discusses the co-infection of HIV/TB in pregnancy.

2.5 CO-INFECTION OF HIV/TB IN PREGNANCY

Infection of both HIV and TB during pregnancy can drastically weaken the immune system of a woman and the unborn baby.

2.5.1 Vulnerability of HIV-positive women to TB

According to Centers for Disease Control and Prevention (CDC 2016:2), untreated latent TB in an HIV positive pregnant woman will probably develop into active TB than in an HIV negative woman. In other words, there is a high risk for pregnant women with HIV to develop active TB resulting from latent TB rejuvenation (Fernandez, Salami, Davis, Mbah, Kazeem, Ash, Babino, Carter, Salami, Spooner, Olaleye & Salihu 2018:6). Due to severe immune suppression as a result of HIV infection, and TB drug-resistant, a pregnant woman who is co-infected with TB is also prone to treatment relapse which will lead to poor obstetric outcomes (Fernandez et al. 2018:6). Furthermore, there is high maternal mortality resulting from TB and HIV infection during pregnancy and the postpartum period (Bates et al. 2014: 125).

2.5.2 Mother to child transmission of HIV/TB in pregnancy

Vertical transmission of HIV/TB takes place when a neonate gets an infection from the mother either during, before and post-delivery (Shiel 2019:3). It is further explained by Mital, Das and Faradi (2014:35), as trans-placental transmission through umbilical veins to the foetal liver and lungs. Transmission of HIV/TB from mother to child occurs in different ways, which is before the infant is born, in the uterus, through the umbilical cord or by swallowing infected fluids.

According to Gupta (2009: 5), there are different ways in which vertical transmission can occur.

- Transmission may occur in utero, in which there is haematogenous dissemination through the membranous duct connecting the fetus with the placenta or through swallowing of amniotic fluid which is contaminated with TB or HIV.
- Transmission may also be through ingestion of infected fluid/genital secretions.
- Lastly, HIV/TB may be ingested in the form of droplets from the infected breast milk

According to Gupta (2009:12), about 15% of neonates from South African co-infected mothers, had TB bacilli in the first 3 weeks of life.

2.5.3 Clinical manifestation of HIV/TB in pregnancy

Tuberculosis is the most important opportunistic infection associated with HIV. As such an estimation is that an HIV infected woman is six times more of acquiring TB than an HIV negative woman (Basavarajaiah & Murthy 2019:190). Due to difficulties in both diagnosis and treatment of TB in co-infected women, most women test negative for sputum smear and end up with undiagnosed and lack of treatment resulting in death (Tiewsoh, Antony & Bloor 2020: 1162). Scott, da Silva, Boehme, Stevens and Gilpin (2017: 3) attest to that by stating the difficulty of diagnosing TB in a pregnant woman who is infected with HIV, more especially those with atypical, non-specific clinical presentation and often smear-negative results. The most common presenting symptom in the study by Tiewsoh et al. (2020:1164) is fever. In another study by Gannepalli, Krishna and Anjum (2020:23), oral lesions depending on the type of TB infection in HIV patients were also found. Functional adrenal insufficiency is also associated with HIV/TB co-infection (Naggirinya, Majugira, Meya, Biraro, Mupere, Worodria & Manabe 2020.16).

The main symptoms as explained by WHO (2015b:54) in the four part-symptom screens, which may also mimic the signs of pregnancy are:

- Current cough, which may last for two weeks, the cough, may contain bloody sputum.
- Fever.
- Night sweats.
- Unexplained weight loss.

2.5.4 The complications of TB in pregnancy

Tuberculosis in pregnancy may result in severe complications to the mother, and the neonate.

2.5.4.1 *The pregnant woman*

The presence of TB in HIV-infected women pose some serious complications during pregnancy. Pleural effusion, which is secondary to mycobacterium tuberculosis, is one of the complications (Starke & Crus 2011: 490). Another complication, which may result, is tuberculosis meningitis, which affects the brain and disseminated TB, which affects many parts of the body. Furthermore, spontaneous, and difficult labour are some of the complications of HIV/TB co-infection in pregnancy (Wasserman & Meitjies 2014:891). According to EL-Messidi et al. (2016: 56), TB in pregnancy is associated with respiratory complications, mortality, and postpartum morbidity.

Human immunodeficiency virus/TB co-infection is further associated with poor outcomes in a pregnant woman which is a major cause of maternal deaths (Odayar et al. 2018:760). The high number of maternal deaths remains a thorn in the South African Health Department. Dennis, Hao, Tamambang, Roshan, Gatlin, Bghigh, Diallo, Spooner, Salemi, Olaleye and Khan (2018:09), highlight that the most important cause of morbidity and deaths in pregnant women is TB. Additionally, a hiccup is also revealed as one of the complications of HIV/TB co-infection in pregnancy, which may challenge the treatment ability and outcomes (Stoltz 2015:15). Human immunodeficiency virus/TB co-infection in pregnancy seem to bear devastating effects. The study by Yadav, Sharma, Kachawa, Kulshresrtha, Mahey, Kumari and Kriplani (2019: 160) revealed increased incidences of oligohydramnios and preterm rapture of membranes as an outcome of TB in pregnancy. On the other hand, the possibility of drug-resistant TB which may lead to peripheral neuropathy seems to be a threat to pregnant women (Saroaha, Dvyani Sigh & Dhamija 2019:20). Moreover, Annamraju and Mackillop (2017:238), discovered breathlessness as another complication, which is associated with TB in a pregnant woman. Tuberculosis disease in pregnancy is further associated with pre-eclampsia and vaginal bleeding (Repossi & Bothamley 2015:64).

2.5.4.2 The fetus

Tuberculosis infection during pregnancy increases the risk of perinatal morbidity and mortality (Sugarman et al 2014:710). In addition, HIV/TB co-infection also cause anaemia which put the baby at risk for low birth weight, preterm birth, foetal distress, and perinatal death (WHO 2018:14). According to WHO (2018:14), HIV/TB co-infection among mothers is further associated with increased perinatal mortality, premature babies, and low birthweight. Furthermore, other complications due to oligohydramnios and preterm rupture of membranes are also seen in a pregnant woman who is suffering from both HIV and TB infections, which increase the chances for infant mortality (Baquero-Artigao, Mallado, Pena, Rosal Rabes, Nonguera Julian, Goncemellgren, Fernandez-Miranda and Navarro Gomez 2015: 285).

2.5.4.3 Congenital tuberculosis

Untreated TB places an unborn child at higher risk for vertical transmission of HIV (WHO 2013:124). Congenital tuberculosis is the result of in-utero infection of the fetus with mycobacterium tuberculosis, which can be acquired either in utero or during delivery (Thwaites 2014:470). (Saramba & Zhao 2016: 6), concur by stating that TB can be passed from a mother to a neonate in utero, during labour or after birth. Congenital TB seems to be a rare complication; however, untreated maternal TB is harmful to the neonate. Saramba and Zhao (2016: 6) further state septicaemia as a major complication of TB which can lead to neonatal death. Multiple births defect as a result of congenital TB are also seen in untreated TB from a pregnant woman who is HIV positive (Bates, et al 2014:125). From studies consulted regarding congenital TB, co-infection of HIV/TB disease in pregnancy places a woman and the fetus at risk, therefore early diagnosis and prompt management should be instituted.

2.6 MANAGEMENT OF HIV/TB IN PREGNANCY

According to Khan, Minion, Pai, Royce, Burman, Harries and Menzies (2010: 1290), HIV patient with TB co-infection is at a higher risk for treatment failure, relapse, and death. Thus, early diagnosis and prompt management of HIV/TB co-infection in pregnancy is important to save the life of the mother and the fetus (Awua-Boateng, Mohamed, Aglanu, Acheampong, Amuasi, Bonsu, Phillips & Owusu-Dabo 2019:271).

In some other instances, clinicians initiate TB treatment to HIV-positive patients based on clinical judgement as a testing process is a low and delaying treatment (Grant, Charalambous, Tlali, Karat, Dorman, Hoffmann, Johnson, Vassali, Churchyard & Fielding 2020:28). Moreover, pregnant women initiated with TB should be monitored closely for the first eight weeks for vital signs and mid-upper arm circumference as death occurs mostly during that period (Bhargava & Bhargava 2020:6). Furthermore, initiation of isoniazid (INH) for 12 months should be done for all HIV positive pregnant women who tested negative for TB to prevent TB infection (SA 2019:124). Isoniazid treatment has been found to deliver more health benefits to HIV positive pregnant women if taken for 6 months, which can assist with reduction of death and severe illness (Letang, Ellis, Naidoo, Casas, Sánchez, Hassan-Moosa, Creswell, Miró & Carcia- Basteiro 2020:4). Isoniazid is a TB preventive drug therapy that is usually given to HIV pregnant women who tested negative for TB. According to United States Agency for International Development (USAID 2017:25), a woman who is diagnosed with TB while on ante retro viral treatment (ART) should remain on the same ART treatment except when they are on Nevirapine. World Health Organisation (2003:81), further explain that when the diagnosis of TB and HIV are made at the same time, the priority is to start the woman with TB treatment for two weeks to prevent TB-IRIS (immune reconstitution inflammatory syndrome). However, both TB and HIV treatment can be started simultaneously with careful management (SA 2019:125). The next sub-topic will be on the impact which HIV/TB co-infection has on pregnancy.

2.7 THE IMPACT OF HIV/TB CO-INFECTION ON PREGNANCY

Tuberculosis in pregnancy poses a high risk of morbidity to both the woman and the fetus if not diagnosed and treated earlier (Miele, Bamrah Moris & Tepper 2020:1450). Human immunodeficiency virus/TB co-infection is further associated with poor maternal and perinatal outcomes (Bekker, Schaaf, Drapper, Kriel & Hesselting 2016:15). In addition, there is a high number of mortalities during pregnancy and postpartum period due to co-infection of HIV and TB (Bates et al 2014: 125). The study by LaCourse, Cranmer, Matemo, Kinuthia, Richardson, Stewart and Horne (2016:9) in Kenya, further revealed a high burden of undiagnosed PTB (pulmonary tuberculosis) in 2014 among pregnant women who are HIV infected. The Nigerian study by Atiola, Obadara, Komolafe, Odutolu,

Olomu and Adenegua (2018:830), state that HIV/TB co-infection has a shocking impact on pregnancy.

South Africa is ranked as one of the high TB burden countries (Atiola et al 2018:826). A high burden of HIV/TB co-infection in pregnancy is further revealed in SA by Martin and Black (2012:183). Another impact was revealed in SA by Gounder, Wada, Kensler, Violari, McIntyre, Chaison and Martinson (2011:80), who stated that the prevalence of TB infection in HIV positive women was at a higher number of 808 per 100 000. The next sub-topic will discuss TB screening in pregnancy.

2.8 SCREENING OF TB IN PREGNANCY

Early detection of TB is the main objective of screening to inform immediate infection control actions and to reduce transmission risk (WHO 2013:29). Zinatsa, Engelbrecht, van Rensburg and Kigozi (2018:16) recommend that to improve TB infection in SA, health care workers and patients should be educated on TB. According to USAID (2017:25), TB screening should be offered to all pregnant women who are HIV positive at every antenatal care visit. On the other hand, SA (2014:11), states that inadequate or lack of basic TB screening of women during ANC is usually a health care provider avoidable factor regarding maternal mortality in SA.

2.8.1 The benefits of TB screening in pregnancy

Tuberculosis screening according to literature showed to have benefits to both the pregnant woman and the baby.

2.8.1.1 *To the pregnant woman*

Diagnosis of TB in pregnancy is important to avoid adverse outcomes to the mother and the child (Rendell, Batjargal, Jadambaa & Dobler 2016:1619). Sobhy, Babiker, Zamora, Khan and Kunst (2016:730) (Yadav et al 2019:158), affirm the findings by Rendell et al by revealing that significant maternal deaths may be prevented through early diagnosis of TB during pregnancy. Furthermore, screening of TB during antenatal care assist with the decisions on whether to initiate a woman on isoniazid preventive therapy or not

(Broughton, Haumba, Calnan, Ginindsa, Jeffries, Maphalala, Mazibuko, Mirara, Modi, Munyaradzi, Preko & Simelani 2017:5).

According to a suggestion by Cranmer, Langat, Ronen, McGrath, LaCourse, Pintyre, Odeny, Singa, Katana, Nganaga and Stewart (2017:256) TB screening should be integrated with (PMTCT) program to improve maternal and neonatal outcomes.

2.8.1.2 *To the baby*

According to Reuter, Seddon, Marais and Furin (2020:18) 20 million children are exposed to TB each year and that makes TB a global paediatric crisis. Adhikari (2009:239) also added that early detection of TB in pregnancy can assist with the following to the baby:

- Neonatal TB can be prevented.
- Low birth weight can be reduced.
- Pre-term labour can be avoided.
- Congenital tuberculosis can be avoided.
- Abortions can be avoided.
- Early infant mortality can also be avoided.

Screening of TB during the antenatal period is crucial to saving the life of the unborn baby.

2.8.2 Tuberculosis screening guidelines

Guidelines are intended to guide with the management of HIV/TB coinfection in the whole population and pregnant women as well (SA 2014:4)

Currently, the END-TB strategy is used, and it includes (SDGs) target 3.3 which indicate the ending of the TB epidemic by the year 2030 (WHO 2019:2). The following were suggested under the END-TB strategy:

- All pregnant women should be screened for TB continuously using a four-part symptom screen
- Offers INH prevention therapy to all HIV positive women where active TB is ruled out.

- Ensuring of TB disease management in health facilities: The transmission of TB can easily occur where there are large crowd like in the clinics, which offers PHC services.

2.8.3 The South African national guidelines

South African guidelines emphasise the importance of TB screening during the antenatal period since TB is regarded as the leading cause of maternal death among women who are infected with HIV (SA 2014:61) (SA 2020:4). The national department of health in South Africa, SA (2014:61), further states that the symptomatic screening tool should be used to screen TB to all pregnant women at each visit. In addition, SA (2014:61), state that women who are symptomatic for TB should be collected sputum and those who are symptomatic but not coughing should be referred for radiology. Moreover, the new PMTC guideline state that every woman who comes for antenatal services should be screened for TB regardless of their HIV status (SA 2019:7). The guideline further recommends that all HIV positive women who tested negative for TB should be initiated with INH prophylaxis. Maternal guideline of SA in addition, emphasises screening of all pregnant women at antenatal services with early detection and starting of TB treatment to prevent complications (SA 2015:143).

2.8.4 Tuberculosis screening and testing methods

According to WHO (2021:2), every pregnant woman regardless of their HIV status should be screened routinely for TB using a four-part symptom screen. The national department of health SA (2016:88) continues by stating that all HIV positive pregnant women who are symptomatic should be tested for gene-xpert to rule out active TB.

Tuberculosis symptoms screening includes asking questions to the patient, for example, bloody cough, night sweats, loss of appetite and fever (WHO 2013:44). Moreover, integration of WHO four-part symptom-based intensified case finding can enhance early detection of PTB in pregnant women (Gebreegziarbir et al 2017:46). However, Odendal (2021) argues that in terms of diagnosing TB in HIV infected people, the symptom screen is not performing well. World Health Organisation (2013:44), further recommend the following screening methods: chest radiography to check abnormalities suggestive of TB, followed by sputum microscopy, gene-xpert and clinical diagnosis if symptomatic. The

idea of using the gene-xpert is further supported by Turnbull, Kancheya, Harris, Topp, Henostroza and Reld (2012:3) by stating that gene-xpert can be reliable and advantageous in terms of its sensitivity, turnaround time and simplicity.

Mantoux tuberculin skin test is one of the tests which is regarded as the primary screening method for TB (Herchline 2020:2). This test is called a tuberculin skin test (TST) in which a harmless fluid is placed under the skin inside of the arm (CDC 2016:3). According to de Lima Corvino, Shrestha and Kosmin (2017:11), the use of TST is also recommended by the United State guidelines.

Figure 2.1 explain symptomatic screening, followed by sputum smear microscopy. Further diagnostic tests like chest X-ray will be considered if there is a clinical suspicion of TB infection with negative sputum results.

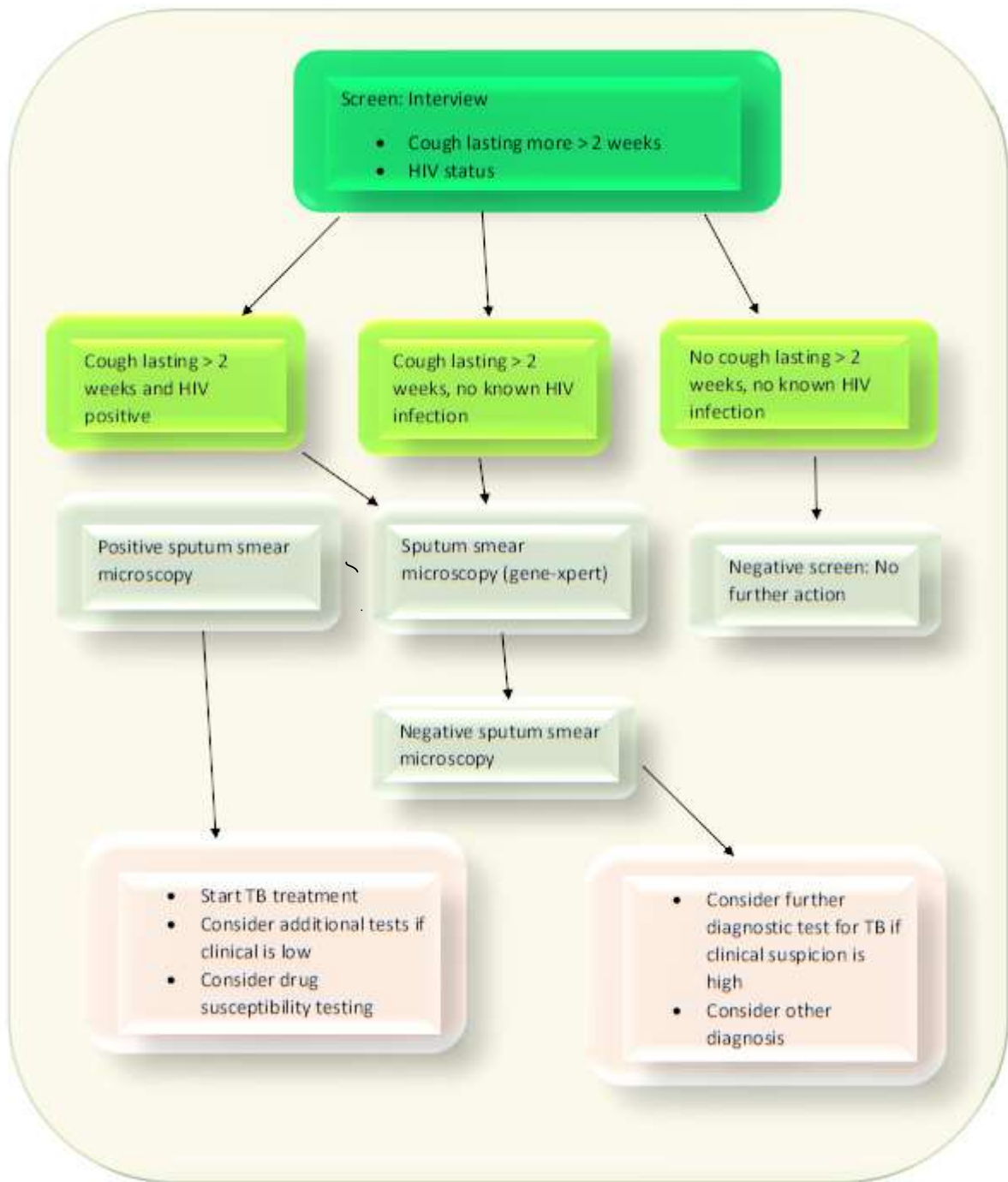


Figure 2.1: TB testing algorithm - Adopted from WHO 2013 page 115

2.8.5 The challenges concerning TB screening

Several challenges towards TB screening were noted and discussed in this paragraph. According to Lacourse et al (2016:224), the present tools for screening and diagnosis of TB function badly in a pregnant woman who is HIV-infected. The way screening is organised and implemented as stated by Carillon and Desgrèes (2017:160), is linked to obstacles to tuberculosis screening. Other challenges stated by Sulis, Gnanou, Roggi, Konseimbo, Giorgetti, Castelli, and Matteelli (2016:1307) is that TB diagnostic practices during antenatal care services are limited. Additional methods to strengthen productive TB case identification in pregnant women with HIV are suggested (Repossi & Bothamley 2015:64). It is further indicated by Repossi and Bothamley (2015:64) that sputum examination is an important investigation that can be done to rule out TB in a pregnant woman. However, Heidebrecht, Podewils, Pym, Cohen, Mthiyane and Wilson (2015:7), revealed that gene-xpert is found to be effective in the diagnosis of TB and should be considered as a primary screening tool.

2.9 SUMMARY

In this chapter, we reviewed the literature related to HIV/TB co-infection in pregnancy. Topics that emerged during the literature review included viewpoint of HIV/TB co-infection in pregnancy, the relationship between HIV and TB, Co-infection of HIV/TB in pregnancy, management of HIV/TB in pregnancy, the impact HIV/TB co-infection has on pregnancy and screening of TB in pregnancy. The following chapter discusses research design and methodology, data collection, trustworthiness, and ethical considerations. The literature review focused on the studies which were conducted globally, in SSA and SA.

CHAPTER 3

RESEARCH DESIGN AND RESEARCH METHOD

3.1 INTRODUCTION

In chapter 2, we reviewed literature related to HIV/TB co-infection in pregnancy. Research methodologies provide direction on how the study was conducted. The methodology used to conduct this study is discussed in this chapter, and include study design, population, sampling, trustworthiness, and ethics consideration followed. The study was done to explore the views and challenges faced by midwives concerning screening of TB among HIV positive pregnant women.

3.2 RESEARCH SETTING

The setting is an area in which the research study takes place (Polit & Beck 2012:742). Moreover, a setting should be natural to those being studied for example places of work or home (Polit & Beck 2012:742). Limpopo Province is made up of five districts namely, Vhembe, Mopani, Capricorn, Lepelle Nkumpi and Waterberg. The study was conducted at Kganya local area, which falls under Capricorn district. Kganya local area consist of seven clinics, which render both PHC and maternity health services. The distance between the clinics ranged from 10 to 30 kilometres apart. A total of 42 midwives were working at these clinics. Ten out of the population of 42 midwives formed part of the study as outlined in Table 3.1. Each month, on average, sixty-seven pregnant women were seen in the Kganya area, which was also plagued by high rates of maternal mortality due to TB amongst HIV positive women.

Table 3.1 Kganya local area PHC clinics and total number of midwives

Local area	Clinic name	Total number of midwives	Total number interviewed
Kganya local area	Clinic A	05	01
	Clinic B	06	02
	Clinic C	09	02
	Clinic D	05	01
	Clinic E	06	02
	Clinic F	06	01
	Clinic G	05	01
	TOTAL	42	10

3.3 RESEARCH DESIGN

The strategy which employs well defined methodological traditions of enquiry to investigate a human problem is called a research design (Creswell 2014:120). The researcher 's problem in this context was a high number of maternal deaths due to TB in HIV positive pregnant women as a non-direct cause, which can be prevented with screening during antenatal care. It was envisaged that the chosen research design will assist with answering the study questions below:

- What are the views of midwives regarding TB screening among HIV positive pregnant women?
- What are the challenges faced by midwives regarding TB screening among HIV positive pregnant women?

3.3.1 Qualitative research approach

The approach which was followed to conduct this study was the qualitative descriptive approach. Qualitative research is a well-structured strategy utilised to understand human health, practices, health behaviour and health services (Green & Thorogood 2018:10). It is further described by Parahoo (2014:50) as experiences from the participants' belief in the circumstances they find themselves in. In this study, the words of the participants were analysed, meaning found, experiences described, to promote profound understanding (Grove et al 2015:67). The researcher saw the necessity to explore challenges faced by participants as they offer TB screening services to pregnant women who are HIV positive.

3.3.2 Characteristics of qualitative research approach

Qualitative research works from specific observations to broader generalisations, which is inductive (Ellis 2010:9). According to Parahoo (2014:57), the inductive approach is used during an interview as a characteristic of the qualitative approach to observe and listen to participants without interference. Thus, theories and ideas are generated from observations. The researcher was unaware of the results when conducting interviews, and the collected data led to new ideas. Qualitative research design is adjustable and allows the adjustment of new information during the process of data collection (Polit &

Beck 2012:534). When collecting data, attentiveness was used to understand participants 'point of view regarding TB screening in HIV positive pregnant women (Parahoo 2014:56). Polit and Beck (2014:393), further state that qualitative research involves using multiple data collection methods called triangulation to make certain that the results are valid.

The approach allowed the researcher to personally interview participants and take field notes during data collection. The notes which were jotted down by the researcher during an interview are called field notes (Phillippi & Lauderdale 2017:332). Flexible methods which resembled everyday conversations were used in this approach, meaning that data was collected in the setting of everyday life, which in this case is the work/home of the midwives as digital methods were used due to COVID-19 regulations (Harding 2013:8). In qualitative research, knowledge is generated by the participants, whereas the investigator seeks to comprehend the subjective significance the participants attach to their situation (Saks & Allsop 2013:27). As a result of this study, the researcher gained an understanding of the challenges associated with TB screening among pregnant women with HIV. Furthermore, Creswell (2013:80) explain that data saturation guides the collection of data in qualitative research, not sample size. Data analysis is an ongoing process in qualitative research, in a way of guiding the researcher when new information is not yielded by further interviews (Polit & Beck 2012:487). Qualitative research also enabled interaction between the participants and the researcher during the collection of data (Moule & Goodman 2014:175).

3.3.3 The benefits and rationale for using qualitative research qualitative research

Qualitative research was used as it involves collecting data in a setting of everyday life (Saks & Allsop 2013:27). In the Kganya local area (PHC) clinics of Limpopo Province, the purpose of the study was to examine midwives' views on TB screening among HIV positive pregnant women. The design allowed personal involvement in the private world of participants (Parahoo 2014:59). Their private world in this context was their work/homes as digital methods were used to collect data due to COVID-19 regulations. The researcher became actively involved as the primary data collection instrument (Streubert & Carpenter 2011:22).

3.3.4 Descriptive design

These studies are used where additional data is needed in a certain field about attributes through the provision of an image on the phenomenon on specific circumstances as it naturally happens (Brink et al 2018:96). Furthermore, the descriptive design provides a precise picture of the attributes of a specific person or group in actual life situation; research that is carried out to locate new interpretations, describe what prevails, determine the prevalence with which something takes place and classify data (Grove et al 2015:502).

The researcher chose this design as it assisted with interviewing participants regarding their views about TB screening among HIV positive pregnant women to identify and describe the new meaning and to discover their practices. As a result of the design, rich data was collected during the interview. The description of challenges faced by midwives as they provide TB screening services to pregnant women allowed the researcher to gain insight to establish their views regarding the topic.

3.4 RESEARCH METHOD

Application of systematic strategies which are used to shape research study in terms of data gathering and analysis that corresponds to the relevance of the research question is called a research method (Polit & Beck 2012: 741). Study methods that assisted with answering the research question for this study are discussed below:

3.4.1 Sampling

According to Grove et al (2015:511), sampling is the action plan which is followed when selecting a sample for a research study, it can either include probability or nonprobability sampling.

3.4.1.1 Population

According to Grove et al (2015:503), the entire people with attributes and qualities on which the study focus is referred to as a population. The population for the current study included all midwives who were currently working at Kganya local area clinics, Capricorn District, Limpopo Province. Kganya local area consists of seven clinics. The population

was distributed as follows: clinic A has 05 midwives, clinic B has 06 midwives, clinic C has 09 midwives, clinic D has 05 midwives, clinic E has 06 midwives, clinic F has 06 midwives and clinic G has 05 midwives. There were 42 midwives working in the Kganya locality at the time the study was conducted.

3.4.1.2 *Sampling*

The strategy, which was used to select participants in this study, was nonprobability purposive sampling. With this sampling method, participants are selected intentionally based on distinct characteristics to represent a sample (Mishra & Alok 2011:9). Selection of a sample using nonprobability purposive sampling technique is done with special attention given to specific qualities from the participants which will answer the research question best (Polit & Beck 2012:517). Participants were chosen intentionally since they worked at PHC facilities that treated HIV-positive pregnant women. The study explored the perspectives and challenges faced by midwives providing TB screenings to HIV-positive pregnant women. By following the said strategy, the researcher was able to conduct interviews with more knowledgeable participants regarding screening of TB to pregnant women who are HIV positive from Kganya local area, Capricorn District, Limpopo Province (Tappen 2016:130). Thus, both the nonprobability sampling method and the participants were suitable for the study.

3.4.1.3 *Ethical issues related to sampling*

Throughout the investigations, the researcher was guided by ethics in making choices and remained liable for maintaining humanity among participants (Norwood 2010:69). Permission in the form of ethical approval was acquired from the following, UNISA and Limpopo Department of Health. Permission to conduct the study was also accorded by Capricorn District and clinics managers. The participants were recruited individually via telephone and their rights were explained. The participants were provided with research information, an information leaflet and informed consent were obtained from all who volunteered to partake in the research (see annexure G and H).

3.4.1.4 Sample

Sample according to Fink (2019:84), is a portion of participants, extracted from the whole population with specific attributes and qualities required for the study. For the purposes of this study, semi-structured interviews were used to collect data, as saturation of data was a determinant of sample size. The study has reached data saturation when further interviews yielded no new information (Grove et al 2015:274). During the interview process, special attention was paid to the quality of the data collected. Thus, the collection of data continued to a point when new information was not produced with a further interview. The total number of participants who were interviewed for this study was 10.

3.4.1.4.1 Eligibility criteria

The list of attributes that are necessary for inclusion or exclusion in the targeted population is called eligibility criteria (Burns & Grove: 2011:548). The inclusion and exclusion criterion for this study was:

Inclusion

- Midwives with five years and more experience, working with HIV positive pregnant women at Kganya local area.
- Midwives who gave consent and were available to participate in the study.

Exclusion

- Midwives with work experience of fewer than 5 years working at Kganya local area.
- Midwives who did not give consent for participation.

3.4.2 Data collection

Several indivisible events which focus on the collection of perfect data intending to answer the research question is called data collection (Creswell 2013:147). Data collection in this study produced enormous data through digital platforms like zoom, teams, and duo (Sutton & Austin 2015:227). Due to COVID-19 (corona virus disease 2019) regulations face to face contact was not allowed at the time of data collection. Using digital tools such as zoom and Microsoft teams meetings, the study was conducted at the participants' workplaces and homes. Digital platforms assisted the researcher to collect a generous

amount of information as the participants were able to set their own time for the interview. During data collection, the researcher was able to generate large volumes of audio-recorded data and field notes which assisted with an understanding of the challenges which are faced by midwives during the screening of TB among pregnant women who are HIV positive.

3.4.2.1 *Data collection approach and method*

An interview is a method that was used for the collection of data in this study. An interview is a planned dialogue between the researcher and the participant, in which the participants provide the researcher with answers to research questions (Ellis 2010:35). The interview assisted the researcher to gather in-depth information from the participants. As they screen pregnant women who are HIV positive for TB, the participants related to the challenges they face. The researcher was also, able to probe and modify questions throughout the interview to allow rich data to be gathered (Ellis 2010:36).

According to Tappen (2016:249), there are three types of interviews which are structured, unstructured, and semi-structured. The structured interviews are highly structured and make use of predetermined questions. The interviews which are guided by the response of the participants called unstructured interviews. Lastly, there is semi-structured interview which makes use of a fixed set of questions without fixed answers (Burns & Grove 2011:84). The interview method followed by the researcher to collect data was semi-structured interview. The method allowed probing for further information which assisted the researcher with collection of rich data (Burns & Grove 2011:84).

3.4.2.2 *Development and testing of the data collection instrument*

Three main open-ended questions with sub-questions were contained in the interview guide. A pilot study to test the feasibility of the instrument was done a week before the actual data collection began. The testing was done on two participants from another local area who was not sampled for the research study.

3.4.2.3 *Characteristics of the data collection instrument*

Semi-structured interview was used for this study. When using semi-structured interviews, the researcher makes use of several pre-determined questions which allows probing for further information (Brink et al 2012:158). Furthermore, a semi-structured interview allowed the use of close-ended and open-ended questions to obtain rich data on the participants' point of view regarding screening of TB among pregnant women who HIV are positive with a guide from pre-determined questions (Brink, van der Walt & Van Rensburg 2012:158). A semi-structured interview was more flexible in that the researcher was able to obtain important information about the screening of TB among women who are HIV positive in Limpopo Province, from participants (Ellis 2010: 37). Moreover, the semi-structured approach also assisted the researcher with the formulation of a list of possible answers to discover new aspects of the problem (Bless, Higson-Smith & Sithole 2013:197). Rich data was provided using semi-structured interviews as participants talked freely about the issues and challenges, they often come across as they screen TB among HIV positive pregnant women (Corbin & Strauss 2015:38). The homes and the work of participants offered a real-world and naturalistic setting which is advocated by phenomenologists for exploring participants' lived experiences (De Vos, Strydom & Fouchè 2011:316).

3.4.2.4 *Data collection process*

Approval was accorded by the University of South Africa Ethics Review Committee, Limpopo DoH, and the clinic managers to conduct the study. The participants were recruited individually through telephones. The contact details of participants were provided by the clinic managers. During the recruitment process, the following details of the research study were thoroughly explained to the participant by the researcher, the study title, objectives, purpose, and the voluntary nature of participation. The participants who had five years and above of experience working at PHC with pregnant women who were positive for HIV, available, willing, signed an informed concern form to participate in the study. Research information leaflets and consent forms were emailed to the participant before the date of the interview. The consent forms were signed by the participants in the presence of the witnesses, sealed in an envelope, and handed to the Sub-District driver for delivery to the researcher.

The researcher secured an appointment for dates, times suitable and convenient for the participants. The time, place and method differed per individual participants. Data collection methods ranged from duo, zoom and teams. The digital interview methods were used as face-to-face interviews were prohibited due to COVID-19 regulations. Regardless of the method chosen all participants permitted the interview to be recorded. Additionally, the contents of the interview guide were studied before each interview.

The researcher recorded the interview per participants' permission. Personal information such as names, addresses and emails were not collected. The individual responses were not at any point linked with participants' identities. Participants' answers were given pseudonyms and were referred to like that in all forms of reporting and publications. The participants were referred to as participant 1 (P1) to participant 10 (P10).

3.4.2.5 *Ethical considerations related to data collection*

According to (Norwood 2010:69), ethical considerations guide decision-making and direct accountability of the research study. Ethical principles were adhered to, throughout the research process.

3.4.2.5.1 *Ethical clearance*

Approval to conduct the research was acquired from the following committees, UNISA and Limpopo Department of Health. Further approval was also accorded by Capricorn District and clinics managers (see annexure A, D and E).

The participants were provided with research information, an information leaflet and informed consent were obtained from all who volunteered to partake in the research (see annexure G and H).

3.4.2.5.2 *Ethical principles*

The following ethical principles were followed:

- Autonomy

Every individual has a right to decide independently and with self-determination (Brink et

al 2018:29). The choices made by the participant on whether to participate in the study or not were supported without victimisation. Researchers allowed participants to withdraw from the study without penalty if they did not want to take part. Verbal information about the study, participant information leaflets, and what is expected from participants were issued to the participants before the study. The decision of the participants on whether to participate or not was respected without discrimination.

- Beneficence

The principle of beneficence explains that the rights of the participant should be respected during a research study, and include being protected from harm and discomfort, whether is physically, legally, psychologically, or socially (Brink et al 2018:29). Information regarding all the procedures which was followed during data collection was made transparent to the participants about the methods, voluntary nature, and the settings to allow them to decide whether to partake in the study or not. The participants were further advised that they could only answer questions they are comfortable with. The participants were also advised to pull out of the study at any point in time, should they feel like doing so without any fear of punishment. The researcher assured the participants that the information provided will remain confidential and will be stored in a secure place where unauthorized people do not have access it (Polit & Beck 2017:720). The principle was adhered to by avoiding using the participants' names.

- Justice

Selection of participants in an honest and same manner for involvement in the investigation is called justice (Brink et al 2018:30). The participants who qualified to participate in the study, had an equal chance to take part, thus participant selection was done solely on the research attributes. There was no personal relationship between the participants and the researcher, as such, there was no room for manipulation, coercion, and exploitation of participants.

Attached to this research proposal is the ethical compliance certificate from UNISA, request and permission request letters from the Limpopo Department of Health, Capricorn District. Also attached is a participant information pamphlet and informed consent form.

3.4.2.5.3 *Participant information*

The participants were first recruited telephonically. The researcher explained the study details, including purpose and objectives. Those who were willing to participate were issued with a research information leaflet. Lastly, informed consent was obtained from all who volunteered to partake in the research (see annexure H).

3.4.2.5.4 *Informed consent*

Written informed consent was acquired from all participants who were willing to participate in the study, as stated in the UNISA study guide (RSC2601 2010:112). Consent forms and information pamphlets were given to all prospective participants and were signed before the interview (see annexure G and H). When obtaining consent, the participants were supplied with comprehensive and clear information regarding the study purpose, participant's roles during the interview and possible discomfort. The consent form was understandable, clearly specifying the voluntary nature of the involvement and that confidentiality and anonymity were guaranteed. The participants' names were not written, instead, codes were given, and data collected was locked in a safe.

3.4.3 Data analysis

The procedure in which data is being narrowed, sorted, and provided with meaning is called data analysis (Grove et al, 2015:502). Further explanation of data analysis is the conceptualisation of descriptive data, which was collected from participants for the identification of themes, categories, and sub-categories (Polit & Beck 2012:739). Scientific rigour was maintained in this study using relevance, thorough data, and openness, methodological and epistemological congruence (Brink et al 2012:126).

The following eight steps of Tesch as cited in Botma et al (2016:224) were used for data analysis:

Step 1

The researcher familiarised herself with verbatim transcripts by meticulously reading through them. Each meaning which surfaced during reading were jotted down as well as the concepts as they present themselves. Similar meanings were grouped after several

readings of each transcript. Understanding of participants' transcripts was ensured by attentively reading them over and over by the researcher. Data analysis then proceeded, and verbal reactions were noted.

Step 2

Data collected was reduced to codes, according to the recurrence of concepts found in the transcripts. Topics surfaced during reductions were recorded down. Furthermore, topics with the same meaning were grouped. The topics which belonged alone were grouped separately from others. The topics were then identified on each transcript.

Step 3

The transcripts were rigorously read and analysed by the researcher. The meaning of the topics identified were created, and the perfect word which described meanings were attached.

Step 4

The topics were identified from surfaced codes. The codes were then written alongside the suitable section of the verbatim transcripts. Each code was written with a different highlighter adjacent to its data.

Step 5

The themes, categories and sub-categories were developed from coded data. The sub-categories which had similar meaning were further scaled down and the most appropriate headings were provided.

Step 6

Rechecking of identical themes, categories and sub-categories were done by the researcher to prevent duplications. Grouping of identical codes was done and proper description was provided.

Step 7

Finally, the researcher gathered each theme together with its data in columns in which initial data analysis was carried out. The researcher and the co-coder met thereafter to reach an agreement on the themes, categories, and sub-categories both attained.

Step 8

Recording of the existing materials was done where necessary.

3.5 RIGOUR OF THE STUDY: TRUSTWORTHINESS

Lincoln and Guba (1985:305) was employed to enhance trustworthiness for this study. Rigour on the other hand is striving for the best in research, which means discipline, attention to detail and diligent accuracy (Gray et al 2017:36). In this study, the principles of trustworthiness, which were utilised to ensure the worth and truthfulness of the findings are discussed below:

3.5.1 Credibility

According to Polit and Beck (2014:539), credibility is when there is confidence that data is honestly analysed and interpreted. This reinforces that the investigations should be carried out in a way people can believe in the findings. During the data collection process, the researcher had a lengthy session with the participants since the interview took place during a convenient time for them. This allowed rich data collection, gaining an adequate understanding of the participants and establishment of a good relationship with participants. Data was collected in a systemic, objective, and thorough manner. Data analysis was done in such a way that contamination was minimised, and the accuracy of the research was maintained. A review of field notes as well as audio records was used to ensure the quality of the data.

3.5.2 Dependability

Dependability is the reliability of data throughout and irrespective of circumstances (Polit & Beck 2014:16). Data were collected at Kganya local area of Capricorn District, Limpopo Province using the same interview guides. The research methodology was fully explained, and notes were written to ensure that all reactions are fully recorded. The notes and the audio records were kept safe on the computer and the external hard drive.

3.5.3 Confirmability

As stated by Brink et al (2018:110), confirmability means that research outcomes, solutions and suggestions should be braced by statistics. Confirmability was applied by obtaining an ethical clearance certificate from the UNISA ethics research committee. Approval for conducting the research was accorded by Limpopo DoH, Capricorn District, and clinic managers. Participant information sheets were given to the participants before the interview date and all clarity seeking questions were answered by the researcher. Participants who were willing to take part in the study signed an informed consent form before the commencement of an interview.

3.5.4 Transferability

The degree to which the outcomes of the study can be conveyed or applicable to other settings using the same participants is called transferability (Yin 2011:106). Transferability was achieved by providing the readers with enough data to determine whether the findings could be applied in other settings. The research report of this study was further provided with full details which allowed readers to make decisions of whether the findings are applicable to other situations or not.

3.6 SUMMARY

This chapter discussed research methodology and design, which was followed throughout the study process. A qualitative descriptive study was followed to conduct the study. Study methods such as research design, population, sampling, was described in this chapter. Furthermore, ethical principles employed were also discussed, as well as how the trustworthiness of the findings was enhanced. Chapter 4 will discuss data analysis and presentations of research findings.

CHAPTER 4

ANALYSIS, PRESENTATION AND DESCRIPTION OF THE RESEARCH FINDINGS

4.1 INTRODUCTION

Methodology and design for this research study were discussed in chapter 3. This chapter present, analysis of data and a description of study outcomes. The purpose of this qualitative study was to explore the views and challenges faced by midwives regarding TB screening among HIV positive pregnant women in Kganya local area, Limpopo Province. The study was done under the guidance of the following objectives:

- To explore the views of midwives regarding TB screening among HIV positive pregnant women at Kganya local area, primary health care (PHC) clinics in Limpopo Province.
- To describe challenges faced by midwives regarding TB screening among HIV positive pregnant women at Kganya local area PHC clinics in Limpopo Province.

4.2 DATA MANAGEMENT AND DATA ANALYSIS

Tesch's eight steps were applied to conduct data analysis as cited in Botma et al (2016:224), which led to the identification and development of themes, categories and sub-categories.

Data organisation assisted the researcher to classify, concentrate, remove, and arrange data in which verification and conclusions were met (Namey & Guest 2015:139).

All track of data collected was kept safe and maintained in its original form by the researcher. The transcripts, field notes and audiotapes were kept in a safe place unaltered to reduce scientific pressure of data analysis and to minimise contamination. To confirm trustworthiness, the collected data was listened to, then transcribed word for word and impressions written as they come to mind. Thus, the researcher went through participants' transcripts attentively and continuously until she understands them.

Manual analysis of data was executed, and data collected was reduced to codes following the rate of occurrence of concepts utilized in the actual transcriptions. Topics with the same meaning were grouped. The topics which belonged alone were grouped separately from others. Themes, categories, and sub-categories surfaced from the coded data in which initial data analysis was carried out. Analysis of data was done by the researcher with no predetermined theoretical coding structure. The researcher and the co-coder met thereafter to attain an agreement on the themes, categories, and sub-categories both reached.

4.3 RESEARCH RESULTS

Qualitative semi-structured interviews were conducted through digital channels with midwives who consented to participate in the study. Face-to-face interview was not possible in this study due to COVID-19 regulations. The interviews took place from December 2020 to June 2021 during suitable times for the participants.

4.3.1 Demographic analysis of participants

The sample was selected purposefully from participants who work with HIV positive pregnant women on a daily basis. Ten participants who were employed at Kganya local area PHC facilities were interviewed. The profile was age, gender, qualifications, experience, and short courses obtained.

A semi-structured interview was employed to collect data from 10 participants, with ages ranging from 30 to 48 years. All had the experience of working with HIV positive pregnant women of more than 5 years, ranging from 6 to 17 years. All ten were trained on PMTCT, HIV and TB management. The nursing profession is mostly dominated by females, as such 9 were females and 1 was a male. All were registered nurses with midwifery. Table 4.1 below illustrates the demographic information per participant.

Participant	Age	Gender	Academic qualifications	Short course	Experience in years
1	37	Female	Basic diploma in nursing science	PMTCT, TB, HIV,	10
2	35	Female	Basic diploma in nursing science	PMTCT, TB, HIV	06
3	43	Male	Basic diploma in nursing science	PMTCT, TB, HIV	12
4	45	Female	Basic diploma in nursing science	PMTCT, TB, HIV	09
5	35	Female	Basic diploma in nursing science	PMTCT, TB, HIV	10
6	33	Female	Basic diploma in nursing science	PMTCT, TB, HIV	07
7	34	Female	Basic diploma in nursing science	PMTCT, TB, HIV	07
8	48	Female	Bachelor's degree in nursing science	PMTCT, TB, HIV	17
9	40	Female	Basic diploma in nursing science	PMTCT, TB, HIV	11
10	30	Female	Basic diploma in nursing science	PMTCT, TB, HIV	06

4.4 OVERVIEW OF RESEARCH FINDINGS

Four themes emerged from the whole data analysis exercise. Those themes include acknowledging screening of TB amongst pregnant women who are positive for HIV, challenges to screening of TB among pregnant women who are positive for HIV, the negative impact of inadequate screening of TB amongst pregnant women who are positive for HIV and Measures that can enhance screening of TB amongst pregnant women who are positive for HIV. Eight categories and twenty sub-categories further emerged. Table 4.2 below summarises the themes, categories and sub-categories:

Table 4.2 Themes, categories, and sub-categories			
THEME	CATEGORIES		SUB-CATEGORIES
1. Acknowledging TB screening amongst pregnant women who are positive for HIV	1.1	Midwives' role and responsibilities regarding screening of TB in pregnant women who are positive for HIV	1.1.1 Adequate TB screening 1.1.2 Embracing proper Implementation of TB guidelines 1.1.3 Counselling and health education
2. Challenges to screening of TB among pregnant women who are positive for HIV	2.1	Lack of resources	2.1.1 Shortage of working tools 2.1.2 Shortage of midwives and work overload
	2.2	Midwives' related challenges	2.2.1 Inadequate knowledge 2.2.2 Midwives' negative attitude towards TB screening
	2.3	Pregnant women related challenges	2.3.1 Withholding of TB information 2.3.2 Late presentation to facility 2.3.3 Language barrier
3 The negative impact of inadequate screening of TB amongst pregnant women who are positive for HIV	3.1	Poor obstetric outcomes	3.1.1 The upsurge of neonatal complications and perinatal mortality
			3.1.2 Increased maternal complications and maternal mortality
	3.2	Impact on midwives	3.2.1 Psychological impact/reaction 3.2.2 Legal implications
4 Measures that can enhance screening of TB amongst pregnant women who are positive for HIV	4.1	Managerial strategies	4.1.1 Appropriate delegation of duties 4.1.2 Consistent in-service training and workshops 4.1.3 Proper sorting of patients 4.1.4 Consistent auditing of TB records 4.1.5 Reliable TB screening tools
	4.2	Community mobilisation	4.2.1 Consistent health education and campaigns.

4.4.1 Theme 1: Acknowledging screening of TB amongst pregnant women who are HIV positive

Tuberculosis screening among people who are infected with HIV is a requirement by the department of health to prevent deaths that can be due to severe immune suppression. In this study, as revealed during the interview the participants understand the importance for screening of TB among pregnant women who are positive for HIV. One category emerged from this theme namely: midwives' role and responsibilities regarding screening of TB among pregnant women who are positive for HIV.

4.4.1.1 Category 1: Midwives' role and responsibilities regarding screening of TB amongst pregnant women who are positive for HIV

The participant demonstrated knowledge of their roles and responsibilities regarding screening of TB in HIV positive pregnant women.

4.4.1.1.1 Sub-category 1.1: Adequate TB screening

Participants raised positive views towards screening of TB in pregnancy, mostly in women who are HIV positive. According to the participants, all pregnant women who come to the facility for antenatal care are screened for TB, and if symptomatic sputum for gene-xpert is collected. This is an expression of the participant:

"In general er... my view is that er... any pregnant woman who comes to this facility uh... we try... to... screen them and then ask them questions uh...about uh... TB or...actually what can I say...uh...about symptoms if ever they are having symptoms and then...we do test every pregnant woman, uh... for... for their first time booking, but we do continue uh... doing the test and TB screening every visit when they come to our facility." P2

In support, the following participant said:

"According to my knowledge, I can say it is being done in most of the facilities in this sense most pregnant women are screened when they enter the facility, to confirm that you will find the stamp which confirms that they have asked those questions in their files, the retained files that remain in the facility and even the midwives also when they do ANC booking, before ... ANC visit at first visit they also screen for TB and STI... and also, for HIV. So, I can say it is being done." P8

4.4.1.1.2 Sub-category 1.2: Embracing proper implementation of TB guidelines

Guidelines and protocols play an important role in guiding the midwives' step by step on how to screen TB to an HIV positive pregnant woman. The participants expressed their knowledge on different TB guidelines available and their importance. It was noted that

the participants implement TB guidelines in their facilities. The following quote support this:

“Ok, the guidelines that we are having in the facility, it tells clearly that when a pregnant woman who is screened for TB presents with this, this and that, what are the further steps that we should take in managing that particular person. So... that guideline has the signs and symptoms, the investigations and the management. We do have posters on the walls to show that if a person presents with this what we should do.” P7

Another participant said:

“Uh...we, we (laughter) ok, we u (laughter), we u (laughter), we use the guidelines...it guides us, it guides us if ever somewhere somehow we do have challenges of not how...of not knowing how to manage a pregnant woman who is HIV and TB at the same time, because like at a normal uh...at a normal patient, meaning at the patient who is not pregnant we know that before we test uh... and then If ever that patient is having TB symptoms, we...we don't initiate immediately, we wait for the results of TB to come back so that we can...initiate the...the medication. So with the pregnant, it might be confusing and then with the... with the dosage and all so we use that guideline to see what, what are we supposed to give... does it work the same as giving... the normal patient, uh... the treatment, and the what are... jah (yes) what are the side effects for...the baby as well because now this person is pregnant. Yes.” P2

4.4.1.1.3 Sub-category 1.3: Counselling and health education

Counselling and health education assist the pregnant woman in such a way that she can make an informed decisions regarding her health issues. In this context, it is referring to TB screening of pregnant women with HIV infection. The participants expressed that they offer counselling and education to pregnant women before they screen them for TB. This is supported by the following quotes:

“We... uhm... do... we do counselling, health education, we educate the patient about TB infection as a whole and explain the reason why we are focusing on screening for TB, why do we want to prevent TB infection. Especially because she is positive, we do health education and then we counsel further so that the patient can understand more (that) TB infection is infectious if she does not disclose, she can infect others and then also... uh... she can get very ill and have complications with that TB if is not managed well.” P1

And

“Ok, I get it., I get it, jah (yes) so... after that we...actually before we....do...we screen them? We just give them counselling in general. We counsel them about TB.... we give health education. We uh.... we tell them to ask questions if ever they understood everything and then uh.... we allow them to...give the knowledge that they have about the TB, uh... so that we can uh.... we can distinguish if this person is telling us the myth that goes around hearing them.” P2

4.4.2 Theme 2: Challenges for screening of TB among pregnant women among women who are HIV positive

Participants voiced out various challenges which they often encounter as they carry out their duties of screening TB and managing HIV positive pregnant women in their facilities. Theme three produced three categories which include: lack of resources, midwife related challenges and patient-related challenges.

4.4.2.1 Category 2.1: Lack of resources

Adequate resources, ranging from material and human are required for the participants to provide quality patient care, which is TB screening to pregnant women who are HIV positive in this context. Participants raised with concern the shortage of such resources in their facilities.

4.4.2.1.1 Sub-category 2.1.1: Shortage of working tools

At times, participants experience a shortage of Isoniazid treatment and TB screening tools in the facilities. Isoniazid prophylaxis is used to prevent the chances of TB infection to the pregnant who is positive for HIV. Tuberculosis screening assists the midwives to issue INH prophylaxis in case the woman is found to be negative of TB.

The participant expressed concern that, they sometimes experience a shortage of INH, which places the mother and the baby at risk for contracting TB infection. The participant said:

“Most of the time we...we...are having a shortage of INH prophylaxis, though is not always, even when we have this challenge, we usually talk with our pharmacist to assist and then ...we also do stock rotation, we ask other facilities if they have so that we can have the stock in the facility if we have a shortage for the month. P1

In support, another participant experienced the same challenge indicated:

“Though we do have some challenges we regard to INH, because sometimes we have the o/s (out of stock) stock, we order some, some we don't have stock, sometimes we have... In relation to treatment yes, we do have some barriers. Because sometimes you order, they don't deliver you find that there is out of stock.” P8

The screening tool is a questionnaire that has TB screening questions. Participants raised their frustrations as they sometimes run short of screening tools that they use to screen pregnant women for TB. The following respond demonstrates:

“And then, and then the...what was ... what was...and the shortage of... shortage of equipment, Shortage of equipment...working equipment like the...screening tool, sometimes uh...when...you don't know, where to record because there are no screening tools.” P2

Another participant with the same experience commented:

“The challenges we are having is lack of stationery, recently we have been running short of the maternity case records and screening tools, and we end up popping some rands to make copies for the clients because we cannot turn them back, so that is just one of the challenges, stationery.” P9

4.4.2.1.2 Sub-category 2.1.2: Shortage of midwives and work overload

Shortage of midwives leads to increased workload and time constraints when coming to the provision quality TB screening to HIV positive pregnant women.

Participants were concerned that they are experiencing a shortage of midwives in the facilities, who have to screen pregnant women for TB. This was expressed in the following:

The only challenge that we are having in the facility is shortage of midwives because we have got only two midwives allocated when we don't calculate... when we don't... add the operational manager, it means the facility is only operating with only two midwives. P8

Another participant with a similar experience said:

“Jah... here in our facility we... we have a shortage of staff, and... what can I say about a shortage of staff uhm... sometimes uh... uh...we have like three nurses on duty, which is two professional nurses and one ENA (enrolled nursing assistant), yes... and then uh...it might happen that uhm...that day one ENA is uh... busy dressing the other patient and then I'm uh... seeing the pregnant women, I am attending the pregnant women and the other uh... the other health care provider is uh... helping the...what's that? Is it chronic? Yah chronic patients. So, we just...we just...we just don't even ask, we don't even have time to ask them about the symptoms or everything. We are just...we are just short... there is just a shortage of staff. I can say that.” P2

Throughout the interview sessions, it was clear that there is an increased workload at the facilities due to staff shortage, which contributes to missing to screen TB among pregnant

women who are HIV positive. According to the participants they are overworked due to a shortage of staff and as such, they resort to quantity in state of quality care to pregnant women. These were quotes from the participants:

“Patients I don’t think they have a problem with that because neh they just came here for the service so even if you ask them general questions, they don’t have a problem with that. So maybe it’s bec... it’s the side of the midwives. You know when there is a lot of work some of the things (laughter) you even forget them because we take it lightly.” P6

4.4.2.2 Category 2.2: Midwives’ related challenges

Some challenges are related to midwives, which affect the quality of TB screening they provide to pregnant women. The challenges emerged as sub-categories, namely: inadequate knowledge and Midwives’ attitude towards screening of TB.

4.4.2.2.1 Sub-category 2.2.1: Inadequate knowledge

During the interviews, it was noted that some participants lack knowledge regarding screening of TB in pregnancy, especially those women who tested positive for HIV positive. This became clear when the following participants vented out their frustrations:

“So... I think the knowledge is not enough because even on the in-service training, since I have been in my clinic, I haven’t attended one, or seen one teaching with pregnant women... positive pregnant women with TB. So, I have’ received an in-service before, I haven’t been dealt with the patient, so as far as I am concerned, I wouldn’t be confident regarding that. I will just say the guideline will be of help should I come across one but is not enough as far as I am concerned. It should be something that is just known, when going to the guideline should be just like, I am revising or want to be sure not going because I don’t know at all, I still want to know. So... the knowledge is very much of low standard when it comes to that, according to my opinion.” P10

And

“Err... yes, and also a little knowledge of how important TB is, how it plays a big role in, in death of pregnant women.” P6

4.4.2.2 Sub-category 2.2.2: Midwives ‘negative attitude towards TB screening

The attitude of midwives surfaced as another factor that hinders screening of TB among pregnant women who are also HIV positive. According to the participants, some of the midwives shows a negative attitude towards screening of TB in pregnant women. This is an expression from the participant:

“That’s why maybe we are taking it on a lighter... scale. So that’s why we are not concerned about it, so we, we, we are mainly focused on ANC, is the baby fine, are you fine and a, a, a bit of... delinquent, I’m not sure if it’s a... if it’s a delinquent or what. We have to screen them, but we don’t screen them.” P6

Another participant with the same expression said:

“Yes, another one is that most of our midwives at the facility don’t want to collect the sputum, they say collecting the sputum is for the juniors...so is where we miss the patient because if they did not take, or collect enough history at the vital signs, when the patient comes to the midwife in the consulting room, because like I said the midwives have that attitude of collecting the sputum they say is for the juniors, is whereby we will miss the patient.” P7

4.4.2.3 Category 2.3: Pregnant women related challenges

Pregnant women can sometimes contribute to them not being screened for TB. Sometimes they do not provide TB information when screened, they also present late at clinics for ANC booking and deliveries, whereas others are not able to speak South African languages.

4.4.2.3.1 Sub-category 2.3.1: Withholding of TB information

Participants raised with concern that they experience some problems as some pregnant decide not to provide required information about TB symptoms during history taking. In confirmation this is quotes from participants:

“I don’t know is whether the patient will be stubborn, or she think we will take her somehow...she just...she just decided to keep quiet. Or is a little knowledge maybe she thinks is a flue it will... go off when the time is getting on.” P6

Other participants with the same sentiments said:

“I think some of the patients can withhold information, especially if the patient is aware that is being screened for TB. Some of the questions...they will just say no, like are you coughing? No, are you having someone with TB at home? No, it can also affect TB screening because if she says no, you can’t investigate further...you... (a moment of silence) you think that the patient does not have TB symptoms.” P1

4.4.2.3.2 Subcategory 2.3.2 Late presentation to a health facility

The participants expressed their concerns that pregnant women sometimes present late for ANC and for delivery which makes it difficult to screen TB. According to participants the women prefer the services of traditional healers and regard health facilities as their last option. The following is a quote from participants:

“The pregnant woman come here fine, does not have symptoms of saying I am sick, you test them you find that they are TB positive, the moment you tell them, the... then most of them they have denial, they say I don’t have TB, they will go to the traditional healer, they will tell them that you have Madlozi (ancestors) or something like that, thy they go there.” P6

And

“Yes... another thing is those women that come to the clinic while on advanced labour... uhm... with... with head-on perineum., when you investigated you find that the patient is not booked for ANC, she just comes, and deliver. So, I think is...is...it also affects the TB screening of patients because the patient was not seen for ANC booking, she was not seen for a subsequent visit, she might come to deliver while having those TB symptoms and was never screened. Because she never attended antenatal care.” P1

4.4.2.3.3 Sub-category 2.3.3: Language barrier

One participant indicated that they sometimes have challenges when they have to screen a non-South African woman who cannot communicate either in English or Sepedi. The participant said:

“Another thing... might be language break down, we are having those people that are coming from Zimbabwe, who might come to the clinic being alone, she does not understand English, she does not understand Sepedi, so sometimes when we call for... the person from Zimbabwe who can interpret, you find that there is no one who can interpret, so we are having a challenge, language breakdown. Is where we can leave the patient because if the patient doesn't understand what we are asking if the patient don't...cannot answer us with the relevant answer is where that we will be missing the patient.” P6

4.4.3 Theme 3: Negative impact of inadequate screening of TB screening amongst pregnant women who are HIV positive.

As expressed by participants inadequate TB screening can lead to more undiagnosed TB infections which may impact negatively on the lives of the neonate and the woman. This theme revealed how inadequate TB screening can affect both the mother and the neonate.

4.4.3.1 Category 3.1: Poor obstetric outcomes

Participants were concerned about the outcomes of pregnancy from an undiagnosed TB pregnant woman due to lack of screening. Two sub-categories emerged, namely: Upsurge of neonatal complications and perinatal mortality and increased maternal complications and maternal mortality.

4.4.3.1.1 Sub-category 3.1.1: Upsurge of neonatal complications and perinatal mortality

The participants voiced with sadness that the neonate of a mother who is infected with TB may be born with several complications, ranging from congenital TB infection, some deformities and neonatal death. According to participants:

“The baby may acquire the TB, and then it will be very difficult to manage TB in a neonate or a child.” P9

Another participant further substantiated that negative outcome for the neonates due to non-screening of the pregnant mother for TB are, intrauterine growth restrictions and small for gestational age babies. The participant said:

“Ohk. Since TB we know that it’s an air born, it’s an air... born er... I might say because of the effects that it might have on the pregnant woman that maybe there might be some... problems with the pregnant women-you’ll find that the unborn child is not growing well. And then the unborn child when you... correlate the.... symphysis fundal height with the...gestational age does not correlate ... because the mother is not gaining weight or the mother is having problems with the health and that will lead us to had low birth weight children since the mother is having TB but if we get... if we get to know that the mother is having TB early we’ll be able to assist but by starting treatment early and then the health of the pregnant women will go back to normal. Since er...” P4

It was further revealed in this study that a lack of TB screening in HIV positive pregnant woman can bear negative consequences to the neonate or the unborn baby, which may lead to perinatal deaths. The following response demonstrates:

“Is...the unborn baby is not safe. The unborn baby is not safe... (Moment of silence) ...because uhm... this can lead to the death of the fetus in utero. Yes, this may result in a uterine death... and this may also result in the baby not growing well in the utero.” P3

4.4.3.1.2 Sub-category 3.1.2 Increased maternal complications and maternal mortality

Tuberculosis infection plays a role in the deterioration of HIV, in a positive pregnant woman 's health due to co-infection. It was indicated in this study by the participants that a lack of screening for TB in pregnant women who are positive for HIV, can result in more maternal complications. This was verbalised by the participant:

“Ohk. The few that I know it's pneumonia then... uh... what this is.... Ohk other I forgot but uh... even the... it can also because what do they say ... MDR-TB (multi-drug resistant) also. So, into more details, I don't know, and death at the end.” P5

Limpopo Province is one of the South African provinces with a high maternal mortality rate, with TB disease as one of the contributory factors (SA 2017:12). The participants revealed during the interview that TB disease will result in maternal death if not diagnosed and managed. The participant said:

“Ja (yes)... there are consequences of omitting to screen because once you omit to screen, we'll miss the patient and the patient will go home with those symptoms, when she goes home the condition deteriorates and the patient will come back to the clinic being sick, very sick, and the virus will be spread all over the body, so we might lose the patient, the patient might die, because we have detected, the...that infection late. Yes, is then that we will be having uhm... we are going to have maternal death in the facility due to omitting of TB screening.” P7

4.4.3.2 **Category 3.2: Impact on midwives**

Participants elaborated their understanding about the impact the midwives may encounter due to non-screening of TB to pregnant women who are HIV positive. The impacts include psychological, and legal implications thereof.

4.4.3.2.1 *Sub-category 3.2.1: Psychological impacts/ reaction.*

Regarding the mental wellbeing of the participants, the emotions will be affected should they not screen the woman and the woman tend to be positive. According to the participants' guilty feelings and depression may result.

The participant vented out her feeling:

"The consequences on the midwife... since we... work within the facility for a long time and then you will be faced with the client as long as you will be working within the facility. The effect might be that feeling of...sadness, maybe I have done wrong to this woman, why haven't I screen her early, why was I... maybe you'll be doing other issues, issues like I was short stuffed, but... sometimes it does depress us seeing the woman who is not healthy, seeing the woman who's bringing the child who is uhm... low birth weight, maybe when we check the records you find that the woman was diagnosed late...." P4

Another participant with the same feeling said:

"It does affect us... uh... when you think that the patient has not uh.... receive any prophylaxis or any HCT counselling, the baby might be infected with HIV and if the patient had uh...TB, the patient might be TB positive and, she might uh.... infected others at home and attending the patient at emergency level le rena (also us) ...uhm the clinicians we might be infected with that TB infection, and uh.... I think ... also emotionally is affecting us because is stressful to attend the patient who had never.... Who had never attended ANC, we have to start and counsel the patient and explain

everything that uh... give a lot of information to the patient and also is a lot of work to us, so, is emotionally draining. It does affect us.” P1

4.4.3.2.2 Sub-category 3.2.2: Legal implications

Litigations are being widely used these days due to malpractice at health centres across SA. The participants highlighted in this study that the midwife who omits TB screening on pregnant women, can face disciplinary actions which can lead to expulsion. These quotes emphasise this:

“Ok... are... joh (exclamation)... too much, depending on how the case will be handled, cause nower (this) days, we have lawsuits, there are a lot of things. So always when we come to pregnant women... they are always important and of priority, so ... should we see... like we have a way... M&M where these pregnant women are being discussed what went wrong what went right, so... because it will come back to us, if we end up losing this women, so discussion from day one of booking what was happening, and then if such screening were not done, it remains with who? ... and then if it goes further you might end up losing your licence as a midwife, you might end up being to unfinished hearing, you might end up... jah (yes)...suspended.” P10

Another participant added by saying:

“(Laughter) ehm... at the end of the day we must account why you saw the patient and you did not screen. Can you allow me to say it was overloaded and everything? Like you, maybe that time would be family suing the department of health then we must account. So you’ll go to a hearing, hearing you have to pay, and you could be fired for a small thing that you don’t take seriously.” P6

4.4.4 Theme 4: Measures that can enhance screening of TB amongst pregnant women who are HIV positive

The participants suggested a number of ways to improve screening of TB in pregnant women who are HIV positive. According to participants, managerial factors and community mobilisation should be strengthened.

4.4.4.1 Category 4.1: Managerial strategies

Different strategies that can be used to improve the quality of TB screening among HIV positive pregnant women in the facilities were suggested by participants in this category, which makes up the sub-categories, namely, delegation, in-service training, auditing of records and material resources.

4.4.4.1.1 Sub-categories 4.1.1: Appropriate delegation of duties

Delegation is used in the nursing departments to see that all-important tasks are done and accounted for by the person being delegated.

The participants suggested that the use of delegation will assist in such a way that a person responsible for TB screening is delegated on daily basis. The patient alluded:

“Well...is an issue of delegating a specific person who will be dealing specifically with such, if a person knows oh, this is my task for the day and she acknowledges it that this what I have been delegated to and sign for it will be easy because if we just take a general major that anyone can do it they might overlook it, and then... end up that is not done it correctly as they should.” P9

In support, the following participants commented:

“I think a delegation... can improve it. Somebody who concentrates on it the whole day... and just bring patients. I think that would help... because... except for that, well, I can say ohk (okay) today I’m gonna (will) screen but I’ll only screen maybe five, from there I’m no longer screening them.” P5

4.4.4.1.2 Sub-category 4.1.2: Consistent In-service training and workshops

Participants' responses show how in-service education to all midwives can assist with TB screening and care of pregnant women. The participants said:

"Another thing is just on-going in-service training on what exactly is needed to be done to be practising the, at least re (we are on board, re (we) practise the same thing. Everyone should just be educated on the screening part, regardless of the scope of practice". P9

Furthermore, one participant suggested that more workshops on TB screening should be offered:

"Then if... is possible, I can recommend that more workshops are done, so that for nurses who have not attended maybe basic antenatal care should attend so that "a kere" (is true) when we attend workshops we are reminded of things that we have, maybe forgotten or something that we are no more doing, so when we attend workshops we will be able to come back educating others, in-servicing other and that will be improving quality patient care on daily basis." P4

4.4.4.1.3 Sub-category 4.1.3: Proper sorting of patients

Triaging is performed in many health sectors as a way of providing care to the patients according to their health needs. One participant indicated that it would assist the midwives in that the chances of missing TB screening among pregnant women will be minimised. These responses confirm what the participant said:

"I think the most important thing is the triage... I think the most important thing is the triage. When they, the triage we should triage so that they should undergo the screening and the screening should be each visit of the ANC one. We must make sure that they are screened. Yes. Uhm... with triaging... when clients came to the clinic neh... so... we triage like uh... we ensure that those who want to be seen early they must be seen so those who are emergencies they must be prioritised, things like that. Pregnant women

are prioritised in the facility, when they reach the facility, the data is captured, allocated to them and given their files. Already usually we check uhm...if we have called an appointment date for them, so we will be knowing that this one and this one will be coming on this date. So, we give them their files when they come, and then we start with them". P3

4.4.4.1.4 Sub-category 4.1.4: Consistent auditing of records

Frequent auditing of maternal records by managers improves the quality of care given to pregnant women. It was raised by one participant, in a view that it will assist with the early identification of gaps in TB screening among pregnant women who are HIV positive. The participant said:

"Daily auditing of records by the operational managers to make certain that all women were screened for TB and for those who avoid screening harsh measures to be taken against them. Other things like increasing of auditing screening tools, hiring of more midwives can also be good for a screening of TB in pregnant women living with HIV." P9

4.4.4.1.5 Sub-category 4.1.5: Reliable TB screening tool

A screening tool in this context is an instrument used for TB screening in a pregnant woman who is HIV positive. Participants alluded that screening tools should be made available by the people in authority so that it can be easier for the midwives to screen the women for TB. The participant said:

"I think if we can have the screening tools, making copies, and each pregnant woman, we give it to them, so that even if when they are at home, they will be able to screen themselves, they will even be able to read those screening tools and say ok, the sister said if I am having cough for more than two weeks, If I am having the night sweets I must come to the clinic."

P7

In support another participant said:

“Oho (Ok)...I think ... our local uhm...is it area manager must know that we...must be informed that we...we... oh yes actually must provide us with the working tools maybe weekly because uhm...we not uhm...screening only the pregnant women. Every patient that comes so we screen, so you can imagine we run short of them because every day there are a lot of patients comes so uhm... it...it...it is unfortunate that when that pregnant woman or...jah (yes) comes the screening tools are not there, so if ever they can give a bunch of the screening tools, I think we will win.” P2

4.4.4.2 Category 4.2: Community mobilisation

Different strategies which can be used to keep the community informed about the importance of TB screening more especially in pregnant women who are positive for HIV emerged, and are discussed below:

4.4.4.2.1 Sub-category 4.2.1: Consistent health education and campaigns

Information giving is one of the key elements that can keep the community informed. It was suggested by the participants that campaigns should be done in the communities where people will be educated about TB infection at large. As stated by the participants:

“Through health education in the morning, through the radio slot, if we have given an opportunity, to...teach about TB among pregnant women, through the...unfortunately nou (this) days because of the covid restrictions, we are unable to go to...meshate, (tribal authorities) and doing the...campaigns, but the...few clients who are coming to our facility we must give them information every morning, even as a community in our churches, in our societies, the ones we are...having every month under the tree we must preach that gospel of TB screening, the signs and symptoms, and when to report to the facility. So, we will help our community.” P8

On the other hand, the issue of door to door as means of community awareness towards TB was raised by another participant saying:

“Other things? Door to door, Is a pity now cause we still having uhm...uhm...this pandemic covid 19 but door to door can improve TB screening because even those that they don’t want to come to the clinic, we will be uhm...screening them at home, yes if we can form a team of home-based cares, maybe we take one professional nurse..., one staff nurse and one ENA we will be going and doing door to door because some people don’t want to come to the clinic, Their believe when they cough they go to their traditional doctor, consult there, get medicine and that’s all. Are those people who will come to the clinic with the virus already spread all over the body. I think by doing door to door, we will be checking the virus earlier and treat the patient.” P7

4.5 SUMMARY

In this chapter qualitative data analysis process and data management was presented. Demographic information of the participants was discussed with attention given to the attributes. Tesch’s eight steps of data analysis as cited in Creswell (2014:198) was used to prepare, organise, sort and code. Based on the quotes from the participants, four major themes were identified, eight categories and twenty subcategories were discussed. The focus of the next chapter will be on interpretation, discussions of findings with support from relevant literature, conclusions and recommendations.

CHAPTER 5

INTERPRETATION AND DISCUSSION OF FINDINGS, CONCLUSIONS AND RECOMMENDATIONS

5.1 INTRODUCTION

The focus of chapter four was on data analysis and data presentations with quotes from the participants of which four themes, eight categories and twenty sub-categories emerged. In this chapter, research findings were discussed with support from relevant literature. Conclusions and recommendations were also formulated based on the outcome of the study findings.

5.2 RESEARCH DESIGN AND RESEARCH METHOD

A descriptive qualitative research method was employed to conduct the study, to help the researcher to understand the challenges which are encountered by midwives regarding screening of TB among pregnant women who are HIV positive at Kganya local area of Polokwane east sub-district under Capricorn District of Limpopo Province.

The sampling method used, was non-probability purposive sampling, which was informed by the knowledge possessed by the participant about the management of HIV/TB co-infected pregnant women at their facilities. The sample consisted of 10 participants, nine female midwives and one male (accoucheur). Seven PHC facilities were involved in the study in the Kganya local area of the Polokwane East sub-district. Semi-structured interviews were used to collect data through digital channels due to COVID-19 regulations at the time of data collection. Trustworthiness was ensured by applying Lincoln and Guba (1985:305) 'criteria which are credibility, dependability, confirmability and transferability.

5.2.1 Research purpose

The study was conducted with the purpose of exploring the views and challenges which are faced by midwives, regarding TB screening among HIV positive pregnant women at Kganya local area, Limpopo Province.

5.2.2 Research objectives

The study was done under the guidance of the following objectives:

- To explore the views of midwives regarding TB screening among HIV positive pregnant women at Kganya local area, primary health care (PHC) clinics in Limpopo Province.
- To describe the challenges faced by midwives regarding TB screening among HIV positive pregnant women at Kganya local area PHC clinics in Limpopo Province.

5.2.3 Research question

The study sought to answer the following questions:

- What are the 'views of the midwives regarding TB screening among HIV positive pregnant women?
- What are the challenges faced by midwives concerning TB screening among HIV positive pregnant women?

5.3 SUMMARY AND INTERPRETATION OF THE RESEARCH FINDINGS

Themes, categories and sub-categories that emerged from the study findings were supported with relevant literature. In the study, it was found that HIV-positive pregnant women have some challenges when screening for TB. Below are the discussions of the study findings.

5.3.1 Acknowledging TB screening amongst pregnant women who are HIV positive

The participants embraced the significance of screening TB in HIV positive pregnant women during antenatal care to institute preventive measures for those who are without symptoms and prompt management for the symptomatic.

World Health Organisation (2021:2) recommend that for those countries with a heavy toll on TB and little resources, standardised screening for active TB to be considered as part of ante-natal care of which SA is one of those countries. This theme consists of one category which is midwives' role and responsibilities regarding screening of TB amongst pregnant women who are HIV positive.

5.3.1.1 Midwives' role and responsibilities regarding screening of TB amongst pregnant women who are HIV positive

During the individual interview sessions with participants, they illustrated their knowledge on the roles and responsibilities concerning the screening of TB in pregnant women who are HIV positive. This category entails three sub-categories which are adequate TB screening, embracing proper implementation of TB guidelines and counselling and education.

5.3.1.1.1 Adequate TB screening

Timely diagnosis of TB is crucial in pregnant women, especially those who are HIV positive due to compromised immune systems, to save the lives of both the mother and the neonate. The study by Bongomin, Ssekamatte, Nattabi, Olum, Ninsiima, Kyazze, Nabakka, Kukunda, Cose, Kibirige, Batte, Kaddumukasa, Kirenga, Nakimuli, Baluku and Andia-Biraro (2021:5) indicate that HIV positive pregnant women are 4-fold more likely to have latent TB infection.

The findings of this study revealed that every pregnant woman who visits the clinic regardless of HIV status is screened for TB, using a screening tool or a designed stamp with TB screening related questions provided by the Limpopo Department of Health. This is consistent with the study by Miele et al (2020:4) in highlighting that all pregnant women who come for ANC booking should be thoroughly evaluated and screened for TB by assessing symptoms, physical examinations and asserting TB risk factors. Despite a report from this study about the screening of pregnant women at each visit, standardised TB screening that is integrated into antenatal health care services have not yet been implemented in most endemic setting (Zenhäusern, Bekker, Wates, Schaaf & Dramowski 2019: 312).

In contrary to what other studies stated, Vijayageetha, Kumar, Ramakrishnana, Sarkara, Papa, Mehta, Joseph, Rajaram, Rajaa and Chinnakali (2018:7) highlights that routine screening among pregnant women remains neglected. From the study findings, it is presumed that TB screening is offered to HIV positive pregnant as they come for their ANC visits.

5.3.1.1.2 Embracing proper implementation of TB guidelines

It was established from this study that midwives are knowledgeable when it comes to TB guidelines in the facilities. The majority of participants mentioned that they use TB guidelines, PMTCT guidelines, BANC guidelines, EDLs to refer whenever the need arises. The participants further explained that they make use of in-service training to keep each other updated. The findings concur with the statement that educational meetings and materials, in combination with audit and feedback, improve guideline adherence (Ebben, Siqeca, Madsen, Vloet & van Achterberg 2017:5). It is notable from the findings that various guidelines which guide TB screening in HIV positive pregnant women are available and used by midwives at PHC clinics.

5.3.1.1.3 Counselling and health education

Counselling is a non-medical treatment that assists the person to conquer their difficulties and make choices (Kabir 2017:22). Whereas health education is about educating people about their health, from the researcher's experience, group health education regarding health-related conditions, including TB, is offered every morning to all pregnant women and other health care users. It is then that specific individualised counselling and health education are offered in the consulting rooms. As expressed by the participants, counselling and health education are offered to HIV positive pregnant women during TB screening to assist them in understanding the importance of TB screening. Mutabazi, Gray, Muhwava, Trottier, Ware, Noris, Murphy, Levit and Zarowsky (2020:14) affirmed the effectiveness of counselling and health education when other people out of healthcare facilities are included. Health education in a community is more valuable, especially with a highly infectious disease like TB. The study by Hahn and Truman (2015:12) attests to using health education as a fundamental social determinant of health in a community.

Other countries like Japan and Thailand have also seen a significant contribution of health awareness (Makabe, Kume, Kamata, Apikomkon, Griffiths, Takagai, Akagawa, Andoh, Ito & Singha-don 2021:773). According to this study, midwives acknowledge the importance of providing counselling and health information to pregnant women so that they make an informed decision when it comes to TB screening.

5.3.2 Challenges to the screening of TB among pregnant women who are HIV positive

In this context, challenges are those obstacles that prevent midwives from screening TB amongst HIV positive pregnant women. The participants were concerned about the lack of some resources, which they referred to as challenges, which prevent TB screening of pregnant women who are HIV positive.

5.3.2.1 Lack of resources

This category consists of sub-categories that discussed different resources lacked by participants regarding screening of TB among pregnant women who are HIV positive, namely: the shortage of working tools and shortage of midwives.

5.3.2.1.1 Shortage of working tools

It is certain that for the midwives to adequately screen and prevent TB infection in pregnant women, relevant resources like screening tools and INH should be made available by those responsible. Isoniazid treatment is given as a prophylaxis to prevent TB infection in HIV positive pregnant women (SA 2016:87). Given the ability of continuous usage of INH to provide more durable protection in high-burden settings, as stated by Bares and Swindle (2020:4), the study findings revealed that midwives often become frustrated due to lack of INH in their facilities. Lack of INH may also hinder TB prevention in HIV positive pregnant women, as the woman may be told to go back and then come back some other day, which may not be possible due to transport and other issues. The use of INH during pregnancy is also supported by Kalk, Heekes, Mehta, de Waal, Jacob, Cohen, Myer, Davies, Maartens and Boule (2020: 355) who stated additional benefit which is said to confer protection against TB in HIV positive people.

Given that INH does not negatively impact the unborn baby, its use is also advocated by Pop, Bacalbasa, Suciu, Ionescu and Toader (2021: 168), with the reason that its usage does not have any effect on pregnancy, as such it should be used. Isoniazid preventive therapy is one of the innovations of WHO that is aimed at reducing TB infection in HIV positive pregnant women. Shortage of medicines in health facilities is also reported in other studies (Jiyane 2020:61).

According to WHO (2021:2), the four-part screening for TB in pregnancy had to be utilised when screening every pregnant woman attending ANC. In SA, it is recommended that all HIV positive pregnant women should be routinely screened for TB during ANC visits (SA 2016:88). Participants in this study, related the shortage of screening tools as one of the obstacles in the provision of quality TB screening services to pregnant women infected with HIV, which makes TB screening among pregnant women to be less effective. Similar findings were found in the study by Christian, Smith and Hompashe (2018: 729), who revealed that TB screening among pregnant women in SA, is not as effective as it should be, given the shortage of resources like screening tools in most facilities. Job satisfaction and morale of midwives in a working situation are influenced by the availability of working resources, among others. According to Kotze (2018:159), job resources have a significant positive influence on the two components of work engagement, which is enthusiasm and dedication. Lack of work resources which remain a thorn in most health facilities is also affirmed by Hildingsson, Westlund and Wiklund (2013:88) who indicated that it led to a stressful work environment. As revealed in this study, midwives must be provided with adequate screening tools and INH so that they can ensure proper TB screen and prevention of TB among HIV positive pregnant women.

5.3.2.1.2 Shortage of midwives and work overload

Shortage of midwives in the facilities results in increased workload and time constraints in which service delivery is affected.

Shortage of midwives is reported as one of the challenges which sometimes lead to the omission of TB screening among pregnant women who are HIV positive. Midwives are key players in the provision of quality TB screening to pregnant women and must be supported with human resources.

According to Olakunde, Adeyinka, Olawepo, Pharr, Ozigbu, Wakdok, Oladele and Ezeanolue (2019:245) the crucial issue which contributes to substandard care of patients and lack of confidence among midwives in the SA health system is a shortage of midwives. This negative impact of a shortage of midwives is further stated in the study by Kieft, De Brouwer, Franeker and Delmoij (2014:15), who state that sufficient staffing is fundamental in the provision of quality patient care whereas insufficient staffing bears unpleasant effects on patient care. Shortage of human resources seems to be a thorn in most health facilities. This was also confirmed in the recent study by Jiyane (2020:65) who revealed a shortage of registered nurses in South Africa.

According to WHO (2012:10), programme implementations is affected and restricted by an increased workload of health workers. This is confirmed by the participants when explaining that the high workload at their facilities with few nurses on duty affects them negatively as they sometimes omit TB screening in pregnant women and strive to finish the queue. Abdollahzadeh, Asghari and Vahidi (2017: 8) further relates nursing workload to work-related stress and pressure with the probability of raised workplace rudeness. Shortage of midwives also contributes to poor quality TB screening to pregnant women who are HIV positive. Furthermore, Haskins, Phakathi, Grant and Horwood (2014:35) asserts that staff shortages and high workloads are related to substandard patient care and low self-confidence among midwives.

Other than staff shortage and increased workload, which limits TB screening to HIV positive pregnant women, time also plays an important role. As with any other service, screening for TB takes time. The participants stated that due to a shortage of midwives, they sometimes experienced long queues in the facilities which they are unable to finish before they knock off. Consequently, pregnant women are not screened for TB due to lack of time. The study by Emanuel, Diegnan and Pryce-Miller (2011: 22), confirmed that lack of time is a major barrier in service delivery. It was apparent from this study that sufficient midwives are needed for the provision of TB screening in HIV positive pregnant women.

5.3.2.2 *Midwives' related challenges*

This category discusses different TB screening challenges faced by midwives at PHC facilities. The participants state that these challenges affect the quality of TB screening they provide to pregnant women.

5.3.2.2.1 *Inadequate knowledge*

Given the concerning outcomes of late diagnosis and prompt initiation of TB treatment during pregnancy, awareness of this disease is important among midwives providing ANC (Christian et al 2018: 729). According to the findings of this study, tuberculosis screening in pregnancy is still neglected in most contexts despite the tremendous impact it has. The findings of this study further revealed that some nurses lack knowledge when it comes to screening of TB in pregnant women who are HIV positive, and this affects the quality of screening they provide. This is consistent with the findings by De Schacht, Mutaquiha, Faria, Castro, Manaca and Manhic (2019: 7) who indicated that knowledge regarding TB among midwives is lacking. The quality of antenatal care depends on the knowledge the midwives possess regarding TB in pregnancy. Lack of knowledge among midwives was also reported in other studies (Sithole & Khunou 2016: 674). Pregnant women need to be informed about TB during pregnancy in order to receive quality care. The study by Oyira, Ella, Osochukhu and Akpan (2016: 190) revealed that the knowledge that is possessed by the midwives has a notable impact on the quality of nursing care they provide. It is notable that, if midwives are empowered, they will be in good standing to adequately follow the guidelines and educate pregnant women regarding the importance of TB screening.

5.3.2.2.2 *Midwives' negative attitude towards TB screening*

According to Banakhar (2018:3), the attitude among midwives has an impact on performance and commitment. Findings from the study revealed that older midwives with more experience were less motivated and showed a negative attitude when it comes to screening of TB in pregnant women who are positive for HIV, which agreed with the other studies (Negussie & Oliksa 2020:4).

The participants highlighted with concern that other midwives tend to omit screening of TB to pregnant women saying that screening is for junior nurses. This is consistent with findings from the study by Akin, Gorak, Unsar, Mollaoglu, Ozdilli, and Durna (2011: 777), who revealed a negative attitude by older midwives towards TB. Despite less motivation revealed from this study, other studies identified high motivation and attitude among midwives in their workplace (Deressa & Zeru 2019:7; Ayalew, Kibwana, Shawula, Misganaw, Abosse, van Roosmalen, Stekelenburg, Kim, Teshome & Maria 2019:7). It is significant from the study findings that midwives should be recognised by the department in the form of incentives and regular debriefing to boost their morale.

5.3.2.3 *Pregnant women related challenges*

Pregnant women related challenges which affect screening of TB in women who are HIV positive were identified by the participants in this category. The challenges are withholding of TB information, late presentation to health facility and language barrier.

5.3.2.3.1 *Withholding of TB information*

Midwives must obtain the history of exposure from pregnant women with a chronic cough or a recent visit to areas endemic with TB to make a proper diagnosis. The findings of this study revealed that pregnant women sometimes decide not to provide the midwives with relevant information regarding TB screening, which makes it difficult for timeous diagnosis. Similar findings of failure to provide midwives with information by HIV pregnant women was revealed in recent studies (Elwell 2016:973). Unfavourable attitude in rural areas is also seen as a contributing factor towards the provision of wrong TB related information by pregnant women (Bashorun, Linda, Omoleke, Kendall, Donkor, Kinteh, Danso, Leigh, Kandeh, D'Alessandro & Adetifa 2020:10). It is evident from the study findings that health education regarding TB screening in pregnancy should be strengthened to keep the community informed of the danger of TB in HIV positive pregnant women.

5.3.2.3.2 *Late presentation to a health facility*

The findings from this study revealed that pregnant woman first goes to traditional healers, which make them present late to the facilities when all their options are

exhausted. By the time they come to the health facilities, they are already on advanced stage of the disease or labour with head-on perineum. Due to this delay and the emergency of delivery, midwives end up omitting TB screening to concentrate on the delivery of the baby. The study by Kalusopa, Mukwato, Muleya, Kwaleyela, Musenge, Chapima, NambalaSianchapa, Jon, Babil and Maimbolwa (2019: 66) revealed that there are lots of traditional/religious believes in the community in which traditional healers and pastors are the women's first choice. Late presentation to health facilities by pregnant women seems to be a serious challenge in South Africa. According to the study by Habedi (2020:32) pregnant women who are positive for HIV, have a habit of avail themselves late for ANC booking.

Several factors can make a woman present late to a health facility, either for antenatal booking or delivery. The stigma associated with TB infection may be one of the challenges that lead to a presentation of antenatal care late in pregnancy or in advanced labour which hinder the prompt diagnosis of TB in pregnancy. This is consistent with other studies (Zenhäusern et al 2019: 313). Health facility related barriers were revealed by Sithole and Khunou (2016:674) as some of the factors that contributed towards a late presentation to facilities by pregnant women. It is indisputable that lack of trust in health facilities by pregnant women prevent the women from seeing the clinics as their first point of care. Therefore, the health department needs to work hard to gain their trust back.

5.3.2.3.3 *Language barrier*

Communication between the midwife and the pregnant women is essential, to avoid misunderstanding and provision of poor-quality TB screening during antenatal care. With an increased number of foreigners from neighbouring countries, the participants find it difficult to communicate with pregnant women from such countries. The findings revealed that participants sometimes face challenges when women come for antenatal care, and they don't understand English and Sepedi. The participant stated that they end up omitting to screen as the woman does not understand the language spoken. Similar findings were revealed by Al Shamisi, Almutairi, Al Mashrafi and Al Kalbani (2020:27), stating language barrier as a key cause of miscommunication between midwives and patients, which negatively affect the quality of healthcare services and patient satisfaction.

Furthermore, it is difficult for the midwife to counsel and educate the pregnant woman due to language problems about the importance of TB screening for a better understanding and consent for TB screening. The findings by Azam and Watson (2017: 1158) highlight further that it is also difficult to explain procedures and arrange appointments with such patients due to the language barrier. The midwives need to be taught the different basic languages as it is evident from this study that they are unable to screen TB for the pregnant women who cannot speak South African languages.

5.3.3 The negative impact of inadequate screening of TB in pregnant women who are HIV positive

Tuberculosis during pregnancy, with the presence of HIV, is associated with increased risk to the woman and the neonate which lead to disease dissemination and progression that would be more difficult to treat at a later stage (Sulis & Pai 2018: 11). Miele et al (2020: 4) further indicate that TB in pregnancy grants elevated risk for both maternal and infant morbidity. The findings of this study revealed that there are negative pregnancy outcomes related to non-screening of TB among HIV positive pregnant women. Three categories emerged from this theme which includes, poor obstetric outcomes, impact on midwives, and impact on the organisation.

5.3.3.1 Poor obstetric outcomes

Complications of pregnancy involve both the mother and the baby 's health which occur during pregnancy, of which pregnancy outcome depends on. Two sub-categories emerged which are Increased neonatal complications and perinatal mortality and increased maternal complications and maternal mortality.

5.3.3.1.1 The upsurge of neonatal complications and perinatal mortality

The findings of the study revealed several complications which may affect the baby as a result of TB infection in the pregnant woman. The complications started by participants were congenital TB, intrauterine growth restrictions, small for dates babies and babies born before time as some which will be encountered. According to Miele et al (2020:4), TB transmission to the baby may be through trans placental spread causing congenital infection which may, in turn, be fatal to the neonate.

Despite being a rare complication, which is fatal without early diagnosis and treatment, congenital TB is treatable if diagnosed and treated early (Yeh, Lin & Lin 2021:5). Similar findings of the possibility of TB infection in a baby from a mother with an untreated infection were also reported (Sulis & Pai 2018:11).

Not only congenital infection was a risk, but the study also further revealed intrauterine growth restrictions, small for dates babies and babies born before time as some complications which will be encountered. This is consistent with the findings by Saramba and Zhao (2016:2) who indicated known effects of untreated TB diagnosis in a pregnant woman as, frequent miscarriages and stillbirths, preterm labour, and small for dates babies.

The other considerable negative outcome which may occur to the baby, as revealed from the study is perinatal mortality. Perinatal mortality is the death of a fetus or a neonate (SA 2017:8). According to Sun, Wang, Jinc and Deng (2020:197), there is the rapid progress of congenital TB with poor prognosis and high mortality with delayed treatment, thus TB screening will assist with early diagnosis. Furthermore, the findings of this study are also consistent with the findings by Mokhele, Jinga, Berhanu, Dlamini, Long and Evans (2021:452), who revealed neonatal death as one of the outcomes of pregnancy in a woman who did not receive treatment due to non-screening of TB. It is, therefore, significant that lack of TB screening among women who are positive for HIV can lead to a late diagnosis which may in turn lead to severe complications on the neonate.

5.3.3.1.2 Increased maternal complications and maternal mortality

According to Bares and Swinddells (2020:4), pregnant women living with HIV are at high risk for progression of active TB disease which may, in turn, bear negative maternal outcomes. Late diagnosis of TB in pregnancy is associated with poor prognosis and severe adverse effects in a woman. Tuberculosis is further stated by SA (2016: 119) as the most single cause of maternal mortality for women who are HIV positive in SA.

Study findings revealed that non-screening/late diagnosis of TB during pregnancy can lead to MDR-TB (multi-drug resistant TB), poor weight gain and preterm labour. Loto and Awowole (2012:4) affirmed the findings by indicating that MDR-TB due to untreated TB infection, impact negatively on the health of the pregnant women as the prognosis is not

favourable as it may lead to spontaneous abortion, small for date uterus, and poor weight gain. The findings are also consistent with the findings by Orazuluke, Sharma, Sharma and Umeora (2021:169) who stated poor prognosis due to late diagnosis which may lead to spontaneous abortion, suboptimal weight gain, pre-eclampsia, preterm labour, postpartum haemorrhage, small for date babies and lastly maternal death.

Maternal death is also stated by the participant, indicating that, TB infection without treatment in an HIV positive pregnant woman is fatal. Similar findings regarding maternal death due to TB infection were revealed by Hamda, Tshikuka, Joel, Setlhare, Monamodi, Mbeha, Tembo, Mulenga and Agizew (2020:76) who stated that TB is usually the source of maternal deaths in high prevalence settings like SA. Tuberculosis infection can be treated successfully and complications like maternal death can be prevented if diagnosed early. Looking at the vulnerability of a pregnant woman who is HIV positive, screening of TB is important to prevent maternal mortality (Yaghoubi, Selehabadic, Abdeahadd, Hasaniand, Avane, Yousefia, Jamehdara, Ferns, Khazaeie & Soleimanpoura 2020: 1318). From the findings of the study, it is remarkable that most maternal deaths can be prevented by screening of TB in HIV positive pregnant woman.

5.3.3.2 *Impact on midwives*

This category discusses the psychological impact/reaction and legal implications faced by midwives as a result of omitting TB screening which will, in turn, result in adverse effects on the woman and the baby.

5.3.3.2.1 *Psychological impact/ reaction*

Given the nature of services that midwives provide, which is caring for the pregnant woman and unborn baby from conception until birth, their psychological health is important. A feeling of sadness and depression are some of the emotions they encounter when they are unable to provide TB screening to a pregnant woman. The study revealed a feeling of sadness and depression from participants due to the inability to provide TB screening to pregnant women when they were supposed to. Findings are consistent with the findings by Fenwick, Hammond, Raymond, Smith, Foureur, Homer and Symon (2012: 60) when they stated that there is increased stress to midwives when they are unable to provide quality care to pregnant women.

Furthermore, other emotional effects are revealed by Hassan (2015:27), by indicating that midwives become very furious when the outcomes of the pregnancy examination reveal that the infant is no longer alive.

Midwives are usually psychologically affected as they face devastating situations related to the negative outcomes of pregnancy, mostly perinatal and maternal mortality, however, they are usually overlooked. According to Penzo (2016:22), the work-related psychological effects of midwives are not recognised and usually, not supported, as such midwives are not allowed to acknowledge the emotional challenge of their work, as midwifery is seen as a privilege. Moreover, a correlation between burnout and inadequate support to midwives was also identified (Dixon, Guilliland, Pallant, Sidebotham, Fenwick, McAra-Couper & Gilkison 2017:13). Despite the risk of midwives for work-related stress, depression, and anxiety Kinman, Teoh and Harriss (2020:4), stated that positive psychological intervention was seen to be effective in increasing the psychological well-being of midwives (Shaghghi, Abedian, Forouhar, Esmaily, Eskandarnia 2019:7). It is therefore notable that midwives need psychosocial support to assist them to cope with different challenges they come across as they provide TB screening to pregnant women who are HIV positive.

5.3.3.2.2 *Legal implications*

The participants expressed the possibility of being sued if they happen to omit screening and the pregnant woman end up dying. The pregnant woman who is not screened for TB while being infected, may complicate and end up dying. These days most people are more informed with regards to the rights of health care services and come to the facility with their expectations in mind. In support, Mashigo (2016:61), states that the use of the internet and media makes it easy for people to access information and this makes litigations to be popular in health departments. According to, Lesyna and Zaret (2017:371), maternal litigation is a global concern. In South Africa maternal death is notifiable, and that is when investigations on the cause of death will be done. Gowda and Bhandiwad (2016:544) further state that most countries are obliged to investigate possible causes of maternal deaths and develop strategies to minimise litigations. Fear of litigation among registered nurses were also stated in the other studies (Jiyane 2021:68). Factors such as the attitude of midwives as stated by the participants which

result in the omission of TB screening to pregnant women who are HIV positive may contribute to litigations.

5.3.4 Measures that can enhance screening of TB screening amongst pregnant women who are HIV positive

This theme consists of two sub-categories that discusses the strategies that can be used to strengthen screening of TB screening in pregnant women who are HIV positive in the form of managerial strategies and community mobilisation.

5.3.4.1 *Managerial strategies*

Participants suggested several managerial strategies which can be implemented to improve screening of TB among pregnant women who are positive for HIV in their facilities.

5.3.4.1.1 *Appropriate delegation of duties*

Muller and Bester (2016:204) explain that delegation refers to the transfer of duties and responsibilities by the supervisor to the personnel to ensure continuity inpatient care. Furthermore, the delegation of duties should be safe and effective (Dudley, Miller, Breslin, Chapman & Spertz 2021:53).

The participants suggested that delegation of personnel should be done on daily basis with TB screening for pregnant women being included. The findings of this study further revealed that a staff member should be delegated specifically for TB screening on daily basis to avoid missing HIV positive pregnant women. The findings are compatible with the study by Yoon and Kim (2016:680) who state that with the incorporation of constructive delegation and competent leadership, midwives can achieve the best possible patient care concerning TB screening among pregnant women who are HIV positive. According to the participants, screening of TB in pregnant women in the clinics is done by the lower categories, such as ENAs which is consistent with the observations by the researcher as explained in the problem statement. However inappropriate delegation can bear adverse effects on the quality of patient care (Barrow & Sharma 2021:10).

Delegation of relevant qualified nurses can enhance adequate TB screening among HIV positive pregnant women.

5.3.4.1.2 Consistent In-service training and workshops

Despite high competence in service delivery which results from in-service training in the nursing midwifery section, TB training is mostly overlooked among midwives who provide ANC care (Mallick, Winter, Wang & Yourkavitch 2016:53). The participants recommended continued in-service training and workshops regarding screening of TB in pregnant women who are HIV positive as a way of keeping them updated. According to Bluestone, Johnson, Fullerton, Carr, Alderman and BonTempo (2013:4), in-service training led to confidence and improved knowledge among midwives. Regular workshops regarding screening of TB in an HIV positive pregnant woman to the midwives are necessary to equip them with relevant knowledge looking at the devastating impact of HIV/TB co-infection in a pregnant woman. In support Chaghari, Saffari, Ebadi and Ameryoun (2017:31) agreed that professional expertise and proficiency in midwives need to be capacitated through education. Moreover, the findings by Asiamah, Mensah and Oteng-Abayie (2016:23) indicate that in-service training makes an incremental effect on healthcare performance. It is, therefore, vital according to the study findings that regular TB screening in-services should be done in PHC for continuous updates of midwives.

5.3.4.1.3 Proper sorting of patients

Triage is the number one crucial step that is well planned and successful in the management of patient care (SA 2012:9). Sorting of patients is called triaging in which patients are sorted by the health professional according to their emergencies and the services needed. Sorting of patients assists the health professionals to group the patients according to their needs and priority to avoid missing other patients. In this study, sorting is made regarding TB screening among pregnant women who are HIV positive. It was suggested by the participants that patients need to be sorted on arrival to the facility, to avoid missing TB screening to pregnant women who are HIV positive. The use of triage of patients is further supported by Lampi (2017:7) who stated that triaging makes the health workers' job easier by prioritising services for patients.

This is consistent with the recommendations by WHO (2009:52), which states that standard triage procedure or checklist should be developed to uniformly identify infectious patients as they enter the facilities.

5.3.4.1.4 Consistent auditing of records

Audit in midwifery is used to recognise obstacles and work out solutions to those obstacles (SA 2016:133). When used consistently audit may improve the quality of TB screening provided to pregnant women who are HIV positive. It was suggested by the participants that the clinic manager should audit the maternal records regularly in a way of identifying gaps in TB screening and corrective measures instituted. Similar findings were found in the study by Martins, Oliveira, Morais, Fecury, Dias, Dendasck, Oliveira and Oliveira (2017:10) who indicated that the nursing audit is essential as it assesses the quality of service offered to pregnant women. Furthermore, Senna, Martins, Kammers, Namante and Sell (2017:398), also recommend auditing by stating that it leads to improvement of quality care and also assist with the reduction of costs due to litigations. Auditing of antenatal records will further assist with the identification of non-documentation of TB screening for the corrective measures to be instituted early. Non-documentation is also affirmed by Mykkänen, Saranto and Miettinen (2012:5), who revealed that nurses rarely document the patients' TB screening outcomes in the patient record. It is therefore essential for the manager to conduct an audit of antenatal records on regular basis to identify gaps and rectify those gaps.

5.3.4.1.5 Reliable TB screening tool

For improved screening and early diagnosis of TB in pregnant women who are positive for HIV, an accurate, TB screening tool is required in all PHC facilities. The participants alluded that, managers and supervisors should be consistent with the provision of TB screening instruments in the facilities. The study findings agree with the recommendations by Getahun, Kittikraisak, Heilig, Corbett, Ayles, Cain, Grant, Churchyard, Kimerling, Shah, Lawn, Wood, Maartens, Granich, Date and Varma (2011:10) who stated that to improve screening of TB in pregnant women who are HIV positive, service point diagnostic test should be utilized. However, Getahun et al (2011: 10) further indicate that the absence of TB screening tools should not prevent midwives

from screening TB to pregnant women as a simple clinical algorithm can still be used to determine those requiring further evaluation. In light of the study findings, midwives should always be provided with TB screening tools to prevent HIV positive pregnant women from missing TB screening.

5.3.4.2 *Community mobilisation*

In this context, community mobilisation refers to a planned health education that is carried out to improve the health of the community. Consistent health education and TB campaigns emerged as a sub-category.

5.3.4.2.1 *Consistent health education and campaigns*

Health education and campaigns are used by most health facilities to educate the communities about infections and how to prevent them. Most participants suggested the use of campaigns and health education to educate the community about the importance of TB screening during antenatal care. This was also recommended by Spruijt, Haile, Van den Hof, Fiekert, Jansen, Jerene, Klinkenberg, Leimane, and Suurmond (2020:4) by stating that programmes that will address prevention of TB in future should embrace education and interventions that are culturally suitable to talk to stigma in the community. Spruijt et al (2020:4) further indicated that most people gain TB knowledge through campaigns organised by the local government. Women who are HIV positive should be taught about the importance of TB screening during pregnancy using resources available in the community. By involving the community at large, countries like Japan and Thailand went as far as engaging saloons and barbershop in health-related awareness (Makabe et al 2021:773). From the study findings, health education is critical in educating the community at large and when it comes to the importance of screening of TB in pregnancy the women will give consent as they will be informed.

5.4 CONCLUSIONS

The study was conducted with the purpose of exploring the views and challenges which are faced by midwives regarding screening of TB among pregnant women who are HIV positive in Kganya local area of Limpopo Province. The study concludes that midwives face numerous challenges as expressed and voiced, that impact negatively on screening

of TB among pregnant who are HIV positive women in Limpopo Province. The challenges revealed in this study are shortage of screening equipment, shortage of human resources, the attitude of midwives, withholding of information by the pregnant women, language barriers and late presentation to health facilities by pregnant women.

5.5 RECOMMENDATIONS

Recommendations originated from this study findings, are about the department of health, primary health care facilities, the midwives and for future research:

5.5.1 Recommendations for the Department of health

- The department of health should invest in training more midwives to curb shortages in the clinics.
- Provision of working equipment, in this context referring to the screening tools of TB, to be prioritised for consistent and effective screening of TB in pregnant women who are HIV positive.
- The department to strengthen TB training workshops for midwives to increase their knowledge on TB in pregnancy.
- Midwives to be taught the basic language of other countries, more especially Zimbabwean and Mozambique languages for improved communication during TB screening.
- In-service training on how to screen the pregnant woman using the TB questionnaire should be offered to junior level staff (ENA) in facilities where screening is conducted by such category.
- Operational managers of the clinics should order more INH prophylaxis to guard against shortages which interrupt treatment continuity in pregnant women.

5.5.2 Recommendations for primary health care facilities

- The facilities to develop a culture to health educate the public about the danger of TB infection in pregnancy using, tribal authorities, community gatherings and radio slots.
- Proper triage of patients should be done to prioritise those with special needs like pregnant women, elderly, and very sick patients for TB screening.

- Proper delegation of duties to be done on daily basis, where TB screening is also included.
- Managers to order adequate INH in time for their facilities to avoid being out of stock.
- It is imperative that there should be collaboration between the multidisciplinary team in order to ensure adequate TB screening of HIV positive pregnant women

5.5.3 Recommendations for the midwives

- Off-duties to be drafted and written in such a way that the busiest days are covered with more midwives, more especially during weekdays so that pregnant women get quality antenatal care including TB screening.
- Midwives to self-develop themselves regarding TB issues when it comes to a pregnant woman in a way of preventing unnecessary maternal deaths.
- Auditing of maternal records to be done regularly for early identification of gaps specifically with issues around TB screening among HIV positive pregnant women. This will also help to identify missed opportunities about implementation of BANC, PMTCT, TB and maternity guidelines.

5.5.4 Recommendations for further research

- The study was confined to Kganya local area clinics which is a small area of Polokwane municipality. The study may be extended to other local areas, districts and other SA provinces to get a broader understanding of this phenomenon.
- Guidelines should be developed to support the midwives in the implementation of TB screening amongst HIV positive pregnant women

5.6 CONTRIBUTIONS OF THE STUDY

The expectation is that the findings of the current study will bear the following contributions:

- The study findings will provide information that may guide future programme improvements.

- The findings of the findings will also inform the public health discipline curriculum, regarding screening of TB among pregnant women who are HIV positive, and the development of skills required.
- The findings will assist with awareness of screening for TB in women who are pregnant and HIV positive at the PHC level to reduce maternal mortality.
- The quality of services rendered to HIV/TB co-infected women will be improved.

5.7 LIMITATIONS OF THE STUDY

The study was limited to the clinics under Kganya local Area in the Polokwane East sub-district of Limpopo Province. Therefore, the results cannot be generalised to other local area clinics of the Polokwane East sub-district. The reason for conducting the study at Kganya Local Area was that the clinics refer their pregnant women to Mankweng Hospital which is a provincial hospital with a high record of maternal death due to non-pregnancy related conditions of which TB is the leading cause as observed by the researcher during maternal mortality meetings.

5.8 CONCLUDING REMARKS

This chapter discussed the findings of the study. Relevant literature was used to support the findings. As a result of the research study, midwives gained a better understanding of the challenges faced when screening for TB in pregnant women who are HIV positive. Findings from the participants is that delay and underdiagnoses of TB in HIV positive woman who is pregnant contribute to high maternal mortality. The research study also revealed several challenges faced by midwives regarding screening of TB among pregnant women who are positive for HIV which need to be addressed by both the DoH and the midwives.

LIST OF SOURCES

- Abdollahzadeh, F, Asghari, E & Vahidi, M. 2017. How to prevent workplace incivility? Nurses' perspective. *Iranian Journal of Nursing and Midwifery Research* 2017 (22). No 2. p157-163. From: <https://www.ncbi.nlm.nih.gov> (Accessed 12 July 2021).
- Adeizera, MA, Abba, AA & Okpapi, JU. 2014. HIV-associated tuberculosis: A Sub-Saharan African perspective. *Sub-Saharan African journal of medicine* 2014. (1). p1-14. FROM: <HTTPS://WWW.SSAJM.ORG/ARTICLE.ASP?ISSN=2384-5147> (Accessed 26 April 2020).
- Adhikari, M. 2009. Tuberculosis and tuberculosis/HIV co-infection in pregnancy. *Fetal and Neonatal Medicine* 2009(14). p234-240. From: <http://www.sciencedirect.com> (Accessed 05 May 2021).
- Al-Ababneh, MM. 2020. Linking ontology, epistemology and research methodology. *Science & philosophy* 2020 (8). p75-91. From: www.researchgate.net/publication/343361530 (Accessed 03 October 2021).
- Al Shamisi, H, Almutairi, AG, Al Mashrafi, S & Al Kalbani, T. 2020. Implications of Language Barriers for Healthcare: A Systematic Review. *Oman Medical Journal* 2020 (35). No. 2: p122. From: <https://www.researchgate.net> (Accessed 01 September 2021).
- Annamraju, H & Mackillop, L. 2017. Respiratory disease in pregnancy. *Obstetrics, Gynaecology & Reproductive Medicine* 2017(2). Issue 4. p105 -111. From <http://www.sciencedirect.com> (Accessed 20 February 2020).
- Akin, S, Gorak, G, Unsar, S, Mollaoglu, M, Ozdilli, K & Durna, Z. 2011. Knowledge of and attitudes toward tuberculosis of Turkish nursing and midwifery students. *Nurse Education Today* 2011. (3) No 8. p774-7799. <https://neuro.unboundmedicine.com/medline/citation/> (Accessed 03 September 2021).
- Asiamah, N, Mensah, HK & Oteng-Abayie, EF. 2016. An Assessment of the Effect of Education, In-Service Training (IST) and Tenure on Healthcare Performance: A

- Cost Optimizing Perspective. *Current Research in Psychology* 2016. (2). p16.26. From <https://www.researchgate.net/profile/Henry-> (Accessed 15 August 2021).
- Atiola, G, Rwandle, T, Obadara, T, Komolafe, IO, Odutolu, G, Olumu, J & Adenuga, L. 2018. Epidemiology of tuberculosis in pregnant women, Southwest Nigeria. *Journal of infection and public health* 2018 (11). p826-833. From <https://pubmed.ncbi.nlm.nih.gov/29914601/> (Accessed 10 February 2020).
- Awua-Boateng, NY, Mohamed, A, Aglanu, LM, Acheampong, G, Amuasi, JH, Bonsu, FA, Phillips, RO & Owusu-Dabo, E. 2019. Is pulmonary tuberculosis in pregnant women a problem in Ghana? Observation and lessons from the national tuberculosis prevalence project. *International journal of microbiology* 2019 (8). Issue 3. p267-272. From: <http://www.ijmyco.org> (Accessed 31 May 2020).
- Ayalew, F, Kibwana, S, Shawula, S, Misganaw, E, Abosse, Z, van Roosmalen, J, Stekelenburg, J, Kim, YM, Teshome, M & Maria, DW. 2019. Understanding job satisfaction and motivation among nurses in public health facilities of Ethiopia: a cross-sectional study. *BioMed Central Nursing*, 2019 (18) No 1. p1-13. From: <https://research.rug.nl/en/publications> (Accessed 13 October 2021).
- Azam, P & Watson, R. 2017. Language barriers and their impact on the provision of care to patients with limited English proficiency: Nurses' perspectives. *Journal of Clinical Nursing* 2017 (27). p1152-1160. From: <https://pubmed.ncbi.nlm.nih.gov/29193568> (Accessed 02 September 2021).
- Banakhar, MA. 2018: Nurses 'motivation and factors affecting it: A scoping review. *International Journal of Nursing and Clinical Practices* 2018. (5) 277. p1-11. From: https://www.researchgate.net/publication/325496003_Nurses. (Accessed 02 October 2021).
- Bares, SH & Swinddells, S. 2020. Latent Tuberculosis and HIV infection. *Current Infectious Disease Reports* 2020 (22)17. P1-9. From: <https://link.springer.com/article> (Accessed 03 September 2021).

- Barrow, JM, Sharma, S. 2021. Five Rights of Nursing Delegation. [Updated 2021 Jul 26]. In: *StatPearls [Internet]. Treasure Island (FL): StatPearls Publishing 2021* (1). From: <https://www.ncbi.nlm.nih.gov/book> (Accessed 15 October 2021).
- Basavarajaiah, DM & Murphy, BN. 2019. *A predictive model approach to HIV TB co-infection in vertical transmission. In: HIV Transmission. Springer, Singapore* P978-981. From: [Predictive Model Approach to HIV TB Co-infection in Vertical Transmission | SpringerLink](#) (Accessed 06 June 2021).
- Bashorun, AO, Linda, C, Omoleke, S, Kendall, L, Donkor, SD, Kinteh, M, Danso, B, Leigh, L, Kandeh, S, D'Alessandro, U & Adetifa, IMO. 2020. Knowledge, attitude and practice towards tuberculosis in Gambia: a nation-wide cross-sectional survey. *BioMed Central Public Health* 2020. (20). p1566. From: <https://reference.medscape.com/medline/abstract> (Accessed 15 August 2021).
- Bates, M, Ahmed, Y, Kapata, N, Maeurer, M, Mwaba, P & Zumla, A. 2014. Perspectives on tuberculosis in pregnancy. *International Journal of infectious diseases* 2015 (32). p124-127. From <https://pubmed.ncbi.nlm.nih.gov/25809768/> (Accessed 10 March 2020).
- Bates, M, Ahmed, Y, Chilukutu, L, Tembo, J, Cheelo, B, Sinyangwe, S, Kapata, N, Maeurer, M, O'Grady, J, Mwaba, P & Zumla, A. 2013. Use of Xpert MTB/RIF assay for diagnosing pulmonary tuberculosis comorbidity and multidrug-resistant TB in obstetrics and gynaecology inpatient wards at the University Teaching Hospital, Lusaka, Zambia. *Tropical Medicine and international Health* 2013 (18). No 9. p 1134-1140. From <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4016757/> (Accessed 13 March 2021).
- Baquero-Artiago, F, Mellado Pena, MJ, Rosal Rabes, T, Noguera Julian, A, GonceMellgren, A, Calle Fernandez-Miranda, M & Navarro Gomez, ML. 2015: Spanish Society for Pediatric infectious diseases guideline on tuberculosis in pregnant and neonates (1): Epidemiology and diagnosis. Congenital tuberculosis. *Anales de Pediatra* 83(4) Barcelona: *Elservier Doyma*, 2015, p285.e1-.e8. From sciencedirect.com/science/articles/abs/pii/S2341287915001623 (Accessed 13 March 2020).

- Bekker, A. Schaaf, HS. Drapper, HR. Kriel, M & Hesselning, AC. 2016. Tuberculosis disease during pregnancy and treatment outcomes in HIV-infected and uninfected women at Referral Hospital in Cape Town. *Plos One* 2016 (10). p1-14. From: <https://scholar.sun.ac.za/bitstream/handle/10019.1> (Accessed 14 March 2020).
- Bhargava, A & Bhargava, M. 2020. Tuberculosis deaths are predictable and preventable: comprehensive assessment and clinical care is the key. *Journal of clinical tuberculosis and other mycobacterial diseases* 19 2020 (1000144). p1-7. From <http://www.elsevier.com/locate/jctube> (Accessed 31 May 2020).
- Black, L. 2007. Effects of malpractice law on the practice of medicine. American Medical Association. *Journal of Ethics*, 2007 (9) No 6. pp. 437-440. <https://www.researchgate.net/publication> (Accessed 03 September 2021).
- Bless, C, Higson-Smith, C & Sithole, SL. 2013. *Fundamentals of research methods: An African perspective*, edited by a de Villiers. 5th Edition. Claremont: Juta.
- Bluestone, J, Johnson, P, Judith Fullerton, J, Carr, C, Alderman, J & BonTempo, J. 2013. Effective in-service training design and delivery: evidence from an integrative literature review. *Biomedical centra1. Human Resources for Health* 2013 (11). p51. <https://www.semanticscholar.org> (Accessed 01 September 2021).
- Bongomin, F, Ssekamatte, P, Nattabi, G, Olum, R, Ninsiima, S, Kyazze, AP, Nabakka, W, Kukunda, R, Cose, S, Kibirige, D, Batte, C, Kaddumukasa, M, Kirenga, B, Nakimuli, A, Baluku, JB & Andia-Biraro, I. 2021. Latent Tuberculosis Infection Status of Pregnant Women in Uganda Determined Using QuantiFERON TB Gold-Plus. *Infectious Disease Society of America*. p1-8. From: <https://www.researchgate.net/profile/Felix-Bongomin> (Accessed 02 October 2021).
- Broughton, E, Haumba, S, Calnan, M, Ginidsa, S, Jeffries, R, Maphalala, G, Mazibuko, S, Mirara, M, Modi, S, Munyaradzi, P, Preko, P & Simelani, B. 2017. Screening in maternity to ascertain tuberculosis status (SMATS) study. *BioMed Central infectious diseases*. 2017 (17). p1-6. From <http://bmcinfectdis.biomedcentral.com> (Accessed 11 February 2020).

- Botma, Y, Greeff, M, Mulaudzi, FM & Wright, SCD. 2016. *Research in Health Sciences*. 5th Impression. Cape Town: Pearson.
- Bowling, A. 2009. *Research methods in health. Investigating health and health services*. 3rd Edition. Berkshire: Open University Press.
- Brink, H. Van der Walt, C, Van Rensburg, G. 2018. *Fundamentals of research methodology for healthcare professionals*. 4th Edition. Cape Town: Juta.
- Brink, H, Van der Walt, C, Van Rensburg, G. 2012. *Fundamentals of research methodology for health care professionals*. 4th Edition. Cape town: Juta.
- Bruchfield, J, Correia-Neves, M & Källenius, G. 2015. Tuberculosis and HIV co-infection. *Cold Spring Harbor Perspective in Medicine* 2015 (7). p1-45. From: <https://pubmed.ncbi.nlm.nih.gov/25722472/> (Accessed 25 April 2020).
- Burns, N & Grove, SK. 2011. *Understanding nursing research, building evidence-based practice*. 5th Edition. USA: Elsevier.
- Carillon, S & Desgrèes, DLA. 2017. [Barriers to tuberculosis and screening: a qualitative study in French department]. *Sante Publique (vandoevre-Les-Nancy) [santé Publique]* 2017 (29). No 2. pp157-166. From: <https://pubmed.ncbi.nlm.nih.gov/28737334/> (Accessed 14 March 2020).
- Centres for Disease Control and Prevention. 2016. *Treatment of LTBI and TB for persons with HIV*. From: <https://www.cdc.gov/tb/topic/basics/default.htm> (Accessed 14 March 2020).
- Christian, SC, Smith, A & Hompashe, D. 2018. Measuring quality Gaps in TB screening in South Africa using standardised patient Analysis. *International Journal of Environmental Research and Public Health* 2018 (15). p729. From: <https://www.academia.edu> (Accessed 03 September 2021).
- Chaghari, M, Saffari, M, Ebadi, A & Ameryoun, A. 2017. Empowering Education: New Model for In-Service Training of Nursing Staff. *Journal of Advances in Medical Education and Professionalism* 2017 (5). p26-32. From: <https://www.cbi.nim.nih.gov> (Accessed 15 August 2021).

- Corbin, J & Strauss, A. 2015. *Basics of qualitative research techniques and procedures for developing grounded theory*. 4th Edition. Los Angeles. London: SAGE.
- Cranmer, LM, Langat, A, Ronen, McGrath, CJ, LaCourse, S, Pintyre, B, Odeny, B, Singa, B, Katana, A, Nganga, J, Kinuthia, G & John-Stewart, G. 2017. Integrating tuberculosis screening in Kenyan Prevention of Mother-To-Child Transmission programs. *International Journal of Tuberculosis and Lung disease*, 2017(3). p256-272. From: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5729039/> (Accessed 10 February 2021).
- Creswell, JW & Creswell, JD. 2018. *Research design. Qualitative, quantitative & mixed methods approach*. 5th Edition. UK: Sage.
- Creswell, JW. 2014. *Research design: qualitative, quantitative and mixed methods approach*. 4th Edition. Singapore: Sage publications.
- Creswell, JW. 2013. *Qualitative inquiry and research design: choosing among five approaches*. 3rd Edition. Washington DC: SAGE.
- de Lima Corvino, DF, Shrestha, S & Kosmin, AR. 2017. Tuberculosis screening. [Updated 2019 Feb 4]. In: *StatPearls*[internet]. *Treasure Island (FL):statsPearl Publishing*; 2020 Jan. From: <https://scholar.google.co.za/scholar> (Accessed 10 March 2020).
- Dennis, EM, Hao, Y, Tamambang, M, Rshan, TN, Gatlin, KJ, Bghigh, H, Ogunyemi, OT, Diallo, F, Spooner, KK, Salemi, JL, Olaleye, OA & Khan, KZ. 2018. Tuberculosis during pregnancy in the United States: racial/ethnic disparities in pregnancy complications and in-hospital death. *Plos One*. 2018. 13(3). p1-11. From [ncib.nlm.nih.gov](https://www.ncbi.nlm.nih.gov) (Accessed 02 March 2020).
- Deressa, AT & Zeru, G. 2019. Work motivation and its effects on organizational performance: the case of nurses in Hawassa public and private hospitals: Mixed method study approach. *BioMed Central* 2019. (12)213. p1-6. From: <https://www.semanticscholar.org/paper> (Accessed 10 October 2021).
- De Schacht C, Mutaquiha C, Faria F, Castro G, Manaca N, Manhiça, I & Cowan, JF. 2019. Barriers to access and adherence to tuberculosis services, as perceived by

- patients: A qualitative study in Mozambique. *PLoS ONE* 2019. 14(7). From: <https://www.researchgate.net/publication> (Accessed 02 August 2021).
- De Vos, AS, Strydom, H, Fouchè, CB & Delpont, CSL. 2011. *Research of grassroots for the social sciences and human service professions*. 4th edition. Pretoria: Van Schaik.
- Dick, J & Schoeman, JH. 1996. Tuberculosis in the community: 2. The perceptions of members of tuberculosis a voluntary health worker programme. *Tubercle & Lung Disease*, 77(4). p380–383. From: <https://europepmc.org/article> (Accessed 05 September 2021).
- Dixon, L, Guilliland, K, Pallant, J, Sidebotham, M, Fenwick, J, McAra-Couper, J & Gilkison, A. 2017. The emotional wellbeing of New Zealand midwives: Comparing responses for midwives in case loading and shift work settings. *New Zealand College of Midwives Journal*. 2017 (53). p1-11. From: <https://www.midwife.org.nz/wp> (Accessed 13 August 2021).
- Dudley, N, Miller, J, Breslin, ML, Susan A, Chapman, SA & Joanne Spetz, J. 2021. The Impact of Nurse Delegation Regulations on the Provision of Home Care Services: A Four-State Case Study. *Medical Care Research and Review Supplement to 2021* (78) Issue 1. p47–56. From: <https://journals.sagepub.com> (Accessed 14 October 2021).
- Ebben, RHA, Siqeca, F, Madsen, UR, Vloet, LCM & Van Achterberg. 2018. Effectiveness of implementation strategies for the improvement of guideline and protocol adherence in emergency care: a systematic review. *BioMed Journal Open* 2018 (8) e017572. From: <https://www.ncbi.nlm.nih.gov/pubmed> (Accessed 12 August 2021).
- Ellis, P. 2010. *Understanding research for nursing students*. Great Britain: TJ International LTD, Padstow, Cornwall.
- El-Messidi, A, Czuzoj-Shulman, N, Spence, AR & Abenhaim, HA. 2016. Medical and obstetric outcomes among pregnant women with tuberculosis: a population-based study of 7.8 million births. *American Journal of Obstetrics & Gynaecology* December

- 2015 (215). p1 - 6. From: <https://pubmed.ncbi.nlm.nih.gov/27530490/> (Accessed 02 March 2020).
- Elwell, K. 2016. Facilitators and barriers to treatment adherence with PMTCT programs in Malawi. *AIDS Care* 2016 (28). No 8. p971-975. From: <https://www.tandfonline.com/doi/abs/10.1080/09540121.2016.1153586> (Accessed 15 September 2021).
- Emanuel, V, Day, K, Diegnan, L & Pryce-Miller, M. 2011. Developing evidence-based practise among students. *Nursing Times* 2011(107). Issue 49/50. p21-23. From: <https://pubmed.ncbi.nlm.nih.gov> (Accessed 03 September 2021).
- Fenwick, J, Hammond, A, Raymond, J, Smith, R, Foureur, M, Homer, C & Symon, A. 2012. Surviving not thriving newly qualified midwives' transition to practice. *Journal of Clinical Nursing* 2012 (21). p2054-2063. From: <https://pubmed.ncbi.nlm.nih.gov> (Accessed 05 September 2021).
- Fernandez, D, Salami, I, Davis, J, Mbah, F, Kazeem, A, Ash, A, Babino, J, Carter, L, salami, J, Spooner, KK, Olaleye, OA & Salihu, HM. 2018. HIV-TB co-infection among 57million pregnant women, obstetric complications, alcohol use, drug abuse and depression. *Journal of Pregnancy* 2018. p1-8. From: www.hindawi.com/journals/jp/2018 (Accessed 03 March 2021).
- Fink, A. 2019. *Conducting research literature reviews; from the internet to paper*. 5th edition. London. SAGE.
- Fowks, FJI, Draper, BL, Hellard, M & Stoove, M. 2016. Achieving development goals for HIV, tuberculosis and malaria in sub-Saharan Africa through integrated antenatal care: barriers and challenges. *BioMed Central Medicine* 2016 (14). No 202. p1-10. From: <https://bmcmmedicine.biomedcentral.com/articles/10.1186/s12916-016-0753-9> (Accessed 26 April 2020).
- Fraser, DM, Cooper, MA & Nolte, AGW. 2010. *Myles textbook for midwives: African Edition*. 2nd Edition. Churchill Livingstone: Elsevier.

- Friedman, LN & Tanooue, LT. 2014. *Tuberculosis in pregnancy. Up to date*. 2014 March. From: <http://www.uptodate.com.lecomlrc.lecom.edu/contents/tuberculosis-in-pregnancy> (Accessed 05 April 2019).
- Gannepalli, A, Krishna, AB & Anjum, B. 2020. Oral manifestation in HIV-TB co-infected patients and their correlation with CD4 count in Telengana State, India. *Journal of International Society of Preventive & Community Density* 2020 (10) No 1. p21-35. From: <https://www.ncbi.nlm.nih.gov/pmc/articles> (Accessed 31 May 2020).
- Galvin, JL. 2017. *Writing literature reviews, A guide for students of the social and behavioural sciences*. 6th Edition. New York: Routledge.
- Gebreegiabiher, D, Adane, K. & Abebe, M. 2017. A survey on undiagnosed active pulmonary tuberculosis among pregnant mothers in Mekelle and surrounding District in Tigray, Ethiopia. *The international journal of mycobacteriology* 2017 (6). Issue 1. p43-46. From: <https://pubmed.ncbi.nlm.nih.gov/28317804/> (Accessed 20 February 2020).
- Getahun, H, Kittikraisak, W, Heilig, CM, Corbett, EL, Ayles, H, Cain, KP, Grant, AD, Churchyard, GJ, Kimerling, M, Shah, S, Lawn, SD, Wood, R, Maartens, G, Granich, R, Date, AA & Varma, JK. 2011. Development of a Standardized Screening Rule for Tuberculosis in People Living with HIV in ResourceConstrained Settings: Individual Participant Data Metaanalysis of Observational Studies. *PLoS ONE Medicine* 2011 (8). Issue 1. e1000391. From: www.plosmedicine.org (Accessed 01 September 2021).
- Glaw, YA, Williams, G, Soares Magalhães, RJ, Gilks, CF & Assefa, Y. 2019. HIV prevalence among tuberculosis patients in Sub-Saharan Africa: A systematic Review and Meta-analysis. *PubMed. Aids Behav* 2019 (23). No 6. p1561-1575. From: <https://pubmed.ncbi.nlm.nih.gov/30607755/> (Accessed 26 April 2020).

- Gounder, CR, Wada, NI, Kensler, C, Violari, A, McIntyre, J, Chaison, R & Martinson, NA. 2011. Active tuberculosis case finding among pregnant women presenting to antenatal clinics in Soweto, South Africa. *Journal of Acquired Immune Deficiency Syndromes* 2011(57). p77-84. From: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3159850/> (Accessed 02 March 2020).
- Gowda, A & Bhandiwad, NA. 2016. Litigations in Obstetric and Gynaecological Practice: Can it be prevented? A Probability to Possibility. *The Journal of Obstetrics and Gynaecology of India* 2016 (66). No 1. p541–547. From: <https://www.semanticscholar.org> (Accessed 11 August 2021).
- Gupta, A. 2009. Mother to child transmission of TB: what do we know? *Catalysing HIV/TB Research: innovation, funding and networking*. From: <https://www.stoptb.org> (Accessed 03 June 2020).
- Grant, AD, Charalambous, S, Tlali, M, Karat, AS, Dorman, SE, Hoffmann, CJ, Johnson, S, Vassali, A, Churchyard, GJ & Fielding, K. 2020. Algorithm-guided empirical tuberculosis treatment for people with advanced HIV (TB fast track): an open-label, cluster-randomised trial. *The Lancet* 2020 (7). p28-37. From: <http://www.thelancet.com/hiv> (Accessed 31 May 2020).
- Grant, C & Osanloo, A. 2014. Understanding, selecting, and integrating a theoretical framework in dissertation research: Creating the blueprint for your house. *Administrative Issues Journal: connecting education, practice, and research* volume 2015 (4). issue 2. p12-26. From: <https://www.researchgate.net/publication/266015734> (Accessed 20 February 2020).
- Gray, J, Groove, SK & Sutherland, S. 2017. *The practise of nursing research: appraisal, synthesis and generation of evidence*. 8th Edition. Mosby: Elsevier.
- Green, J & Thorogood, N. 2018. *Qualitative methods for health research*. 4Th Edition. London: SAGE.

- Grove, SK, Gray, JR & Burns, N. 2015. *Understanding Nursing Research building evidence-based practice*. 6th Edition. USA: Elsevier.
- Habedi, D. 2020. Healthcare workers' perspective on availability and accessibility of the prevention of mother-to-child-transmission programme in Northwest Province, South Africa. *Africa Journal of AIDS Research* 2020 (19). No 1. p24-33. From: <https://pubmed.ncbi.nlm.nih.gov/32200723> (Accessed 01 October 2021).
- Hahn, R & Truman, BI. 2015. Education Improves Public Health and Promotes Health Equity. *International Journal of Health Services* 2015 (45) No 4. p657–678. From: <https://pubmed.ncbi.nlm.nih.gov> (Accessed 01 September 2021).
- Hamda, SG, Tshikuka, JG, Joel, D, Setlhare, V, Monamodi, G, Mbeha, B, Tembo, BP, Mulenga, F & Agizew, T. 2020. Contribution of Xpert® MTB/RIF to tuberculosis case finding among pregnant women in Botswana. *Public Health Action* 2020 (10) No 2. p76-81. From: <https://www.ub.bw/user/977> (Accessed 01 October 2021).
- Harding, J. 2013. *Qualitative Data Analysis from start to finish*. 1st Edition. United Kingdom: SAGE.
- Haskins, L, Phakathi, S, Grant, M & Horwood, C. 2014. Attitudes of nurses towards patient care at a rural district hospital in the KwaZulu Natal Province of South Africa. *Africa Journal of Nursing and Midwifery* 2014 (16). No 1. p31–43. From: <https://www.researchgate.net> (Accessed 12 August 2021).
- Hassan, HA. 2015. Women's Long-Term Life Experience After Pregnancy Termination Women's Long-Term Life Experience After Pregnancy Termination for Fetal Abnormality: Interpretive Phenomenological Study. *Electronic Thesis and Dissertation Repository* 2015. p1-30. From: <https://www.semanticscholar.org> (Accessed 11 august 2021).
- Heidebrecht, CL, Podewils, LJ, Pym, AS, Cohen, T, Mthiyane, T & Wilson, D. 2016. Assessing the utility of Xpert MTB/RIF as a screening tool for patients admitted to medical wards in South Africa. *Scientific Reports* 2016 (6). 19391; doi:10.1038/srep19391. From: <https://www.nature.com/articles/srep19391> (Accessed 02 March 2020).

- Herchline, TE. 2020. What are the primary screening tests for tuberculosis (TB) infection? *Medscape*. From: <https://www.medscape.com> (Accessed 03 March 2020).
- Hildingsson, I, Westlund, K & Wiklund, I. 2013. Burnout in Swedish midwives. *Sexual & Reproductive Healthcare* 2013 (4). No 3. p87-91. From: <https://pubmed.ncbi.nlm.nih.gov/24041728/> (Accessed 10 October 2021).
- Jiyane, MP. 2021. *Experiences of professional nurses on the shortage of resources in a tertiary hospital in Tshwane District*. MA Dissertation. Pretoria: Unisa.
- Kabir, SMS. 2017. *Introduction to counselling*. From: [\(1\) \(PDF\) INTRODUCTION TO COUNSELING \(researchgate.net\)](#) (Accessed 11 October 2021).
- Kalk, E, Heekes, A, Mehta, U, de Waal, R, Jacob, N, Cohen, K, Myer, L, Davies, MA, Maartens, G & Boulle, A. 2020. Safety and Effectiveness of Isoniazid Preventive Therapy in Pregnant Women Living with Human Immunodeficiency Virus on Antiretroviral Therapy: An Observational Study Using Linked Population Data. *Clinical Infectious Disease* 2020 (71). p351-358. From: <https://academic.oup.com/cid/article/71/8/e351/5695919> (Accessed 29 September 2021).
- Kalusopa, MV, Mukwato, KP, Muleya, M, Kwaleyela, C, Musenge, E, Chapima, F, NambalaSianchapa, B, Jon, OO, Babil, S & Maimbolwa, CM. 2019. Midwives' perspectives on risk factors influencing maternal morbidity and mortality rates in Zambia: A case of Lusaka and Mumbwa Districts. *International Journal of Nursing and Midwifery* 2020 (22). No 2. p64-97. From: <https://www.academia.edu/49817097/Midwives> (Accessed 30 September 2021).
- Kanabus, A. 2017. *TBFACTS.ORG Information about Tuberculosis*. From: <https://tbfacts.org> (Accessed 25 April 2020).
- Khan, FA, Minion, J, Pai, M, Royce, S, Burman, W, Harries, AD & Menzies, D. 2010. Treatment of tuberculosis I HIV-Coinfected patients: A systematic review and meta-analysis. *Clinical Infection Disease* 2010 (50). Issue 9. p1288-1299. From: <https://academic.oup.com/cid/article> (Accessed 31 May 2020).

- Khan, M, Pillay, T, Moodley, JM & Connolly, CA. 2001. Maternal mortality associated with tuberculosis-HIV-1 co-infection in Durban, South Africa. *AIDS* 2001 (15). No14. p1857- 1863. From: <https://pubmed.ncbi.nlm.nih.gov/11579249/> (Accessed 10 March 2020).
- Kinman, G, Teoh, K & Harriss, A. 2020. *The Mental Health and Wellbeing of Nurses and Midwives in the United Kingdom. Supporting occupational health and wellbeing of professionals. The society of Occupational Medicine.* 2 St Andrews Place. London NW1 4LB. From: <https://www.nhshealthatwork.co.uk/images/library/> (Accessed 01 October 2021).
- Kieft, RAMM, Der Bouwer, BBJM, Francke, AL & Delmoij, DMJ. 2014. How nurses and their work environment affect patient experiences of the quality of care: a qualitative study. *BioMed Central Health Services Research* 2014 (14). No 1. p1-10. From: <https://www.researchgate.net> (Accessed 05 September 2021).
- Kotze, M. 2018. How job resources and personal resources influence work engagement and burnout. *African Journal of Economic and Management Studies* 2018 (9). Issue 2. p148-164. From: <https://www.ufs.ac.za> (Accessed 02 September 2021).
- Kumar, R. 2011. *Research methodology: a step-by-step guide for beginners.* 3rd Edition. London: SAGE.
- LaCourse, S M, Cranmer, LM, Matemo, D, Kinuthia, J, Richardson, BA, John-Steward, G & Horne, DJ. 2016. Tuberculosis case finding in HIV-infected pregnant women in Kenya reveals the poor performance of symptom screening and rapid diagnostic tests. *Journal of Acquired Immune Deficiency Syndromes* 2016 (71). No 2. p219-227. From: ncib.nlm.nih.gov (Accessed 02 March 2020).
- Lampi, M. 2017. *Triage, management of trauma patient.* Sweden: Linköping University Medical Faculty.
- Lesyna, DK & Zaret, A. 2017. The role of human rights litigation in improving access to reproductive health care and achieving reductions in maternal mortality. *BioMed Central Pregnancy and Childbirth* 2017 (17). No 2. p367–380. From: <https://www.ncbi.nlm.nih.gov> (Accessed 17 August 2021).

- Letang, E, Ellis, J, Naidoo, K, Casas, ES, Sánchez, P, Hassan-Moosa, R, Creswell, F, Miró, JM & Carcia- Basteiro, A. 2020. Tuberculosis-HIV co-infection: progress and challenges after two decades of global antiretroviral treatment roll-out. *Arch bronchoneumol* 2020. P1-9. From: <https://doi.org/10.1016/j.arbers.2019.11.015> (Accessed 31 May 2020).
- Limpopo Department of Health. District Health Plan 2016/2017. Capricorn District.
- Lincoln, Y, & Guba, E. 1985. *Naturalistic enquiry*. Beverly Hills, CA: SAGE Publications.
- Loto, OM & Awowole, I. 2012. Tuberculosis in Pregnancy: A Review. *Journal of Pregnancy* 2012 (2012). Article ID 379271, 7 pages. From: [Tuberculosis in pregnancy: a review - PubMed \(nih.gov\)](#) (Accessed 12 September 2021).
- Makabe, S, Kume, Y, Kamata, T, Apikomkon, H, Griffiths, J, Takagai, J, Akagawa, Y, Andoh, H, Ito, T & Singha-don, N. 2020. Health Promotion Awareness in Barbershops and Salons: An International Cross-Sectional Survey in Japan and Thailand. *Journal of Community Health* 2020 (45). p768–774. From: <https://neurotree.org/neurotree/publications.php?> (Accessed 10 October 2021).
- Malaza, A, Smith, J, Mdaka, N, Haynes, R & Shezi, S. 2016. *The 90-90-90 COPENDIUM, An introduction to 90-90-90 in South Africa*. 2016 (1). From: <https://sahivsoc.org>. (Accessed 17 August 2021).
- Mallick, L, Winter, R, Wang, W & Yourkavitch, J. 2016. Integration of infectious disease services with antenatal care services at health facilities in Kenya, Malawi and Tanzania. DHS ANALYTICAL STUDIES 62. *United States Agency for International Development*. P1-88. From: <https://www.semanticscholar.org/paper/GHI...> (Accessed 02 October 2021).
- Mashigo, MM. 2016. *Midwives 'perception of ethical behaviour and professional malpractice in the labour units of Tshwane, Gauteng Province, South Africa*. MA Dissertation. Pretoria: Unisa.
- Maree, JG (ed). 2016. *First step in Research*. 2nd Edition. Pretoria. Van Schaik.

- Martins, AJL, Oliveira, CM, Morais, ECM, Fecury, AA, Dias, CAGM, Dendasck, CV, Oliveira, M & Oliveira, E. 2017. Audit of Quality Nursing in Public Health Care. *Multidisciplinary Scientific Journal. Special Edition of Health 2017* (04). Issue 11. p96-113. From: <https://www.scirp.org/reference> (Accessed 22 August 2021).
- Martin, CE & Black, V. 2012. Tuberculosis in HIV-infected pregnant women in South Africa. *Southern African Journal of HIV Medicine* 2012 (13). No. 4. p182-185. From: <http://dx.doi.org/10.7196/SAMJ.9090> (Accessed 12 February 2020).
- McKenna, L, Frick, M, Lee, C, Namutamba, D, Smit, L, Theunissen, M, Vandavelde, W, Mandoore, S, Snow, K & Seaworth, B. 2017. A community perspective on inclusion of pregnant women in tuberculosis drug trials. *Clinical infectious disease CID* 2017(65) p1383-1387. From: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5849125/> (Accessed 02 March 2020).
- McNiff, J & Whitehead, J. 2011. *All you need to know about action research*. 2nd Edition. London: SAGE. From: <http://books.co.za> (Accessed 07 February 2020).
- Miele, K, Bamrah Moris, S & Tepper, K. 2020. Tuberculosis in pregnancy. *Obstetrics & Gynecology* 2020 (135). Issue 6. p1444-1453. From: <https://journals.lww.com/greenjournal> (Accessed 31 May 2020).
- Mishra, SB & Alok, S. 2011. *Handbook of research methodology compendium for scholars & researchers*. India: Educreation Publishing.
- Mital, H, Das, S & Faradi, MMA. 2014. Management of new-born infant born to mother suffering from tuberculosis: current recommendation and gaps in knowledge. *Indian Journal of Medical Research* 2014 (140). No 1. p32-39. From: <https://www.ncbi.nlm.gov> (Accessed 03 June 2020).
- Mokhele, I, Jinga, N, Berhanu, R, Dlamini, T, Long, L & Evans, D. 2021. Treatment and pregnancy outcomes of pregnant women exposed to second-line anti-tuberculosis drugs in South Africa. *BMC Pregnancy Childbirth* 2021 (21). p1-11. From: <https://www.semanticscholar.org/paper/Treatment> (Accessed 02 October 2021).

- Molina, R, Venkatesh, K, Schantz-Dunn, J, Meadows, A, Nour, N & Diouf, K. 2016. Comparing an interferon Gamma assay with the tuberculin screening during prenatal care. *Maternal and child health journal* 2016 (20) No 6. p1314-1320. From: <https://ur.booksc.eu/book/48639077/aad42b> (Accessed 02 March 2020).
- Mollel, ED, Todd, J, Mahande, MJ and Msuya, SE. 2020. Effects of tuberculosis on mortality of HIV-infected patients in Northern Tanzania. *Tropical Medicine and Health* 2020 (48). No 26. p1-10. From: <https://doi.org/10.1186/s41182-020-00212-z> (Accessed 02 June 2020).
- Moule, P & Goodman, M. 2014. *Nursing research. An introduction*. 2nd Edition. California: SAGE Publications Ltd.
- Mnqayi, SO. 2016. *Tuberculosis screening for pregnant women living with HIV in Uthungulu District in 2011/2021*. Master of Public Health Dissertation. Durban: University of Kwazulu-Natal.
- Muller, M & Bester, P. 2016. *Nursing dynamics, edited by R Brownlee*. 5th edition. Cape Town: Pearson.
- Mutabazi, JC, Gray, C, Muhwava, L, Trotter, H, Ware, LJ, Noris, S, Murphy, K, Levit, N and Zarowsky, C. 2020. Integrating the prevention of mother-to-child transmission of HIV into primary healthcare services after AIDS denialism in South Africa: Perspectives of experts and health care workers – a qualitative study. *Biomed Central Health Services Research* 2020 (20). p1-18. From: <https://www.researchgate.net/publication/342475396> (Accessed 29 September 2021).
- Mykkänen, M, Saranto, K & Miettinen, M. 2012. Nursing audit as a method for developing nursing care and ensuring patient safety. *PubMed*. 24199107. From: <https://www.researchgate.net/publication> (Accessed 07 September 2021).
- Naggirinya, AB, Majugira, A, Meya, DB, Biraro, IA, Mupere, E, Worodria, W & Manabe, Y. 2020. Functional adrenalin insufficiency among tuberculosis- human immunodeficiency virus co-infected patients: a cross-sectional study in Uganda.

BioMed Central Research notes 2020 (13). p224. From: <https://doi.org/10.1186/s13104-020-050664-8> (Accessed 31 May 2020).

Namey, EE & Guest, G. 2015. *Data reduction technique for large qualitative data sets*. From: <https://www.researchgate.net/publication/2653488624> (Accessed 30 August 2021).

Negussie, BB & Oliksa, GB. 2020. Factors influence nurses' job motivation at governmental health institutions of Jimma Town, South-west Ethiopia. *International Journal of Africa Nursing Sciences* 2020 (13). From: <https://www.researchgate.net/publication/345969223> (Accessed 29 September 2021).

Neuman, WL. 2014. *Social research methods: qualitative and quantitative approaches*. 7th Edition. England: Pearson.

Norwood, SL. 2010. *Research essentials: foundations for evidence-based practice*. New Jersey: Pearson Education.

Obringer, E, Herald-Sargent, T & Hagerman, JR. 2015. Neonatal Tuberculosis. *Pediatric Annals* 2015 (44) No 5. p126-130. From: <https://www.researchgate.net/publication/277082203> (Accessed 06 June 2021).

Odayar, J, Rangaka, MX, Zerbe, A, Petro, G, McIntyre, JA, Phillips, TK, Abrams, EJ & Myer, L. 2018. Burden of tuberculosis in HIV-positive pregnant women in Cape Town, South Africa. *International Journal of Tuberculosis and lung disease* 2018 (22). No 7. p760-765. From: <https://pubmed.ncbi.nlm.nih.gov/29914601/> (Accessed 02 March 2020).

Odendal, L. 2021. *Targeted screening improves TB diagnosis in people with HIV in South Africa*. From: <https://www.aidsmap.com/news> (Accessed 10 September 2021).

Odendal, L. 2013. *HIV and TB in practice for nurses: pregnancy and HIV/TB*. From: <https://www.aidsmap.com/news/feb-2013/> (Accessed 20 April 2020).

Olakunde, BO, Adeyinka, DA, Olawepo, JO, Pharr, JR, Ozigbu, CE, Wakdok, S, Oladele, T & Ezeanolue, EE. 2019. Towards the elimination of mother-to-child transmission

- of HIV in Nigeria: a health system perspective of the achievements and challenges. *International Health* 2019 (11). p240-249. From: <https://academic.oup.com/inthealth/article/11/4/240/5480911> (Accessed 20 September 2021).
- Orazuluke, N, Sharma, JB, Sharma, S & Umeora, OUJ. 2021: Tuberculosis (TB) in pregnancy – A review. *European Journal of Obstetrics & Gynecology and Reproductive Biology* 2021 (259). p167-177. From: <https://europepmc.org/article/MED/33684671> (Accessed 01 October 2021).
- Oyira, EJ, Ella, RE, Usochukwu, EC & Akpan, IP. 2016. Knowledge Practice and Outcome of Quality Nursing Care Among Nurses in University of Calabar Teaching Hospital (UCTH). *Journal of Education and Training Studies* 2016 (4). No. p179-193. From: <https://www.researchgate.net> (Accessed 05 September 2021).
- Oxford Secondary ATLAS for South Africa. 2014. South Africa: Oxford University Press.
- Oxford South African Dictionary. 2006. South Africa: Oxford University Press.
- Palombi, L & Moramarco, S. 2018. *Health in Sub-Saharan Africa: HIV, TB and Malaria Epidemiology. Multidisciplinary teleconsultant in Developing Countries*. From <https://doi.org/10.1007/978-3> (Accessed 02/06/2020).
- Parahoo, K. 2014. *Nursing Research: principles, process and issues*. 3rd edition. China: Palgrave Macmillan.
- Pasipamire, M, Broughton, E, Mkhontfo, M, Maphalala, G, Simelane-Vilane, B & Humba, S. 2020. Detecting tuberculosis in pregnant and postpartum women in Eswatini. *African Journal of Laboratory Medicine* 2020 (9). No 1. p837. From: www.scielo.org.za (Accessed 12 September 2021).
- Penzo, S. 2016. Addressing psychological distress in midwives. *Nursing Times* 24.02.16. 2016 (112). No 8. p22-23. From: <https://www.researchgate.net/publication/295859557> (Accessed 01 October 2021).

- Phillippi, J & Lauderdale, J. 2017. *Qualitative health research. A Guide to Field notes for qualitative research context and conversation*. From: <https://doi.org/10.1177/104932317697102> (Accessed 12 May 2020).
- Polit, DF & Beck, CT. 2012. *Nursing research: generating and assessing evidence for nursing practice*. 9th Edition. Philadelphia: Wolters Kluwer|Lippincott Williams & Wilkins.
- Polit, DF & Beck, CT. 2014. *Nursing research: generating and assessing evidence for nursing practice*. 10th Edition. Philadelphia: Lippincott Williams & Williams.
- Polit, DF & Beck, CT. 2017. *Nursing research: generating and assessing evidence for nursing practice*. 10th Edition. Philadelphia: Lippincott Williams & Wilkins.
- Pop, LG, Bacalbasa, N, Suciu, LD, Ionescu, P & Toader, OD. 2021. Tuberculosis in pregnancy. *Journal of Medicine and Life*. VOL.14. ISSUE: 2 MARCH-APRIL 2021. p165-170. From: <https://europepmc.org/article/MED/1209197> (Accessed 29 September 2021).
- Rendell, NL, Batjargal, N, Jadambaa, N & Dobler, CC. 2016. Risk of tuberculosis during pregnancy in Mongolia, a high incidence setting with low HIV prevalence. *International Journal of Tuberculosis and lung disease* 2016 (12). p1615-1620. From: <https://pubmed.ncbi.nlm.nih.gov/27931336/> (Accessed 02 March 2020).
- Reposi, AC & Bothamley, GH. 2015. Tuberculosis and pregnancy: a systemic review. *Pulmonary research and respiratory medicine open Journal* 2015 (2). Issue 1. p 63-68. From: <http://dx.doi.org> (Accessed 11 March 2020).
- Reuter, A, Seddon, JA, Marais, BJ & Furin, J. 2020. Preventing tuberculosis in children: a global health emergency. *Paediatric respiratory reviews*. From: <https://pubmed.ncbi.nlm.nih.gov/32253128/> (Accessed 02 June 2020).
- Saks, M, Allsop, J. 2013. *Researching health: qualitative, quantitative, and mixed methods*. 2st edition. London. Thousand Oaks, Calif: SAGE.

- Saramba, MI & Zhao, D. 2016. A perspective of the diagnosis and management of congenital tuberculosis. *Journal of Pathogens* 2016 (2016). 8 pages. From: <http://dx.doi.org/10.1155/2016/8623825> (Accessed 09 February 2020).
- Saroha, D, Dvyani, G, Sigh, AK & Dhamija, RK. 2019. Irreversible neuropathy in extremely- drug-resistant tuberculosis: An unfortunate clinical conundrum. *Indian journal of tuberculosis* 2019. ISSN 0019-5707. From: <http://www.sciencedirect.com> (Accessed 09 February 2020).
- Scott, L, da Silva, D, Boehme, CC, Stevens, W & Gilpin, C. 2017. Diagnosis of opportunistic infections: HIV co-infection: *Tuberculosis. Curr opin HIV AIDS* 2017 (12). No 2. p129-138. From: <https://www.ncbi.nlm.nih.gov/pbc/artiles> (Accessed 31 May 2020).
- Senna, CVA, Martins, T, Kammers, TS, Namante, LN & Sell, BT. 2017. Nursing Audit: an integrating review in thesis and dissertations. *Nursing & Care Open Access Journal* 2017 (4). No 2. p396-400. From: <https://medcraveonline.com> (Accessed 30 October 2021).
- Shaghghi, F, Abedian, Z, Forouhar, M, Esmaily, H & Eskandarnia, E. 2019. Effect of positive psychology interventions on psychological well-being of midwives: A randomized clinical trial. *Journal of Education and Health Promotion* 2019 (8). No 160. p 1-8. From: <https://www.researchgate.net/publication/336011370> (Accessed 28 September 2021).
- Shiel, WC. 2019. *Medicinal definition of vertical transmission*. From: <https://www.medicinenet.com/script/main/art.asp?articlekey=6882> (Accessed 25 April 2020).
- Singer, M. 2013. *Development, coinfection, and the syndemic of pregnancy in Sub-Saharan Africa. Infectious disease of poverty*. 2013 (2). No 26. p1-11 From: <https://www.researchgate.net/publication/258633472> (Accessed 13 March 2020).
- Sithole, PM & Khunou, SH. 2016. Factors contributing to missed opportunities in the prevention of mother to child transmission programme in the sub-district of Ngaka Modiri Molema, Northwest Province, South Africa. *African Journal for Physical*

Activity and Health Sciences (AJPHEs) 2016 (33). No 33. p667-678. From: <https://www.semanticscholar.org/paper/Factors> (Accessed 11 October 2021).

Sobhy, S, Babiker, Z, Zamora, J, Khan, KS & Kunst, H. 2016. Maternal and perinatal mortality and morbidity associated with tuberculosis during pregnancy and the postpartum period: a systematic review and meta-analysis. *An international journal of obstetrics and gynaecology*. DOI:10.1111/1471-0528.14408, p727-733. From: <https://www.readcube.com/articles/10.1111%2F1471-0528.14804> (Accessed 02 March 2020).

South Africa Government. 1999. *Public Finance Management Act No 1 of 1999*. Pretoria: Government Printers.

South Africa. National Department of Health. 2019. *Guideline for the prevention of mother to child transmission of communicable infections*. Pretoria: Government Printers.

South Africa. National Department of Health. 2018. *Saving mothers report 2017 seventh reports on to the confidential inquiry into maternal deaths in South Africa*. Pretoria: Government Printers.

South Africa. National Department of Health. 2017. *Saving Babies 2014-2016. Triennial report on perinatal mortality in South Africa*. Pretoria: Government Printers.

South Africa. National Department of Health. 2016. *Guidelines for maternity care in South Africa: a manual for clinics, community health centres and district hospitals*. Pretoria: Government Printers.

South Africa. National Department of Health. 2015. *Guidelines for maternity care in South Africa: a manual for clinics, community health centres and district hospitals*. Pretoria: Government Printers.

South Africa. National Department of Health. 2014. *National tuberculosis management guidelines*. Pretoria: Government Printers.

South Africa. 2012. *The South African Triage Scale*. Western Cape Government Health. From: <https://emssa.org.za> (Accessed 12 October 2021).

- South African Nursing Council. 2005. *Nursing Act No 33 of 2005 as amended*. Pretoria: SANC.
- Spruijt, I, Haile, DT, Van den Hof, S, Fiekert, SK, Jansen, N, Jerene, D, Klinkenberg, E, Leimane, EL & Suurmond, J. 2020. Knowledge, attitudes, beliefs, and stigma related to latent tuberculosis infection: a qualitative study among Eritreans in the Netherlands. *BioMed Central Public Health* 2020 (20). p1602. From: <https://www.researchgate.net> (Accessed 19 August 2021).
- Sugarman, J, Colvin, C, Maran, AC & Oxlade, O. 2014. Tuberculosis in pregnancy: an estimate of the global burden of disease. *Lancet* 2014(2). p 710-716. From: <https://pubmed.ncbi.nlm.nih.gov/25433626/> (Accessed 02 March 2020).
- Sulis, P & Pai, M 2018. Tuberculosis in Pregnancy: A treacherous Yet neglected issue. *Journal of Obstetric Gynaecol Can* 2018 (50). No 8. p1003-1005. From: <https://pubmed.ncbi.nlm.nih.gov/30103870/> (Accessed 20 September 2021).
- Sulis, G, Gnanou, S, Roggi, A, Konseimbo, A, Giorgetti, PF, Castelli, F & Matteelli, A. 2016. Active tuberculosis case finding among pregnant women: a pilot project in Burkina Faso. *International Journal of Tuberculosis and lung disease* 2016 (20). No 10. p1306-1308. From: ncib.nlm.nih.gov (Accessed 02 March 2020).
- Sun, J, Wang, C, Jin, D & Deng, F. 2020. Fetal congenital tuberculosis owing to late diagnosis of maternal tuberculosis: case report and review of congenital tuberculosis in China. *Paediatrics and international child health* 2020 (40). No 3. p194-198. From: <https://doi.org/10.1080/20469047.2020.1743932> (Accessed 01 October 2021).
- Starke, JR, & Cruz, AT. 2011. *Infectious diseases of the fetus and newborn*. 7th Edition. Science Direct. From: [sciencedirect.com/topics/medicines/congenital tuberculosis](https://www.sciencedirect.com/topics/medicines/congenital-tuberculosis) (Accessed 13 March 2020).
- Stoltz, A. 2015. Multi-drug resistant tuberculosis in women. *Obstetrics and gynaecology forum*. p2513-2516. From: <https://scholar.google.co.za/scholar?q=Stoltz> (Accessed 02 March 2020).

- Streubert, HJ & Carpenter, DR. 2011. *Qualitative research in nursing: advancing the humanistic imperative*. 4th Edition. Philadelphia: Lippincott, Williams & Wilkins.
- Sutton, J & Austin, Z. 2015. Qualitative research: data collection, analysis, and management. *The Canadian Journal of Hospital Pharmacy* 2015 (68). No 3. p226-231. From: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4485510/> (Accessed 13 March 2020).
- Tappen, R. 2016. *Advanced Nursing Research from theory to practice*. 2nd Edition. USA: Jones & Bartlett Learning.
- Taylor, SJ, Bogdan, R & Devault, ML. 2016. *Introduction to qualitative research methods. A guide and handbook resource*. 4th Edition. Canada: Willy & Sons.
- Thwaites, G. 2014. *Manson's Tropical infectious diseases*. 23rd Edition. Science Direct.
- Tiewsoh, JBA, Antony, B & Bloor, R. 2020. HIV_TB co-infection with clinical presentation, diagnosis, treatment, outcome and its relation to CD4 count, a cross-sectional study in a tertiary care hospital in coastal Karnataka. *Journal of family medicine and primary care*. 2020 (9). No 2. p1160-1165. From: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7113982/> (Accessed 31 May 2020).
- Trinh, QM, Nguyeni, HL, Nguyeni, VN, Nguyeni, TVA, Sintchenko, V & Marais, BJ. 2015. Tuberculosis and HIV co-infection on the Asia-Pacific region. *International Journal of Infectious Diseases*. 2015 (32). p170-178. From: www.selsevier.com/locate/ijid (Accessed 20 March 2020).
- Turnbull, ER, Kancheya, NG, Harris, JR, Topp, SM, Henostroza, G & Reld, SE. 2012. A model of tuberculosis screening for pregnant women in resource-limited settings using Xpert MTB/RIF. *Journal of pregnancy* 2012 (2012). p1-5. From: <https://pubmed.ncbi.nlm.nih.gov/22007302/> (Accessed 02 March 2020).
- The University of South Africa. Department of Social Sciences. 2010. *Only study guide for RSC2601*. Pretoria: UNISA.
- United States Agency for International Development. Aidsfree. 2017. *Strengthening high impact interventions for an Aids-free generation, Summary of HIV/TB co-infection*

- treatment regimens*. Arlington, VA: AIDSfree Project. From: <http://aidsfree.usaid.gov> (Accessed 10 February 2020).
- Vijayageetha, M, Kumar, AMV, Ramakrishnana, J, Sarkara, S, Papa, D, Mehta, K, Joseph, NM, Rajaram, M, Rajaa, S & Chinnakali, P. 2018: Tuberculosis screening among pregnant women attending a tertiary care hospital in Puducherry, South India: is it worth the effort? *Global Health Action* 2019 (12). No 1. p1-9. From: <https://pubmed.ncbi.nlm.nih.gov/30806593/> (Accessed 09 September 2021).
- Wasserman, S & Meintjies, G. 2014. The diagnosis, management and prevention of HIV-associated tuberculosis. *South African Medical Journal* 2014 (104). No12. From: <http://dx.doi.org/10.7196/SAMJ.9090> (Accessed 14 March 2020).
- World Health Organisation. 2021. *WHO operational handbook on tuberculosis. Module 2: Screening. Systematic screening for tuberculosis disease*. From: www.who.int/hiv (Accessed 27 August 2021).
- World Health Organisation. 2019. *Global tuberculosis report*. France: WHO. From: <http://www.who.int/tb> (Accessed 10 February 2020).
- World Health Organisation. 2018. *Global tuberculosis report*. Geneva: WHO. From: <http://www.who.int/tb> (Accessed 03 February 2020).
- World Health Organisation. 2015a. *Implementing THE END TB strategy: The essential*. Geneva: WHO. From: <http://www.who.int/tb> (Accessed 03 February 2020).
- World Health Organisation. 2015b. *Consolidated guidelines on HIV testing services, 5Cs: consent, confidentiality, counselling, correct results and correction*. France: WHO Press. From: <http://www.who.int> (Accessed 03 March 2010).
- World Health Organisation. 2012. *WHO Policy on collaborative TB/HIV activities. Guidelines for national programmes and other stakeholders*. From: www.who.int/hiv (Accessed 08 September 2021).
- World Health Organisation. 2009. *Implementing the WHO Policy on TB Infection Control in Health-Care Facilities, Congregate Settings and Households A framework to plan,*

implement and scale-up TB infection control activities at country, facility and community level. From: <https://apps.who.int/iris> (Accessed 11 September 2021).

World Health Organisation. 2003. *Treatment of Tuberculosis: Guidelines for national programmes.* 3rd Edition. Geneva. From: <https://www.who.int/tb> (Accessed 31 May 2020).

Yadav, V, Sharma, JB, Kachawa, G, Kulshresrtha, V, Mahey, R, Kumari, R & Kriplani, A. 2019. Obstetrical and perinatal outcome in pregnant women with extrapulmonary tuberculosis. *Indian journal of tuberculosis* 2019 (66). Issue 1. p158-162. From: <http://www.sciencedirect.com> (Accessed 13 February 2020).

Yaghoubi, A, Selehabadic, S, Abdeahadd, H, Hasaniand, SM, Avane, A, Yousefia, M, Jamehdara, AS, Ferns, GA, Khazaeie, M & Soleimanpoura, S. 2020. Tuberculosis, human immunodeficiency viruses and TB/HIV co-infection in pregnant women: A meta-analysis. *Clinical Epidemiology and Global Health* 2020 (8). No 4. p1312-1320. From: <https://www.sciencedirect.com/science/article> (Accessed 02 September 2021).

Yin, RK. 2011. *Qualitative Research from start to finish.* New York, London: The Guilford Press.

Yeh, JJ, Lin, SC & Lin, WC. 2019. Congenital tuberculosis in a Neonate: A case report and Literature review. *Frontier in Paediatrics* 2019 (7). p1-6. From: <https://tmu.pure.elsevier.com/en/publications/> (Accessed 29 September 2021).


Yoon, J & Kim, M. 2016. Confidence in delegation and leadership of registered nurses in long-term-care hospitals. *Journal of Nursing management* 2016 (24). Issue 5. p676-685. From: <https://onlinelibrary.willey.com> (Accessed 11 September 2021).

Zenhäusern, J, Bekker, A, Wates, MA, Schaaf, HS & Dramowski, A. 2019. Tuberculosis transmission in hospitalised neonates: Need for optimised tuberculosis screening of pregnant and postpartum women. *South African Medical journal* 2019 (109). No 5. p1-4. From: <http://www.scielo.org.za/scielo.php?script=sci> (Accessed 02 September 2021).

Zinatsa, F, Engelbrecht, M van Rensburg, AJ & Kigozi, G. 2018. Voices from the frontline: Barriers and strategies to improve tuberculosis infection control in primary health care facilities in South Africa. *BioMed Central Health Serv Res* 2018 1(8). No 1. p269. From: <https://doi.org/10.1186/s12913-018-3083-0> (Accessed 14 March 2020).

ANNEXURES

Annexure A: Approval from the university



RESEARCH ETHICS COMMITTEE: DEPARTMENT OF HEALTH STUDIES
REC-012714-039 (NHERC)

03 December 2019
Dear Chewe Violet Manonyana

HS HDC/934/2019

Student: Chewe Violet Manonyana

Student No: 46451153

Supervisor: Dr S Khunou

Qualification: PhD

Decision: Approval

Name: Chewe Violet Manonyana

Proposal: Tuberculosis screening among human immune deficiency virus positive pregnant women in Limpopo Province

Qualification: MA


Risk Level: Low risk

Thank you for the application for research ethics approval from the Research Ethics Committee: Department of Health Studies, for the above mentioned research. Final approval is granted from 03 December 2019 to 03 December 2022.

The application was reviewed in compliance with the Unisa Policy on Research Ethics by the Research Ethics Committee: Department of Health Studies on 03/12/2019.

The proposed research may now commence with the proviso that:

- 1) The researcher/s will ensure that the research project adheres to the values and principles expressed in the UNISA Policy on Research Ethics.*
- 2) Any adverse circumstance arising in the undertaking of the research project that is relevant to the ethicality of the study, as well as changes in the methodology, should be communicated in writing to the Research Ethics Review Committee, Department*



University of South Africa
P.O. Box 17003, Roseburg, Pietermaritzburg, 6001
Telephone: +27 12 429 7111 Fax: +27 12 429 4130
www.unisa.ac.za

Open Rubric

of Health Studies. An amended application could be requested if there are substantial changes from the existing proposal, especially if those changes affect any of the study-related risks for the research participants.

3) The researcher will ensure that the research project adheres to any applicable national legislation, professional codes of conduct, institutional guidelines and scientific standards relevant to the specific field of study.

4) You are required to submit an annual report by 30 January of each year that indicates that the study is active. Reports should be submitted to the administrator HSREC@unisa.ac.za. Should the reports not be forthcoming the ethical permission might be revoked until such time as the reports are presented.

Note:

The reference numbers [top middle and right corner of this communiqué] should be clearly indicated on all forms of communication [e.g. Webmail, E-mail messages, letters] with the intended research participants, as well as with the Research Ethics Committee: Department of Health Studies.

Kind regards,



Prof JM Mathibe-Neke
CHAIRPERSON
mathijm@unisa.ac.za



Prof A Phillips
DEAN OF COLLEGE OF HUMAN SCIENCES



University of South Africa
Private Bag 1193, Mucklenecks Ridge, City of Tlokweng
PO Box 251, Unisa, 0001 South Africa
Telephone: +27 12 420 3111 | Facsimile: +27 12 420 4130
www.unisa.ac.za

Annexure B: Letter seeking consent from Limpopo DoH

P O Box 54
Rozano
0723
30 January 2020

The Department of Health Research Unit
Limpopo Province
Polokwane
0700

Dear sir/Madam

REQUEST FOR PERMISSION TO CONDUCT RESEARCH

I, the undersigned Violet Manonyana Chewe, a Master of Nursing student at University of South Africa, herewith request permission to conduct research at the selected local area primary health care clinics.

Study Title: Tuberculosis screening among human immune deficiency virus positive pregnant women in Limpopo Province.

Objectives:

- To explore the views of midwives regarding TB screening among HIV positive pregnant women in the selected local area primary health care (PHC) clinics in Limpopo Province.
- To describe the barriers and challenges to TB screening among HIV positive pregnant women in the selected local area PHC clinics in Limpopo Province.

Methodology:

The study will follow qualitative descriptive research design. Population for the study is the midwives who work at the selected local area clinics. Non probability purposive sampling will be used to select participant. Unstructured interviews will be used as data collection method.

The study will be conducted under the supervision of DR Khunou SH from the University of South Africa. I undertake to share the study findings and recommendations with your department upon completion.

Kindly find herewith attached my study proposal for the ease of reference.

In anticipation that my request will receive your favourable consideration.

Yours Faithfully

Chewe VM Master of Nursing student (Student number 46451153)

Annexure C: Letter seeking consent from Capricorn District

P O Box 54
Rozano
0723
11 JUNE 2020

The Department of Health
Limpopo Province (Capricorn District Training)
Polokwane
0700

Dear sir/Madam

REQUEST FOR PERMISSION TO CONDUCT RESEARCH

I, the undersigned Violet Manonyana Chewe, a Master of Nursing student at University of South Africa, herewith request permission to conduct research at Kganya local area clinics (Evelyn Lekganyane, Mamotshwa, A Mamabolo, Sehlale, Mapodu, Molepo and Phuti Clinics)

Study Title: Tuberculosis screening among human immune deficiency virus in Limpopo Province.

Objectives:

- To explore and describe factors contributing to inadequate TB screening among HIV positive pregnant women at Kganya local area clinics.
- To understand the challenges that are faced by midwives regarding screening of TB among HIV positive women at Kganya local area clinics

The study will be conducted under the supervision of DR Khunou SH from the University of South Africa. I undertake to share the study findings and recommendations with your department upon completion

Kindly find herewith attached my study proposal for the ease of reference

In anticipation that my request will receive your favourable consideration

Yours Faithfully

Chewe VM  Date 11/06/202

Master of Nursing student (Student number 46451153)

Annexure D: Letter of approval from Limpopo DoH



LIMPOPO
PROVINCIAL GOVERNMENT
REPUBLIC OF SOUTH AFRICA

Department of Health

Ref : LP- 202001 - 015
Enquires : Ms PF Mahtokwane
Tel : 015-293 6028
Email : Kurhula.Hlomane@dhsd.limpopo.gov.za

Violet Chewe

PERMISSION TO CONDUCT RESEARCH IN DEPARTMENTAL FACILITIES

Your Study Topic as indicated below;

Tuberculosis screening among human immune deficiency virus positive pregnant women in Limpopo Province.

1. Permission to conduct research study as per your research proposal is hereby Granted.
2. Kindly note the following:
 - a. Present this letter of permission to the institution supervisor/s a week before the study is conducted.
 - b. In the course of your study, there should be no action that disrupts the routine services, or incur any cost on the Department.
 - c. After completion of study, it is mandatory that the findings should be submitted to the Department to serve as a resource.
 - d. The researcher should be prepared to assist in the interpretation and implementation of the study recommendation where possible.
 - e. The approval is only valid for a 1-year period.
 - f. If the proposal has been amended, a new approval should be sought from the Department of Health
 - g. Kindly note that, the Department can withdraw the approval at any time.

Your cooperation will be highly appreciated


Head of Department


12/03/2020
Date

Private Bag X9302 Polokwane
Fidel Castro Ruz House, 18 College Street, Polokwane 0700. Tel: 015 293 6000/12. Fax: 015 293 6211.
Website: <http://www.limpopo.gov.za>

The heartland of Southern Africa – Development is about people!

Annexure E: Letter of approval from Capricorn District

19-06-2020
RECEIVED


LIMPOPO
PROVINCIAL GOVERNMENT
REPUBLIC OF SOUTH AFRICA

DEPARTMENT OF HEALTH: CAPRICORN DISTRICT

REF : 5.5/3/1/2

ENQ : Hlatshwayo MM

TEL : 015 290 9154/9096

FROM : DISTRICT EXECUTIVE MANAGER

TO : Ms Chewe Violet

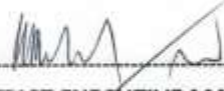
Box 54 Rozano,0723

Contact:073 585 9708

SUBJECT : PERMISSION TO CONDUCT RESEARCH ON TUBERCULOSIS SCREENING
AMONG HUMAN IMMUNE DEFICIENCY VIRUS POSITIVE PREG'IAN T WOMEN IN LIMPOPO
PROVINCE: YOURSELF.

The above matter refers:-

1. Permission for conducting research at Evelyn Lekganyane,Block 14,A Mamabolo,Mamotshwa,Mapodu,Sehlale and Molepo Clinics during the 2020/2021 academic year at the above facilities is hereby granted.
2. Kindly be informed that :
 - In the course of your research there should be no action that disrupts the services.
 - The findings of your research should be submitted to the department as per the HOD's approval.
 - Kindly note that the Department can withdraw the approval at any time.
3. Your cooperation will be highly appreciated.



DISTRICT EXECUTIVE MANAGER

19-06-2020
DATE

1

Annexure F: Researcher acknowledgement

Hereby, I Violet Manonyana Chewe, ID number: 7402200391085, in my capacity as a researcher. Acknowledge that I am aware and familiar with the stipulations and contents of the

- Unisa Research Policy
- Unisa Ethics Policy
- Unisa IP Polity

And that I shall conform to and abide by this policy requirement

Signature:  _____

Date: 15 December 2021

Annexure G: Interview guide

QUESTIONS ABOUT TB SCREENING

1. What are your views regarding TB screening of HIV positive pregnant women?
 - 1.1. What do you think are the benefits of TB screening among HIV positive pregnant women?
2. In your opinion, what are the challenges TB screening of HIV positive pregnant women?
 - 2.1. What are your views regarding the knowledge of midwives about TB screening among HIV positive pregnant women?
 - 2.2. What do you think are the attitudes of midwives about TB screening among HIV positive pregnant women?
 - 2.3. What do you think are other factors that can inhibit midwives from screening HIV positive pregnant women?
3. What do you think can be done to improve TB screening among HIV positive pregnant women?
 - 3.1. What would have to change to improve TB screening among HIV positive pregnant women?
 - 3.2. What other way you might think of that can enhance TB screening among HIV positive pregnant women?

Annexure H: Request to participate in the study

Ethics clearance reference number: HSHDC/934/2019

Research permission reference number: LP 202001-015

Title: Tuberculosis screening among human immunodeficiency virus-positive pregnant women, Limpopo province.

Dear Prospective Participant

My name is Violet Chewa, and I am researching with Dr SH Khunou lecturer in the College of Humanities towards a Master of Arts in Nursing Science at the University of South Africa. I am inviting you to participate in a study entitled: Tuberculosis (TB) screening among human immunodeficiency virus (HIV) positive pregnant women in, Limpopo province.

WHAT IS THE PURPOSE OF THE STUDY?

I am conducting this research to explore the views and challenges faced by midwives regarding screening of TB among HIV positive pregnant women Kganya local area (PHC) clinics. Recommendations will be done to improve screening of TB in HIV positive pregnant women. It is expected that this study will add to the knowledge regarding recommendations for effective implementation of available screening TB strategies in HIV positive pregnant women by midwives.

WHY BEING AM I INVITED TO PARTICIPATE?

The criterion for you being selected to participate was based on the reason that you could bring some light to the phenomenon of challenges faced by midwives in screening for TB in HIV positive women at Kganya local area. Your contact details were requested from your clinic manager. Ethical approval for this study was obtained from the University of South Africa Ethics Research Committee, and permission from the Department of Health and the Operational manager of the clinic.

WHAT IS THE NATURE OF MY PARTICIPATION IN THIS STUDY?

The study will involve being interviewed. Interview questions are semi-structured and include challenges concerning TB screening in HIV positive pregnant women. The interview will take approximately 45 minutes to 1 hour. The interview will be audio taped and field notes were taken with your consent.

CAN I WITHDRAW FROM THIS STUDY EVEN AFTER HAVING AGREED TO PARTICIPATE?

Participating in this study is voluntary and you are under no obligation to consent to participation. If you do decide to take part, you will be given this information sheet to keep and be asked to sign a written consent form. You are free to withdraw at any time and without giving a reason or being penalised.

WHAT ARE THE POTENTIAL BENEFITS OF TAKING PART IN THIS STUDY?

There are no direct possible benefits for you however data provided by you will assist the researcher in achieving the aim set out in the research study. Furthermore, participating in this study will help in the contribution to the body of knowledge directly leading to the improvement in a screening of TB in HIV positive pregnant women.

ARE THERE ANY NEGATIVE CONSEQUENCES FOR ME IF I PARTICIPATE IN THE RESEARCH PROJECT?

The anticipated negative consequences associated with participating in this research study are anxiety during the interviews and your time which the researcher requests you to set aside for the interviews. The study may also affect you emotionally especially if you are also HIV positive. In case of any negative consequence, you will be referred to an independent counsellor for counselling. The independent counsellor will be hired by the researcher.

WILL THE INFORMATION THAT I CONVEY TO THE RESEARCHER AND MY IDENTITY BE KEPT CONFIDENTIAL?

All the information provided by you will be treated as highly confidential as possible and there is no need to submit your name. Information received will be strictly used for this research and thereafter the hard copies will be kept under lock and key for 5 years after

completion of the study. Electronic copies will be password protected and stored in a folder on the computer with access by the researcher, the co-coder and the supervisor. You will at no stage be requested to complete your personal information, like name, surname address etc. Your answers will be given a pseudonym and you will be referred to in this way in the data, any publications, or other research reporting methods such as conference proceedings. Your answers may be reviewed by people responsible for making sure that research is done properly, including the supervisor. Otherwise, records that identify you will be available only to people working on the study, unless you permit for other people to see the records.

Your anonymous data may be used for other purposes, such as a research report, journal articles and/or conference proceedings. In whatever form your supplied data may be used, your name and identity will always be kept confidential and private.

HOW WILL THE RESEARCHER(S) PROTECT THE SECURITY OF DATA?

Hard copies of your answers will be stored by the researcher for five years in a locked cupboard. Electronic information will be de-identified and stored on a password-protected computer with confidential passwords and strong access control will be implemented. The anti-virus software of the computer will be maintained, and regular backup of the research data will be ensured. Future use of the stored data will be subject to further Research Ethics Review and approval if applicable.

After five years the records of the data collected from you will be destroyed as follows:

- Hard copies will be shredded.
- Electronic copies will be permanently destroyed from the electronic devices by reformatting.
- Audio recordings will be degaussed through a magnetic field bulk eraser.

WILL I RECEIVE PAYMENT OR ANY INCENTIVES FOR PARTICIPATING IN THIS STUDY?

There are no payments or incentives for participating in this research study, participation is voluntary. Since digital methods will be used for interviews, the researcher will provide you with data for such purposes. Furthermore, there are no foreseeable costs that will be incurred by participating in this research study.

HAS THE STUDY RECEIVED ETHICS APPROVAL?

This study has received written ethics approval from the Research Ethics Review Committee of the College of Human Studies, UNISA. A copy of the approval letter can be obtained from the researcher if you so wish.

HOW WILL I BE INFORMED OF THE FINDINGS/RESULTS OF THE RESEARCH?

If you would like to be informed of the final research findings, please contact Chewe Violet on 0735859708 or 46451153@mylife.unisa.ac.za. Should you require any further information or want to contact the researcher about any aspect of this study, please contact her on the previously mentioned contact details.

Should you have concerns about how the research has been conducted, you may contact Dr SH Khunou Tel: 012 429 6290, khunosh@unisa.ac.za. This study has been approved by the University of South Africa, Department of Health Studies Research Ethics Committee. Should you want to report any problems you have experienced about the study, kindly contact the Department of Health Studies' Ethics Committee, "The Chairperson HSREC" on HSREC@unisa.ac.za.

Thank you for taking the time to read this information sheet. If you are willing to participate in this study, kindly complete the consent form below.

Kind Regards

Chewe Violet



Annexure I: Consent to participate in the study

I, (participant name), confirm that the person asking my consent to take part in this research has told me about the nature, procedure, potential benefits and anticipated inconvenience of participation.

I have read (or had explained to me) and understood the study as explained in the information sheet.

I have had sufficient opportunity to ask questions and am prepared to participate in the study.

I understand that my participation is voluntary and that I am free to withdraw at any time without penalty (if applicable).

I am aware that the findings of this study will be processed into a research report, journal publications and/or conference proceedings, but that my participation will be kept confidential unless otherwise specified.

I agree with the recording of the semi-structured interviews.

I have received a signed copy of the informed consent agreement.

Participant's full names & surname.....(please print)

Participant's signature:Date.....

Investigator's name: (Please print)

Investigator' signature:Date:

Annexure J: Verbatim transcript

Participant pseudo name: P1

Date : 06 November 2020

Time : 14:00 – 15H15

Duration : 01H15

Venue : TEAMS platform

Researcher: Good afternoon sister

Participant: Good Afternoon mam

Researcher: Thank you for agreeing to participate in the study. My name is sister Violet Chewe as indicated earlier; I am currently doing Master of Arts in Nursing Science with UNISA. I hope you went through the participant information sheet and informed concern that I sent and understood everything. Like I said your participation will remain anonymous, and the details of our interview will only be made available to my supervisor and co-coder.

Participant: You are welcome, well understood, and informed concern signed.

Researcher: As explained earlier, the topic for my study is TB screening among HIV positive pregnant women in Limpopo province. Sister, tell me, what are your views regarding TB screening among HIV positive pregnant women?

Participant: Mm... my view as I know... is that all pregnant women should be screened for TB during their routine antenatal care.

Researcher: Sister can you please talk more about TB screening of pregnant women? How you screen them, when do you screen them and what is the procedure etc, etc.

Participant: Okay, what we do, uhm... when a pregnant woman uhm... uhm... when we see a pregnant woman in the facility, we...we use the... the... the screening tool with questions. Uhm... we ask them whether they have symptoms of HIV positive, uhm... uhm... using the screening tools. We screen them on each and every visit, from the first ANC and also on subsequent visits.

We screen them for TB symptoms and when they have... for...for positive HIV pregnant women, when they don't have symptoms, we initiate INH to prevent TB infection. When they have symptoms, we investigate further we collect the sputum for... we collect sputum for gene-xpert and then wait for results. When they are positive, we start treatment for TB (moment of silence), and then when they don't have uhm... productive cough we refer them to the hospital for chest X-ray or further investigations.

Researcher: O'right, if I may follow up, there is a guideline that you use at the clinic?

Participant: Yes

Researcher: Is everybody aware of the guideline?

Participant: yes

Researcher: Tell me more about the guideline

Participant: What we use, the... the guideline that ... that we use it to guide us about TB screening, we use TB, guideline and also the maternal health guideline, guide us on how to manage TB, ... I mean pregnant women regarding ... on TB management, like screening TB and also if the patient has TB symptoms. We... we use guidelines; ... we have at the office.

Researcher: Okay... thank you very much and does it mean that in each and every consulting room there are the guidelines.

Participants: Uhm..., where I am working, there are three consulting rooms, so in each consulting room we have all the guidelines, TB, PMTCT, Maternal health guideline, IMCI, all the guidelines that are needed by the ideal clinic module.

Researcher: O'right... and ever since you have been working there, have you observed any challenges which hinders, implement of TB screening of HIV positive pregnant women. Are there any challenges that you are aware of that hinders TB screening in pregnant women?

Participant: No, I have never experienced that, because we have the screening tool, we have the guidelines.

Researcher: So, you have never... there are no challenges?

Participant: No, okay... what... what, the challenge that we have... sometimes we have unavailability of INH prophylaxis.

Researcher: The unavailability of INH prophylaxis, can you tell me more about it?

Participant: Most of the time we... we... are having shortage of INH prophylaxis, though is not always, but even when we have this challenge, we usually talk with our pharmacist to assist and then ...we also do stock rotation, we ask other facilities if they have so that we can have the stock in the facility if we have shortage for the month.

Researcher: And how do you frequently experience that type of challenge? Is it more often or less often, tell me more about that?

Participant: Uhm ...in a year maybe ... twice or three times a year. But is not much often...maybe in a month we can have shortage for a week or two weeks, after we have consulted with our pharmacist, we.... and done the stock rotation, then the challenges, uhm... the problem is solved, then we have the stock in the facility.

Researcher: O'right, ... and then about the challenges, is it only the shortage of INH? Tell me more about the challenges.

Participant: Regarding TB Screening only?

Researcher: Yes

Participant: Uhm... some ... of the participants... the pregnant women are missed, for example if there is no intensified TB screening, for example, maybe the person who was seeing the pregnant women did not do intensified TB screening. Some of them are missed but not always. So...you find that they are been diagnosed while they...they become ill but is not always.

Researcher: In other words, it does happen that a woman can come there being pregnant and HIV positive and not screened for TB? And with your experience what do you think might cause that to happen?

Participant: Eish... uhm... I don't know for... my view. I think... I think (small laughter) maybe the clinician didn't screen for TB or... did not use TB screening tool to screen for TB symptoms. But that is why I say is not always, most of the ...our pregnant women we do screen for TB.

Researcher: Mm ... and who is supposed to screen the pregnant women TB?

Participant: The midwife who is attending the patient. Screening uhm... at my facility, screening starts at the vital signs point, then... and then when the patient comes to the consulting room, I also screen for TB using the screening tool.

Researcher: And then what do you think might cause the clinicians not to screen for TB?

Participant: Aai (stammering)...my views I think maybe, Hai...what can I say? Uhm...missing for TB screening, I think maybe the clinicians will be under pressure to finish the queue or then she forgets to screen for TB, I...think...so...because screening for TB is not a lot of work, because those questions are only five of them. I... don't know...I don't know what I can say (deep breath).

Researcher: In other words, it might be related to er... many patients versus several midwives? Can you tell me more about that?

Participant: Yes, I think so.

Researcher: O'right can you tell me more about that because I think that one can be a challenge? If now the number of patients is more than people who are supposed to give... Provide the care that is needed, can you tell me more about that?

Participant: Okay, in other facilities they have uhm... many patients to be seen per day, especially pregnant women to be seen per day and then you only find that is only one or two midwives for the day to attend to all the pregnant women per day. (Moment of silence) Soo...I think also... I think... I think this will also contribute to clinicians' overlook for screening for TB, they just uhm... concentrate on assessing the pregnant woman for... looking for BP, foetal heart, growth monitoring...the...the... management and the antenatal part, forgetting to screen the patient for TB. Looking at the time, looking at the line and the number of patients they have for the day. Especially the pregnant women, because the pregnant women take time when you attend them, they have a lot of things with them, especially first antenatal visit.

Researcher: Uhm, ... If pregnant women are many per day, how many do you think that it will be too many to be taken per day? Statistics, how many do you see per day to such an extent that you end omitting some very TB screening?

Participant: Okay... uhm... per day...where I was working before first, before I work where I am working now, I... we... I usually see 40 subsequent ANC visit and maybe 20 first visit per day. Per day I can...we can attend 65 pregnant women per day. They were so many.

Researcher: Ok, I understand, and then you have mentioned the shortage of INH and several available midwives per day? Are there any other factors that can make it difficult to screen pregnant women for TB, especially those who are HIV positive? Are there any factors for example organisational factors, the very same midwives etc...?

Participant: Uhm... any factors that can contribute to that I think...uhm I...I...mm...those two, I...I...I don't know anymore (small laughter).

Researcher: O'right, are they all eligible to do they are expected to do, are they all experienced? Do they know what to do? Your view?

Participant: O'right...Yaa (yes)... some of the new...newly qualified can contribute, I think because (A kere) most of the professional nurses are from college straight, they are not even trained for TB, they don't understand TB management well. Some of them are still waiting to be trained for TB, to be in serviced about TB screening, the initiation of INH, who is eligible and who is not eligible. I think this can contribute, the newly qualified midwives who attend those women.

Researcher: So, you have mentioned that sometimes they still have to go for some in-service training like PMTCT, TB management, etc, etc...

Participant: Because when they come from school.... come from college, we do orientate them about the normal services. At PHC level we have many... many programmes, some of the programmes like TB management they have to go for training for longer days. So... they just start to attend pregnant women not having experience in all the programmes like TB management, PMTCT, so it might contribute to losing some of...I mean pregnant women.

Researcher: Okay, and then are there any in-service training which are conducted in order to empower the midwives regarding the... the TB screening of pregnant women that you are aware of?

Participant: Usually we wait for the department to ...uhm... to...to launch the workshop. So then, so that the newly qualified midwives can go to... to those workshops. Otherwise, when we have time at the facility we do in service each other about TB screening, HIV, INH management in a pregnant woman. Even though the in service in the facility is not done often because of the... as I have mentioned, sometimes you come to the facility is almost full, so we start by working, we knock off late... During the day we will be helping pregnant women until we knock off, so we usually...we usually, we don't have time to in-service each other about those aspects such as TB

screening and PMTCT, but otherwise the department arrange for those workshops even though this year we did not attend much because of 19.

Researcher: Do you...in your view do you think that patients sometimes contribute to them being missed for TB screening when they are HIV positive?

Participant: No... no, because what we do...uh...I don't think the patients can refuse to be screened for TB especially if you attend the patient in a confidential manner, you are only two in the consulting room the midwife and the patient. So, you will be explaining the reason why you ask the questions, and then you will be explaining the reason why you screen for TB in each and every visit, especially for those who HIV are positive, you will be explaining the importance of screening and importance of taking INH prophylaxis.

Researcher: And are there any other factors related to patients that contribute to TB screening that you can think of?

Participant: factors that uh...I think...

Researcher: Are related to patients

Participant: I think some of the patients can withhold information, especially if the patient is aware that is being screened for TB. Some of the questions...they will just say no, like are you coughing? No, are you having someone with TB at home? No, It can also affect TB screening because if she says no, you can't investigate further...you.....you think that the patient does not have ant TB symptoms.

Researcher: In other words, when you screen the patient sometimes, they don't give you the whole information? They withhold some information.

Participant: Some information, yes.

Researcher: Ok, can you tell me more about that?

Participant: Uhm...what...uhm...what experience, in my view most of the patients they are afraid of being diagnosed with TB. So... especially with...maybe you ask the patient, then they say yes, then... you say for how long then she tells you, then...you tell her I am going to investigate you for TB. Then I am going to take you the sputum and send it to the lab so that we can see if you don't have TB, then... the participant will say no (nna) I don't have TB. I don't think is TB sister, I think is a normal cough. I... I think some of the patients are still afraid to be diagnosed with TB, I

think... maybe is the stigma or maybe the TB infection itself. Maybe they view it as shameful. I don't know how to explain further. If you tell the patient I'm going to investigate further you will see the patient is no longer comfortable with that, she will try to convince you that uhm... sister this is not TB. And sometimes you give them the sputum bottles and say go and cough, I want the sputum, she will say that (nna) I am coughing but nothing is coming out...so... sometimes is a challenging. They are very ... very...very scared to be diagnosed with TB. I don't know how to explain that. The word TB scares them.

Researcher: Okay, in other words, the word stigma can also make the patient not to disclose the whole information regarding the TB etc...etc.... And in that case what do you do if you realise that this person is not disclosing the whole information? How do you support, how do you encourage the patient? What do you do in that case?

Participant: We...uhm ... do... we do counselling, health education, we educate the patient about TB infection as a whole and explain the reason why we are focusing on screening for TB, why do we want to prevent TB infection. Especially because she is HIV positive, we do health education and then we counsel further so that the patient can understand gore (that) TB infection is infectious if she does not disclose, she can infect others and then also... uh... she can get very ill and have complications with that TB if is not managed well.

Researcher: Can you tell me more about pregnant woman related factors if any?

Participant: Yes... another thing is those women that come to the clinic while on advanced labour... uhm... with... with head-on perineum., when you investigated you find that the patient is not booked for ANC, she just comes and deliver. So, I think is...is...it also affects the TB screening of patients because the patient was not seen for ANC booking, she was not seen for a subsequent visit, she might come to deliver while having those TB symptoms and was never screened. Because she never attended antenatal care.

Researcher: Can you tell us more about that, the head on perineum

Participant: Uhm... Mm... meaning like how... like we do have the head on perineum, and most of... most with come with head-on perineum, most of them they are not booked for ANC.

Researcher: And therefore, might be having TB and HIV positive?

Participant: Yes, because we do have those patients who have never attended ANC visits, and then when we have a head on perineum, we deliver, after delivering the patient we counsel for

HIV when we test, we find that the patient is HIV positive and never attended antenatal care... we do have those patients

Researcher: So... sister, how does this affect you?

Participant: In terms of service delivery, or terms of....

Researcher: in terms of anything, service delivery, and whatever

Participant: It does affect us... uh... when you think that the patient has not uh... receive any prophylaxis, or any HCT counselling, the baby might be infected with HIV and if the patient had uh... TB, the patient might be TB positive and also she might uh... infected others at home, and also attending the patient at emergency level le rena (also us) uhm ...the clinicians we might be infected with that TB infection, and uh... I think ... also emotionally is affecting us because is stressful to attend the patient who had never... who had never attended ANC. We have to start and counsel the patient and explain everything that uh... give a lot of information to the patient and also is a lot of work to us, emotionally draining. It does affect us.

Researcher: And then in your view what are the consequences of not screening TB on the pregnant woman.... according to your knowledge?

Participant: Mm..., the consequences... uh...

Researcher: Especially with HIV positive pregnant women?

Participant: Positive woman, uh... because the woman will be co-infected, uh... shhh... she will... get more... ill... and...also (pause)...sh... uhm... what can I say...the...the... she can die from this TB infection especially because she is HIV positive, she will get more, more ill. And then also, can infect the baby.

Researcher: Ok thank you very much, and then about the consequences on the nurse and the midwife, if you fail to screen the patient for TB are any consequences? At the clinic and the department of health etc, etc.

Participant: We are going to have more maternal death, which we don't want, and also if the patient is missed, especially the pregnant woman is missed for TB screening, end up being TB positive not managed, she will infect the uh... family member, also the community will be affected, And also the... the patients uhm... they will also be affected because the patients (akere) is indeed they sit for a long time in the waiting areas, even now we are wearing mask...they...they always

talk to each other even though we try to control that, she can... af ...uhm... also infect others, like when she comes to the clinic to attend.

Researcher: Ok the patient is likely to infect other patients and the infection is likely to spread to other patients, community members and the family is likely to be infected. And what about the nurse? The nurse who did not screen the ...

Participant: Ok... also... the nursing staff at the facility can also be infected with the TB infection. I think the midwife who was attending the patient from ANC, first visit, subsequent visit until the patient is uh..., I think until the patient dies from the TB infection. They... there ...will be consequences.

Researcher: Tell me more about those consequences?

Participant: I... I never experienced that but I I try to answer. Hey (deep breath) ... I think maybe they will investigate what happened. Uhm... the records of the patient whether the records indicate that uhm...did the nurse screen the patient for TB, weather the nurse explained to the patients about the signs and symptoms, whether the nurse did try to explain about uhm... the INH prophylaxis initiation and the INH, uhm... the importance of taking the INH, whether the nurse had ever identified if the patient had the symptom of TB and investigated it further or whether she did manage to refer the patient if ever the patient uhm...was unable to be managed at the facility level. And... I think also they take steps to...those...uhm...to that clinician, ... clinician that uhm... contributed to...not...uh...managing the pregnant woman well regarding the TB...screening and TB management.

Researcher: Ok and then are you having any consequences on the unborn baby?

Participant: What I am aware of uhm...is that ... the baby... the woman... can infect the baby with TB infection. And... another thing... yah...I think that's my answer, the baby can be infected with a TB infection. And also, concerning the growth of the unborn baby, I think is going to be affected because the patient ...uh... the pregnant woman with TB will be ill with TB symptoms and the unborn baby will also be affected.

Researcher: And then what do you think can be done to ensure proper screening of uhm....

Participant: For pregnant women?

Researcher: Yes, HIV positive pregnant woman.

Participant: What can be done... firstly the...the... the facility manager must ensure that the staff is aware of the importance of screening pregnant women, aware of the screening tool, the questions that must be asked to the pregnant women, and then the...manager also must ensure that in-service training are given to the staff of the facility about the TB screening, the TB management uhm.... and INH initiation, especially maybe monthly to remind uhm... clinicians about the TB management and... also, the manager must also monitor and ensure that all the pregnant women are being screened for TB uhm... on each and every visit by the clinicians attending the... the... pregnant woman. The manager must uhm...also...uhm the manager must also find out what are the challenges uhm... the clinicians experience that affect...uhm.... That... uhm... that... uhm...affect TB screening at the facility, the challenges that the facility might have and also uhm... try to.... solve the challenges ...so that...uhm ... so that TB screening for pregnant women can be done properly and uhm... to all pregnant women so that uhm... others are not missed for TB screening and TB management.

Researcher: Ok you have mentioned that midwives should be empowered about managing HIV positive pregnant women. Anything that should be done for the patients?

Participant: Uhm... for the patients, we need to uhm... educate the patients daily about the TB infection, regarding the signs and symptoms of TB and then also when to report uhm...to the facility. When teaching the pregnant woman about TB infections as a whole, they will know the symptoms of TB and ... then even thou they are at home not screened for TB they will also come and report that I am experiencing 1,2,3 and I think I have TB, to... with...we, we health educate our patient about the TB infection and the TB management as a whole, I think we can win this thing of managing TB and to... HIV positive pregnant women.

Researcher: Thank you very much, and can you please share the importance of screening for TB during antenatal care attendance?

Participant: The importance of antenatal care ...

Researcher: Concerning TB screening among HIV positive pregnant women.

Participant: Ok, as I have mentioned at the start of the meeting, we... usually, I prefer the first visit, we do all the screenings, there, the BP, Height. all the things, and we do screen for TB and explain the reasons why we are screening for TB and then we also explain the reasons why we are initiating INH and also on a subsequent visit we do... uhm... uhm... uhm... we screen for TB if the woman has any symptom uhm...uhm...we do... collect sputum for gene xpert. Those without symptoms issue INH prophylaxis, and we do manage the side effect of IHN, because some of the

pregnant women, they... stop taking INH because of the side effects. We do educate the women about the side effects of IHN and thenwe also monitor the side effects of INH on every visit, and also, we remind them about the importance of taking INH. We also teach the patient about uhm...the...the... the...uhm... the prevention strategies if maybe the patient is experiencing any TB symptoms at home..., how to cough, washing hands uh.... opening windows at home for ventilation and report if any...if she can experience any TB symptoms...uh... early.

Researcher: Thank you very much. Sister what can you say about the attitude of midwives about TB screening?

Participant: The attitudes uh...what I can...say ... Is that...like uh... sometimes... some of the clinicians they overlook TB, they just concentrate on ...attending to uh... pregnant issues uh... despite TB. Others ... they have uh... that ...attitude of saying uh... ke tla reng (what can I say?) TB because is infectious uh... some others they don't engage much on ... they are not uh... they are not that passionate about TB screening.

Researcher: Ok sister you talked about some the health professionals that overlook TB screening in pregnant women. What do you mean when you say overlook?

Participant: Uhm... uhm... I I don't know how to explain it, maybe they forget or are busy, but.... theythe TB screening part, most of the... I mean some of the clinicians they do...I think they do forget to screen or forget that there is TB screening, especially on pregnant women.

Researcher: So, in other words you mean they forget to screen for TB because TB is not pregnancy-related condition? Can you talk more about that?

Participant: Eish... answering that, I... I think maybe some of the clinicians think that TB is not a pregnancy-related infection, I think so ... I think...some of the clinicians, they tend to...not being interested in managing TB.

Researcher: sister, thank you for your participation in the study. Uhm... do you have any questions or anything to share before we close the meeting officially?

Participant: What I want to share is that the newly qualified clinicians need to undergo services on TB screening, especially to all the professionals at the facilities.

Researcher: Ok Sister thank you very much mam for the information. We are grateful for the assistance and the information you provided, however, know that we are still going to interview

other participants to get in-depth information from other participants, therefore we are continuing with the study, but we also like your permission to come back to you if we want to make a follow-up, would you allow us to come to you to seek some clarity regarding anything you told us?

Participant: Yes.

Researcher: Thank you mam, bye.

Annexure K: Co coding certificate

Qualitative data analysis

MASTER OF NURSING

OF

Ms Violet Manonyana Chewe

THIS IS TO CERTIFY THAT:

Professor Tebogo M. Mothiba has co-coded the following qualitative data:

Semi-Structured one-to-one interviews

For the study:

TUBERCULOSIS SCREENING AMONG HIV POSITIVE PREGNANT WOMEN IN
LIMPOPO PROVINCE, SOUTH AFRICA

I declare that the candidate and I have reached consensus on the major themes reflected by the data. I further declare that adequate data saturation was achieved as evidenced by repeating themes.

Prof TM Mothiba

AUGUST 2021



TM Mothiba (PhD)

Annexure L: Editorial Certificate

Fax: 0152682868
Tel. 0152862684
Cell: 0822198060
Rammalaj@ul.ac.za

Dr J R Rammala
440B Mankweng
Box 4019
Sovenga
0727
15 November 2021

EDITORIAL CERTIFICATE

Author: **VIOLET MANONYANA CHEWE**

DOCUMENT TITLE: **TUBERCULOSIS SCREENING AMONG HUMAN IMMUNE DEFICIENCY VIRUS POSITIVE PREGNANT WOMEN IN LIMPOPO PROVINCE**

This document certifies that the above Dissertation was edited by Dr J R Rammala (PhD, Linguistics). The document was edited and proofread for proper English language, grammar, punctuation, spelling and overall style. The editor endeavored to ensure that the author's intended meaning was not altered during the review. Track changes have been used in editing to allow the client to view the changes suggested.

Kind regards



Dr J R Rammala